(CBCS) for Generic Elective Course

Money & Banking

Singhal Publications

SYLLABUS

Money & Banking

(CBCS) for Generic Elective Course

LATEST MINUTES OF MEETING

This course exposes students to the theory and functioning of the monetary and financial sectors of the economy.

The following suggestions were made for the topic wise reading list

UNIT 1 : Money: Concept, functions, measurement; theories of money supply determination.

1. Baye and Jansen	Chapter 1 pp2-27; chapter 14 (465-486)
2. N Jadhav	Chapter 2 section 2.1 pp(18-25)
3. RBI Report Money supply Analytics and Methodology of Compilation 1998	Chapter 2 pp(11-17)

UNIT 2 : Financial institutions, markets, instruments and financial innovation.

(a) Role of financial markets and institutions; problem of asymmetric information – adverse selection and moral hazard; financial crises.

1. Mishkin and Eakins	Chapter 15 pp(369-396)
2. MY Khan	Chapter 1
3. Baye and Jansen	Chapter 5 pp(153-161)

(b) Money and capital markets: organisation, structure and reforms in India; role of financial derivatives and other innovations

1. MY Khan	Chapter 9 (9.13-9.19, 9.21, 9.24-9.32)
2. Bhole	Chapter 5 pp(137-143)
3. Fabozzi et. all.	Chapter 26 pp(496-504)
	Chapter 27 pp (517-529)
	Chapter 30 pp(577-580)

UNIT 3 : Interest rates : Determination; sources of interest rate differentials; theories of term structure of interest rates; interest rates in India.

1. Baye and Jayesen	Chapter 10
2. Annual Report of RBI 2011	Box-III Base Rate System : An Assesment

UNIT 4 : Banking system

(a) Balance sheet and portfolio management.

(b) Indian banking system: Changing role and structure; banking sector reforms.

1. RBI bulletin Sep 2013	Banking Structure in India – looking ahead by looking back article by D. Subharao
2. RBI Bulletin April, 2013	Implications of Basel III for captal, liquidty and profitability of Banks by B. Mahaparta

UNIT 5 : Central banking and monetary policy: Functions, balance sheet; goals, targets, indicators and instruments of monetary control; monetary management in an open economy; current monetary policy of India

1. Baye and Jansen	Chapter 19 (666-687, 692-693, 6977-705)
2. Jadhav	Chapter 9.2-9.3, except 9.3.7
3. Annual Report of RBI 2014-2015	Chapter 3

CONTENTS

UNIT

1

Money : Concepts, Functions, Measurement, Theories of Money Supply Determination

CHAPTER-1

Baye and Jansen (Chapter 1 & 2)

Q.1. What is Money? How is it different from wealth and income? Define the term Liquidity in context of money.

Ans. Money is not simply bills and coins; it is anything generally accepted as a medium of exchange. A medium of exchange is virtually anything that is used to pay for goods and services or settle debts.

Money is **neither wealth nor income.**

Wealth refers to the **stock of assets that individuals own** like stocks, bonds, cars and even textbooks **minus the amount owed by the individual to others.**

Income is the **flow of earnings over some time interval** whereas money is anything generally accepted as a medium of exchange.

Currency i.e., bills and coins are one part of the money.

Liquidity is a term to describe how cheaply and easily an asset may be converted into a medium of exchange. A few examples that illustrate the concept of liquidity are as under:

- Real estate is illiquid because it can't be quickly and easily converted into a medium of exchange.
- Checkable deposits, deposits with ATM card have become liquid after the revolution of digitalization in India.

Q.2. Explain the role of money in the economy.

Ans. We will examine four types of roles of money in economy:

(i) **Medium of Exchange.** Medium of Exchange function of money means that you can buy goods and services or financial instruments using money. In earlier times, exchange of goods and services used to take place on barter basis i.e. exchange of good/ services for other goods and services without the use of money. A barter transaction

required a double coincidence of want. A shoemaker who wants bread will need to find some bread maker who is in the need of shoes. If this happens, trade will take place. A shoemaker will get bread and bread maker gets shoes. But if baker does not need shoes, trade won't take place. There is a transaction cost associated with barter which makes it inefficient. When money is used as medium of exchange the baker can use money to buy shoes from the shoemaker even if the shoemaker does not want bread. The shoemaker can use the money received to buy whatever he or she desires. Money satisfies the double coincidences of wants.

(ii) **Unit of account.** Different commodities are of different value. But there is no common unit of account in barter system. Suppose a sheep is to be exchanged for Basmati rice. It is difficult to decide in what proportion the two goods are to be exchanged. The use of money as the unit of account reduces the amount of information needed to make purchase decisions. Fortunately, the monetary economy uses money as a common unit of account. All prices are stated in Rupees/ dollars.

(iii) **Store of values.** It is a means of storing today's purchasing power to purchase say a house or a car tomorrow. In this absence of money one has to store stock of goods to use/ trade in future. *This trade would be inefficient for two reasons.*

(a) Some commodities are perishable like fruit and milk and would be of no value if stored for future use.

(b) Some commodities which are not perishable like a car can be very costly to maintain.

(iv) **Standard of deferred payments.** Deferred payment is a payment that is deferred to the future and is usually stated as a sum of money. Suppose you owe $5 to your friend and need to pay it back in a week. It would be very difficult to determine the goods/ services to be provided on a future date to honor a current debt. However, with the advent of money, it is easier to define a payment to be made in the future for a current debt.

Q.3. What are the different kinds of money in the economy?

Ans. The following are the kinds of money in the economy:

(i) **Commodity money.** Commodity money means the use of a physical commodity as money which also has alternative, non- monetary uses. Most recent examples are Gold and Silver. Gold and Silver are used in jewelry and for other decorative purposes and thus also have value independent of their use as money.

Commodity Money can further be of the following two kinds:

- The commodity that itself circulates as money is called **full bodied money.** The monetary value of a full-bodied money is exactly equal to its value in its non-monetary use.

- **Representative full bodied money** is paper money that represents a claim to a specific quantity of some commodity. The actual commodity is in bank's vault or other depository and is not openly circulated. Example: Gold certificates were pieces of paper that could be redeemed for a specified amount of gold.

(ii) **Fiat Money.** The use of representative full-bodied money familiarized people to the use of paper money. Fiat money does not have any value as a commodity and does not represent any claim against a commodity. They are also called un-backed paper money. They are accepted as a medium of exchange as they are issued as a legal tender by the government.

- Token coins and paper money are the fiat money generally used in an economy.
- Cheques issued by banks and other financial institutions are also un-backed by any commodity.

Fiat money is backed by its general acceptance by society as a medium of exchange.

Q.4. Explain the physical properties of money.

Ans. Physical properties of money are as follows:

(i) **Portability.** Money should be portable, as the easier it is to carry around, the more effective it is as a medium of exchange.

(ii) **Divisibility.** Money should be made of a commodity which is divisible into smaller units to facilitate "making change".

(iii) **Durability.** Money should be durable such that it does not depreciate quickly when not in use. Gold and silver meet this criterion. Eggs would therefore be poor mediums of exchange.

(iv) **Recognizable value.** Money should have easily recognizable value so that its easy for people to engage in a transaction and agree to use money as money. A desire for recognizable value is because of efforts to curtail currency counterfeiting. Modern currency has complicated engravings, and makes use of rare papers, inks and sometimes embedded metal strips. All of these make it easier to recognize genuine currency and more difficult to produce counterfeit bills.

Q.5. Explain the role of banks as financial intermediaries.

Ans. Banks are considered to be a safe place for saving money from thefts, fire and other hazards. Bank is an institution that accepts deposits and makes loans to the public.

Features of Banks are as under:

1. **T-account.** The bank's assets are listed on the left side and its liabilities are listed on the right side of the T-shaped account:

Bank Holding Demand Deposits

Assets		Liabilities	
Reserves (gold in vault)	$ 75	Demand Deposits	$ 75

In the aforementioned T-account, individuals have deposited $ 75 in gold. This represents banks assets. Notice that gold on deposits is not a 'gift' to the bank. The depositors are free to withdraw it whenever they choose. The obligation to give back $ 75 in gold to depositors at their demand represents a liability to bank.

2. **Bank Notes.** A document written by the early banks promising to pay a sum of specie to the bearer on demand is called a bank note. The main difference is that bank notes are supplied by banks rather than by government.
   (i) Bank notes are issued in convenient denominations that facilitate their use in trade and stay in circulation for long time.
   (ii) Bank notes are more prone to theft than money is. Using stolen bank notes to make purchase is as easy as using gold.
3. **100% reserve banking.** Bank holds reserves equal to the total value of outstanding bank notes and demand deposits fully. It covers the hypothetical situation in which all deposits and bank notes are withdrawn on same day.
   – Bank charges money to store deposits and to trade specie for bank notes to earn profit.
4. **Fractional reserve banking.** Banks realized that most of the money in their vaults was never withdrawn. It sat idle while demand deposits and banks notes circulated as money. They realized that they could loan out some of their reserves and earn additional profit on loans. This led to fractional reserve banking, in which bank reserve equal only a fraction of outstanding demand deposits and bank notes.
5. Direct Finance occurs when savers lend directly to borrowers. Whereas indirect finance involves a particular type of middleman. This middleman is called a financial intermediary. The function of an intermediary is to accumulate funds from various savers and lend those funds to borrowers. Banks are an intermediary because they accept funds from depositors and loan it to borrowers. Depositors receive interest from bank; bank receives interest payment from borrowers, thereby earning a profit on the difference.
6. The main difference between a broker and a bank is that while a broker facilitates the transaction without personally creating a financial instrument, a financial intermediary accumulates savers funds and lends them to borrowers by making a loan from itself.
7. A general model of money creation :
   Total money stock M, is the sum of Currency hold by public C and deposits in the banks D.
   So, $M = C + D$ ..... ①

Role of Banks as Financial Intermediaries:

1. Banks match up savers who want to lend for short time periods with borrowers who want to borrow funds for long time periods.

2. Banks pool relatively small deposits to make relatively large loans to borrowers.
3. Banks help in reducing the risk faced by small depositors and even large depositors by diversifying the loans over which their deposits are spread. Thus default by one borrower does not put their entire savings in risk.
4. Finally, banks economize the transactions costs relative to those that would occur with direct finance. If individual savers attempt to diversify without using financial intermediaries, each will make small denomination loans to a number of borrowers. In doing so, each saver would personally verify the creditworthiness of the borrower and there will be duplication of efforts. In contrast if a bank pools the savings of these small depositors and lends the same to the borrowers, the transaction cost is a one-time cost that gets spread across a number of small depositors, thus reducing the transaction cost.

Q.6. Explain the concept of Monetary Base and Money Multiplier.

Ans. Monetary Base

The funds provided by RBI get split into two major uses: one is the currency in the hands of the public (C) and the second is the commercial bank reserves (R). These two together comprise the **monetary base or the high powered money.**

$$MB = C + R \quad \text{.....①}$$

Money Multiplier refers to the rate at which the money increases in the economy for a given increase in deposits:

Money Multiplier Derivations:

Now, we know that the money stock in the economy is the sum of currency and deposits.

$$M = C + D$$

The public's preference for currency or deposit is reflected by the currenty to deposit ratio.

Let, the desired currency to deposit ratio be $(C^{d=\frac{C}{D}})$

So, $C = C^d \times D$ .....②

Total Reserves (R) held by banks is the sum of Required Reserves (RR) and Excess Reserves (ER) :

$$R = RR + ER \quad \text{.....③}$$

Required reserves equal the amount of deposits that banks are required to park with the RBI under the guidelines of the central bank.

$$RR = rr \times D \quad \text{.....④}$$

rr : (Required Reserve ratio)

Desired Excess Reserve are assumed to be proportional to deposits

$$ER = e^d \times D \quad \text{.....⑤}$$

e^d : Desired Excess Reserve ratio

Combining equations ③, ④ and ⑤

$$R = rr \times D + e^d \times D$$
$$= (rr + e^d)D \quad \ldots\ldots\ldots ⑥$$

Thus, when banks holds a constant fraction of banking system deposits as required and excess reserves, total banking system reserves are proportional to total deposits.

Complete Deposit Multiplier

$$MB = C + R \quad \ldots\ldots\ldots ⑦$$

Now, using equations ② and ⑥, we get;

$$MB = C^d D + (rr + e^d)D \quad \ldots\ldots\ldots ⑧$$

That is monetary base is total banking system deposit multiplied by the sum of the currency to deposit ratio (C^d), the required Reserve ratio (rr) and Desired Excess Reserve ratio (e^d).

$$D = \left(\frac{1}{C^d + e^d + rr}\right) \times MB \quad \ldots\ldots\ldots ⑨$$

Thus the value of the **complete deposit multiplier** is $\left(\frac{1}{C^d + e^d + rr}\right)$

It says that the total amount of banking system **deposits** is actually a multiplier of the monetary base

Suppose,

MB = ` 350 Billion
$rr = 0.2$
$e^d = 0.05$
$C^d = 0.25$

Then, total banking deposits are

$$D = \left(\frac{1}{0.2 + 0.05 + 0.25}\right) \times ₹\ 3,50,00,00,00,000$$
$$= 2 \times ₹\ 3,50,00,00,00,000$$
$$= ₹\ 700 \text{ Billions}$$

Notice that total banking system deposits are double the monetary base.

Complete Currency Multiplier

Similarly, the **complete currency multiplier** is derived as follows:

$$C = C^d \times D \quad \ldots\ldots\ldots ①$$

Where, C^d is derived currency to deposit ratio

$$D = (1/rr + e^d + C^d) \times MB \quad \ldots\ldots\ldots ②$$

From ① and ②

$$C = (C^d/rr + e^d + c^d) \times MB$$

A change in monetary base will lead to a change in currency holdings that is a fraction of the initial increase in monetary base.

$$\Delta C = \left(\frac{C^d}{rr + e^d + C^d}\right) \times \Delta MB$$

This relationship between the change in the monetary base and change in currency held by the public is explained by

$$C = \left(\frac{C^d}{rr + e^d + C^d}\right) \times MB$$

Where, $\frac{C^d}{(rr + e^d + C^d)}$ is complete currency multiplier

Complete Money Multiplier

The **complete money multiplier** is thus the sum of the complete deposit multiplier and the complete currency multiplier;

$$D = \left(\frac{1}{rr + e^d + C^d}\right) \times MB$$
$$C = \left(\frac{C^d}{rr + e^d + C^d}\right) \times MB$$

Money stock is simply the sum of currency and deposits

$$M = (C + D)$$
$$M = \left(\frac{1 + C^d}{rr + e^d C^d}\right) \times MB$$

$\frac{1 + C^d}{rr + e^d C^d}$ is called **complete money multiplier**

Q.7. What are changes in deposits, currency holdings and the money stock for an open market sale of $ 1,00,000? The required reserves ratio is 10%, the desired excess reserves ratio is 5% and the desired currency to deposit ratio is 25%.

Sol. Changes in Deposits

$rr = 0.10$
$e^d = 0.05$
$C^d = 0.25$
$\Delta MB = -1,00,000$ (open market sale)
$\Delta D = ?$
$\Delta C = ?$
$\Delta M = ?$

Changes in Deposits

$$\Delta D = \frac{1}{rr + e^d + C^d} \Delta MB$$
$$= \frac{1}{0.10 + 0.05 + 0.25} \Delta MB$$
$$= 2.5\ \Delta MB$$
$$= 2.5 \times (-1,00,000)$$

$$= -\$\ 2{,}50{,}000$$

Changes in Currency holdings

$$\Delta C = \frac{C^d}{rr + e^d + C^d}\Delta MB$$

$$= \frac{0.25}{0.40} \times \Delta MB$$

$$= 0.625 \times (-\ 1{,}00{,}000)$$

$$= -\ \$\ 62{,}500$$

Changes in Money Stock

$$\Delta M = \Delta C + \Delta D$$

$$= -\ 2{,}50{,}000 - 62{,}500$$

$$= -\ \$\ 3{,}12{,}500$$

Open market sale causes decline of deposits by $ 2,50,000. Currency holdings to decline by $ 62,500 and money stock declines by $ 3,12,500

Q.8. Explain the Money Supply equation. How can the Central Bank influence the money supply in the economy?

Ans. Money supply equation indicates how much money is created in the economy for a given monetary base. It is expressed as follows;

$$M = \left(\frac{1 + C^d}{rr + e^d + C^d}\right) \times MB$$

- It indicates the major determinants of money supply to be :
  a. Required Reserve ratio (rr)
  b. Currency to Deposit ratio (C^d)
  c. Desired Excess reserve ratio (e^d)
  d. Monetary Base(MB)
- A change in any of these determinants will change the amount of money.

Central bank of any country (RBI in India) can influence the money supply by two ways:

(i) **Monetary Base (MB).** The RBI can increase (or decrease) the monetary base by engaging in open market purchase (sales). An increase in the monetary base leads to an increase in the money supply that is a multiple of the increase in the monetary base.

(ii) **Required Reserve ratio (rr).** The RBI can change the money supply by changing the Required Reserve ratio. RBI changes the money multiplier by changing the required reserve ratio.

$$M^s \propto \frac{1}{rr}$$

An increase in required reserve ratio decreases the money supply by reducing the money multiplier.

Q.9. Explain the bank determinants of money supply. . What factors may cause a bank to raise or lower its desired excess reserve ratio?

Ans. Banking system helps to determine the money supply through choice of excess reserves to be maintained on deposits (e^d). Higher excess reserves reduce the amount of loans the banking system can create from a given monetary base. Thus, increase in (e^d) reduces money supply. On the other hand, reduction in (e^d) leads to an increase in the money supply in the economy.

The three major factors that influence the excess reserve ratio are;

(i) **Market Interest rates on loans.** Interest rates on loans are the opportunity cost of holding excess reserves. When a bank holds excess reserves it forgoes the interest it could have earned by making a loan from those reserves. Thus, desired ratio of excess reserves will decline with increase in the market interest rates on loans and other securities.

(ii) **Risk of deposit withdrawals.** Banks holds excess reserves mostly to help them deal with unexpected withdrawals. Having excess reserves available allows a bank to avoid calling in loans, selling securities or borrowing resources from other banks. The higher the risk of withdrawals, the greater the excess reserve ratio.

(iii) **Interest rate on borrowed reserves.** Instead of keeping excess reserves and foregoing the interest that could have been earned, banks can borrow reserves from other banks at specified interest rates. When this interest rate decreases banks see a viable option of borrowing reserves instead of keeping excess reserves. When the interest rate paid on borrowed reserves increases this option becomes relatively unattractive and excess reserve ratio increases.

Q.10. Explain the public determinants of money supply. What factors might lead to a change in desired currency to deposit ratio?

Ans. The public chooses (c^d) i.e., the desired currency to deposit ratio, which also helps to determine money supply. If people want to hold more cash or make more cash transactions the desired currency to deposit ratio will increase. This will reduce the complete money multiplier and thus lead to reduction in the money supply. A decrease in (c^d) has the opposite effect.

Following factors will lead to a change in desired currency to deposit ratio;

a. **Interest rates on checkable deposits.** Money holders face the choice of holding money in the form of currency or checkable deposits. When the interest rate on checkable deposits rises, the attractiveness of holding currency declines. This reduces the currency to deposit ratio.

b. **Fees on checkable deposits.** Money holders choosing between currency and deposits can also be influenced by the fee charged on accounts: both the monthly maintenance charges and fees assessed per check or ATM withdrawal.

c. **Income.** The income of money holders also has some influences on the currency to deposit ratio. In general, currency to deposit ratio declines with income. People with higher income tend to use their money more effectively and rely on financial system.

d. **Probability of bank failure.** When the probability of a bank failure rises, the money lenders tend to abandon deposits in favor of currency. This often leads to a situation known as bank run.

e. **Illegal Activity.** Economists often speak of the underground economy, meaning that part of the economy that is unrecorded in official measurements of economic activity because it consists of illegal and unrecorded cash transactions. Any increase in the amount of transactions that take place in the underground economy will tend to increase the currency to deposit ratio and thus decrease the money supply.

Q.11. Graphically illustrate the impact of open market purchase by the central bank on the money supply when:

***(i)* the money supply is exogenous, and**

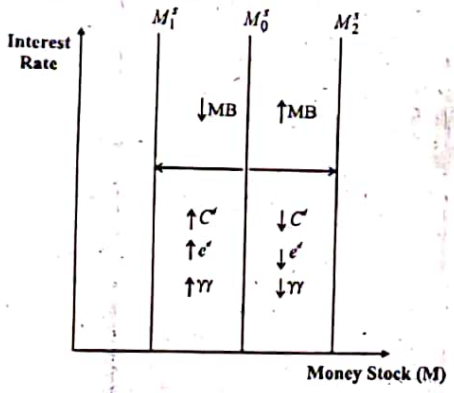
***(ii)* the money supply is endogenous**

Ans. Graphical representation of the money supply equation is called the money supply curve *i.e.*, the money supply curve shows the amount of money suppliers are willing and able to supply at various interest rates in the economy.

There are two schools of thought regarding money supply-

a. **Exogenous money supply**

The term exogenous money supply refers to the situation where the supply of money in the economy is determined by banks' preferences for excess reserves and depositors preferences for holding cash, and these preferences are not affected by changes in interest rate. In this case money multiplier is constant.

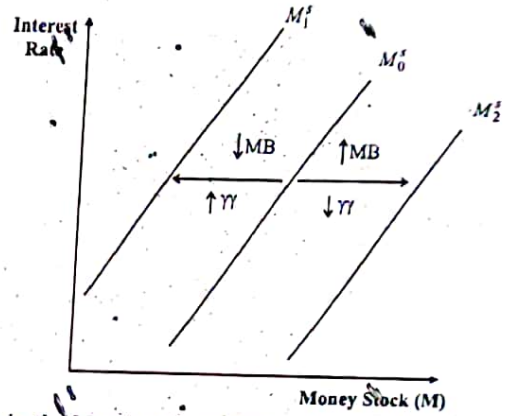


- In this case, e^d and C^d are constant, e^d and C^d are exogenous and independent of interest rates and other economic variable.
- In this case, money supply curve is vertical and called exogenous money supply curve.

- An increase in the value of C^d, rr or e^d shifts the money supply curve to the left since it reduces the value of the complete money multiplier. A decrease in the value of C^d, rr or e^d has the opposite effect on the money supply curve.

b. **Endogenous money supply**

- Some believe that excess reserve and currency to deposit ratio are not constant but vary systematically with economic conditions.
- A rise in the interest rate will decrease the excess reserves that's banks hold. Similarly, many depositors could wish to hold less currency if interest rate rise and would prefer to have their money stored in deposits.
- Their multiplier is not constant but an increasing function of interest rates.
- This gives rise to an endogenous money supply curve which is upward sloping as shown below:



- Change in the Monetary base (MB) and required reserves (rr) will however lead to a shift in the money supply curve as in the case of exogenous money supply curve.

CHAPTER-2

N Jadhav (Chapter-2)

Q.1. How is money stock measured in India?

Ans. In India, the money stock is currently published in ranges from M1 to M4, defined as;

- ⇒ M1 = currency (with public) + demand deposits+ 'other deposits' with the Reserve Bank of India
- ⇒ M2 = M1+ saving deposits with the post office savings bank
- ⇒ M3 = M2+ time deposits
- ⇒ M4 = M3+ all deposits with the post office savings organization

However, the Working Group has laid down new measures of monetary and liquidity aggregates which are as follows:

- ⇒ NM0 = Monetary Base = currency in circulation + Bankers' deposits with RBI + 'other deposits' with the RBI.
- ⇒ NM1 = currency (with public) + demand deposits with the banking system + 'other deposits' with the Reserve Bank of India.
- ⇒ NM2 = NM1 + time deposits portion of savings deposits + certificates of deposits + Term deposits (excluding foreign currency deposits) with a contractual maturity of up to one year with the banking system.
- ⇒ NM3 = NM2 + Term deposits (excluding foreign currency deposits) with a contractual maturity of more than one year with the banking system + call borrowings from 'non-depository financial corporations' by the banking system.
- ⇒ L1 = NM3 + all deposits with the post office savings banks (excluding NSC).
- ⇒ L2 = L1 + term deposits with term lending institutions and refinancing institutions + certificate of deposits issued by financial institutions.
- ⇒ L3 = L2 + public deposits of non – banking financial companies.

Q.2. Explain the money multiplier approach of money supply creation.

Ans. $M = m.H$

m = Nominal money stock

M= Money multiplier

H = Nominal reserve money (It is also called the monetary base or the high powered money)

- Money stock is simply a multiple of the reserve money.
- If money multiplier is constant then variations in money supply would arise entirely on account of changes in reserve money. But if money multiplier is not constant then, $M = m(.)H$, where money multiplier is itself a function of a few unspecified variable.

The reserve money (H) is the total of existing assets which either are, or could be used as reserves by banking sector.

$H = C + R$

C = Currency held by the general public

R = Reserves

Source of change in Reserve Money (Balance Sheet Approach of Money Supply Determination);

Reserve money = Net RBI credit to Government
+ RBI credits to Banks
+ RBI credits to-Commercial Sector
+ Net Foreign Exchange Assets of RBI
+ Government Currency Liabilities to the Public
– Net Non-Monetary Liabilities of RBI

Thus, changes in reserve money could be traced to changes in assets acquired by RBI.

Liabilities	Assets
1. Currency with General Public	1. Net RBI Credit to Government (Centre and States)
2. Bank Reserves (i) Cash in Hand (ii) Bankers' Deposits with RBI	2. RBI Credit to Banks**
3. Net Non-Monetary Liabilities***	3. RBI Credit to Commercial Sector#
	4. Net Foreign Exchange Assets of RBI
	5. Government's Currency Liabilities to the Public##

* Net of government deposits. It includes the RBI holdings of Treasury Bills (and ad hocs), dated securities of the Central Government, rupee coins, and advances to State Governments.

** RBI credit to commercial and cooperative banks by way of accommodation against Government securities, usance bills, promissory notes and through purchase or rediscounting of bills.

*** RBI's loans advances and investments in shares/bonds of non-bank financial institutions such as the Industrial Development Bank of India (IDBI) and National Bank for Agriculture and Rural Development (NABARD) and internal bills purchased or discounted.

\# RBI is the sole agency issuing rupee coins and small coins to the public on behalf of the government.

Non-monetary liabilities (such as capital and reserves of the RBI and banks profits of RBI temporarily held, Compulsory Deposit Scheme deposits, National Funds maintained by the RBI, the IMF Account No.1, bank's borrowings from abroad and other miscellaneous liabilities) net of 'other assets' (such as building sundry debtors, etc.)

Q.3. Explain the factors affecting the money multiplier.

Ans. Sources of change in money multiplier

Broad money multiplier (m)

$$M = \frac{1+c+t}{c+r\,(1+t)}$$

$\Rightarrow$ c = Currency to demand deposit ratio

$\Rightarrow$ t = Time deposit to demand deposit ratio

$\Rightarrow$ r = Ratio of bank reserves to demand and time deposits together

Derivation of money multiplier is as follows

Broad money $M_3 = m.H$

m = Broad money multiplier

H = Reserve money

$$m = \frac{M_3}{H}$$

$= \frac{C+DD+TD}{C+r(DD+TD)}$ [By definition $M_3 = C + D + TD$ and $H = C + R$]

r = Reserve to deposit ratio

$$\frac{1+\frac{C}{DD}+\frac{TD}{DD}}{\frac{C}{DD}+r\left(1+\frac{TD}{DD}\right)}$$

$$\frac{1+c+t}{c+r\,(1+t)}$$

c, t, r are called the proximate determinants

Now,

$$M = \left(\frac{1+c+t}{c+r(1+t)}\right) \times H$$

Following adjustments has been suggested;

Adjustments = $(r_t - r_0)D + IR - DF$

$\Rightarrow$ r_t = current cash reserve ratio (CRR)

$\Rightarrow$ r_0 = initial or benchmark (CRR)

$\Rightarrow$ D = demand and time liabilities relevant for computation of CRR

$\Rightarrow$ IR = incremental reserve requirements

$\Rightarrow$ DF = net CRR default for all commercial banks

The adjustment factor is a measure of the bank reserve absorbed by the changes in reserve requirement.

Adjusted reserve money (H^*) is

H^* = H – adjustment factor

- *Thus, when CRR is raised relative to the base period, the adjustment factor increases, so that a part of reserve money is nullified from deposit creation. On the other hand, when the CRR is lowered the adjustments factor declines and the adjusted reserve money is enhanced equivalently as additional reserves are liberated for deposit creation.*
- The discussion so far assumed that banks do not hold excess reserves (i.e., reserves in excess of the amount required by the central bank) nor do they borrow from central bank. These assumptions are unrealistic. Banks do hold excess reserves and also borrow from the central bank in the form of so called *'discretionary finance'* or *'discount loans'*.

When a bank decides to hold excess reserves it does not lend them out. Hence, no deposits are created. If the central bank injects reserves in to the banking system, which are simply excess reserves, there will be no effect on deposits or on the money supply. Excess reserves in the banking system could be regarded as an idle component of reserves that are not being used to support any deposits.

This implies that such excess reserves in the banking system should be subtracted from the reserve money. So that focus should be on amount that is actually supporting money supply.

In the opposite direction, the ability of banks to borrow from central bank requires one more modification to the model. To the extent that banks raise discount loans from the central bank their capacity of deposit creation is adjusted.

A fairly general mode of money multiplier may therefore be formulated as

$$M = \left[\frac{1+c+t}{c+r(1+t)}\right](H^O + DF - ER)$$

where,

$\Rightarrow$ H^O = Non borrowed reserve money

$\Rightarrow$ DF = Discretionary finance provided

$\Rightarrow$ ER = Excess reserves

In the summing up the money multiplier approach, various impulses to the monetary expansion or contraction can be brought together in a nutshell as shown in table:

Change in Variable	Money Supply Response
1. Rise in (C/DD) ration (c)	Contraction
2. Rise in (TD/DD) ratio (t)	Expansion
3. Enhancement in reserve ratio (r)	Contraction
4. Rise in non-borrowed reserve (H^*)	Expansion
5. Enhancement in discretionary finance (DF)	Expansion
6. Rise in excess reserve holdings of banks (ER)	Contraction

Note. Among the three proximate determinants i.e., '*c*', '*t*' and '*r*' evidently the reserve ratio '*r*' is fully controllable by the monetary authorities. On the other hand, the currency demand deposit ratio (*t*) reflects the asset preferences of the public. The currency demand deposit ratio in the short run depends on income and interest rates. In the long run it is expected to depend on institutional factors such as degree of monetization the extent of financial widening and dependency etc.

Similarly, the time deposit demand ratio would depend among other things, on interest rates on time deposits and rates of return on competing assets.

Non-monetarist's often argue that most of the variables entering the formulation are endogenous and depend on income, interest rate and other measures. The behavioral functions explaining these proximate determinants are unstable. Monetarists in their defense do not necessarily deny that both the real and financial sectors of the economy exert influence on the money stock.

The issue between monetarists and non-monetarists is therefore empirical and answer would depend on country specific factors, especially the stage of financial development of the economy.

Q.4. Write a note on the drawbacks of money multiplier approach as a measure of money supply.

Ans. Goodhart provides a perceptive critique of the money-multiplier approach (1981-1987), the salient features of his critique are as follows;

1. The money multiplier approach is based on an identity, i.e., a tautology which may be analytically convenient but what it really offers is a description of movements in money stock rather than a behavioral theory of its determination.
2. Even in the general form $M = m(.)H$, it is actually an equilibrium condition rather than a money supply function. The process involved is rather mechanical. The only facts of portfolio choices of the public and banks which seem to affect the results are the public desired currency demand deposit ratio and time deposit ratio, demand deposit ratio and banks desired reserve ratio which is inadequate. The analysis does not explicitly involve or appear to require any interest changes at all.
3. The theory of determinants of money stock ought to be treated as one branch of the more general theory of portfolio adjustments in response to relative price change. The money multiplier identity short-circuits this approach by taking the reserve money stock as given.
4. All too often the reserve money is taken as given i.e. exogenous as fixed by the authorities. No further steps are taken to examine the factors determining its level. As a matter of fact, the level of reserve money is a target rather than an exogenous variable.

UNIT

2

Financial Institutions Market Instruments and Financial Innovations:

(a) Role of financial markets and institution, problems of symmetric information – adverse selection and moral hazards, financial crisis.

CHAPTER-3

Mishkin and Eakins (Chapter 15, pp.369-396)

Q.1. Explain the problem of transaction cost faced by individual investors. How do financial intermediaries reduce the transaction costs?

Ans. When you have a small amount of funds available, you can make only a restricted number of investments because a large number of small transactions would result in very high transactions costs. That is you have to put all your eggs in one basket and your inability to diversify will subject you to a lot of risk.

Fortunately financial intermediaries, an important part of the financial structure, have evolved to reduce transaction costs and allow small savers and borrowers to benefit from the existence of financial markets. Financial Intermediaries reduce the amount of transaction cost through the following:

(i) **Economies of scale.** One solution to the problem of high transaction costs is to bundle the funds of many investors together so that they can take advantage of economies of scale i.e. the reduction in transaction costs per dollar of investments as the size (scale) of transactions increases. Economies of scale exist because the total cost of carrying out a transaction in financial markets increases only a little as the size of the transaction grows.

(ii) **Expertise.** Financial intermediaries are also better able to develop expertise to lower transaction costs. Their expertise in computer technology enable them to offer customers convenient services like being able to call a toll free number for information on how well their investments are doing and to write checks on their accounts.

(iii) **Liquidity Services.** An important outcome of a financial intermediary is to provide its customers with liquidity services, that make it easier for customers to conduct transactions.

Q.2. What is Asymmetric information? Explain the problem of Adverse Selection and Moral hazards in its context.

Ans. Asymmetric Information. A situation that arises when one party's insufficient knowledge about the other party involved in a transaction makes it impossible to make accurate decisions when conducting the transaction is an important aspect of the financial makers. The presence of asymmetric information leads to adverse selection and moral hazards problems.

(i) **Adverse selection.** It is an asymmetric information problem that occurs before the transaction. Potential bad credit risks are the ones who most actively seek out loans. Thus, the parties who are the most likely to produce an undesirable outcome are the ones most likely to want to engage in the transactions. Adverse selection increases the chances that a loan might be made to a bad credit risk. Thus, lenders might decide not to make any loan, even though there are good credit risks in the market place too.

(ii) **Moral hazards.** Moral hazards arise after the transaction occurs. The lenders run the risk that borrower will engage in activities that are undesirable from the lenders point of view because they make it less likely that the loan will be paid back. For example, once borrowers have obtained the loan, they may take on big risks (which have possible high returns but also run a greater risk of default) because they are playing with someone else's money. Because moral hazard lowers the probability that the loan will be repaid, lenders may decide that they would rather not make a loan.

Q.3. Explain the lemons problem in the stock and bond markets.

Ans. A potential investor cannot distinguish between good firms with high expected profits and low risk and bad firms with low expected profits and high risks. In this situation, investor will be willing to pay only a price that reflects the average quality of firms issuing securities. Thus the price lies between the value of securities from bad firms and the value of those from good firms. If owners or managers of good firms have better information than the potential investor and know that they are good firms, they know that their securities are undervalued and will not want to sell them to him at the price he is willing to pay. The only firms willing to sell him securities will be bad firms (because their securities price is higher than the securities are worth).

The potential investor does not want to hold securities in bad firms, and hence will decide not to purchase securities in the market. This analysis is similar if investor considers purchasing a corporate debt instrument in the bond market rather than an equity share.

This is the lemon problem in the stock and bonds market.

Q.4. Explain the various tools to solve Adverse Selection problem of Asymmetric Information.

Ans. The various tools to solve the adverse selection problem are as follows:

(i) **Private production and sale of information.** Eliminating adverse selection problem by furnishing the people supplying funds with full details about the firms/ individuals seeking to finance their investments activities is one way. To get this material, private companies collect and produce information that distinguishes good from bad firms and then sell it. The system of private production and sale of information does not completely solve the adverse selection problem in securities market, however because of the free – rider problem. The free - rider problem occurs when people who do not pay for information take advantage of the information that other people have paid for. The free rider problem suggests that the private sale of information will be a partial solution to the lemons problems.

(ii) **Government regulation to increase information.** The free rider problem prevents the private market from producing enough information to eliminate all the asymmetric information that leads to adverse selection. The government could produce information to help investors distinguish good firms from bad firms and provide it to the public free of charge. This solution would involve the government releasing negative information about firms, a practice that might be politically difficult. A second possibility is for the government to regulate securities market in a way that encourages firms to reveal honest information about themselves so that investors can determine how good or bad the firms are themselves. Although government regulation lessens the adverse selection problem, it doesn't eliminate it even when firms provide information to the public about their sales, asset or earnings. Firms still have more information than investors.

(iii) **Financial intermediaries.** A financial intermediary, such as a bank, is an expert in producing information about firms so that it can sort out good credit risks from bad ones. Then it can acquire funds from depositors and lend them to the good firms. Because a bank is able to lend mostly to good firms, it is able to earn a higher return on its loans than the interest it has to pay to its depositors. The resulting profit that the bank earns gives it incentive to engage in this information production activity.

(iv) **Collateral and net worth.** Adverse selection interferes with the functioning of financial markets only if lenders suffers a loss when a borrower is unable to make loan payments and thereby defaults. Collateral, property promised to the lender if the borrower default, reduces the consequences of adverse selection because it reduces the lender's losses in the event of a default. Lenders are thus more willing to supply collateral because the reduced risk for the lender makes it more likely they will get the loan in the first place and perhaps to a better loan rate.

Net worth (equity capital), the differences between a firm's assets and its liabilities, can perform a similar role to collateral. If a firm has a high net worth then, even if it engage in investments that causes it to have

negative profit and so defaults on its debts payment, the lender can take little of the firm's net worth, sell it off and use the proceeds to recoup some of the losses from the loan. In addition, the more net worth a firm has in the first place, the less likely it is to default, because the firm has a cushion of assets that it can use to pay off its loans.

Q.5. What is the Moral Hazard problem of Asymmetric Information? Explain the principal agent problem in context of this.

Ans. Moral hazard is the asymmetric information problem that occurs after the financial transactions takes place, when the seller of a security may have incentives to hide information and engage in activities that are undesirable for the purchaser of the security. Moral hazard has important consequences for whether a firm finds it easier to raise funds with debt than the equity contracts.

The Principal Agent Problem: Moral Hazards in Equity Contracts

When managers own only a small fraction of the firm they work for, the stockholders who own most of the firm's equity (called the principals) are not the same people as the managers of the firm, who are agents of the owner. The separation of ownership and control involves moral hazards in that the managers in control (the agent) may act in their own interest rather than in the interest of the stock owners (the principals) because the managers have less incentive to maximize profits than the stockholders owners do. The principal-agent problem arises only because a manager has more information about the activities than the stockholder does – that is, there is asymmetric information. The P-A problem would also not arise if manager is sole owner of firm/shop and there is no separation of ownership and control.

Tools to help solve the P-A problem

(i) **Production of information.** One way for stockholders to reduce moral hazards problem is for them to engage in particular type of information production, the monitoring of the firms activities, auditing the firm frequently and checking on what the management is doing. The problem is that monitoring process can be expensive in terms of money and time, called costly state verification. Costly state verification makes the equity contract less desirable. Moreover, the free rider problem decreases monitoring.

(ii) **Government regulation to increase information.** Governments everywhere have laws to force firms to adhere to standard accounting principles that make profit verification easier. They also pass laws to impose stiff criminal penalties on people who commit the fraud of hiding and stealing profits.

(iii) **Financial intermediation.** Financial intermediaries have the ability to avoid the free rider problem in the face of moral hazards and that is why indirect finance is very important. One financial intermediary that helps reduce the moral hazard arising from the principal agent's problem is the venture capital firm. Venture capital firms pool the resources of their

partners and use the funds to help budding entrepreneurs start new businesses.

(iv) **Debt contracts.** Moral hazard arises with an equity contract which is a claim on profits earned by the firm. The debt contracts on the other hand are contractual agreements by the borrower to pay the lenders fixed dollar amounts at periodic intervals. When the firm has higher profits the lender receives the contractual payments and does not need to know the exact profits of the firms.

Q.6. Explain the Moral hazards in debt contracts and the methods to solve the problem.

Ans. The debt safeguards the interest of shareholders by promising them guaranteed return irrespective of what business does with the investor's money. It is this very fact that is a matter of concern here. Since, the debt assumes a guaranteed return, turning a blind eye to the principal amount still subjects the investments to the problem of moral hazards.

Methods to solve moral hazards problem in debt contracts

(a) **Net worth and collateral.** Firms and corporates that raise debt need to provide sufficient cover to the investment by way of collateral and net worth. During this process, the borrowers are well versed about the value of the collateral they have mortgaged and will refrain from indulging in risky activity. Since they would themselves loose an equivalent amount of asset. If in lieu of lending ₹ 4,50,000 you ask your friend to place his house as collateral, the property will not only protect your money but will also motivate your friend to protect the value of his asset and to also protect your money. Here incentive of both parties to the contract is to work to the best of each other's interest, driving the problem of moral hazard down. Such collateralization of debt makes business easy.

(b) **Restrictive covenants.** Even if the borrower is asked to pledge some physical asset, a lender must monitor the future actions of the borrower to be doubly sure. One method to achieve this is by making the contract binding in several aspects to avoid any loose ends to the contract. Restrictive covenants can be used to promote a desirable behavior or prohibit an undesirable behavior from the borrower.

(i) **Covenants to discourage undesirable behavior.** Such covenants can be framed in order to reduce moral hazard by restricting any undesired action or behavior by the borrower. For example –you can set a covenant, which mandates the use of funds to purchase only specific materials, equipment's and products which ensure the business sanctity.

(ii) **Covenants to encourage desired business.** Since the risk of loss always surmounts the business, a covenant can be set in motion to encourage the borrower to maintain certain type of assets to protect the business from such jarring situation.

(iii) **Covenant's to keep collateral valuable.** Collateral will provide the cover to exposure of the lender but is also an asset originally owned by the borrower. Hence a covenant enforcing the borrower to buy insurance for the asset pledge would make the borrower not just beat the cost of insurance cover but will also ensure desired behavior to avoid moral hazard problem from arising.

(iv) **Covenant's to provide information.** Making timely disclosures and furnishing timely reports would suffice the need to period information about the business and borrowers actions in the direction of safeguarding the interest of lenders. Restrictive covenant's like compelling borrower to provide audited quarterly reports in the public arena would make them cautious enough to abstain from undesired behavior.

(c) **Financial Intermediation.** As discussed earlier, private loans by intermediaries like banks which are non-tradable reduce the risk of free ridership and moral hazards significantly by single handedly arranging the information and receiving the benefits of the same.

Q.7. What is a financial crisis? What are the major causes of financial crisis in the economy?

Ans. Major disruption in financial markets that are characterized by sharp declines in asset prices and the failures of many financial and non-financial firms is ca;;ed a financial crisis. It occurs due to existence of asymmetric information. This gives rise to problem of adverse selection and moral hazard. An uncontrolled financial crisis can drive an economy into recession transforming into economic crisis as whole factors causing financial crisis.

(i) **Increase in interest rates.** Adverse selection problem pointed out that risky borrowers are willingly to pay higher interest rates. If interest in the economy rise exogenously, higher interest rates will drive out good credit borrower from the market with only bad borrower surviving With rise of adverse selection, loan market will shrink with lesser lending happening. Decline in supply of funds will result in lower investment and capital formation in the economy causing economic downturn.

(ii) **Increase in uncertainty.** Financial market uncertainty or ambiguity results in loss of consumer confidence. Uncertainty could arise due to breakdown of stock market, sudden volatile movement in asset prices, failure or seizure of prominent financial or non-financial institutions etc. In such times lenders lack charity over borrower profits and opacity causes reduced participation. Such prolonged situations of uncertainty result in adverse selection causing spurn lending, lower investment as well as capital formation and reduced aggregate economic activity.

(iii) **Asset market effect on balance sheet.** Net worth of a company represents the value of matching asset it creates over period of time. Net worth enable the firms to project strong internal financial position and enable sequencing of borrowings. Volatile movements in stock markets can

result in deterioration of balance sheet of the company. Often seen is the case that companies tend to loose heavily in terms of market valuation of companies. Similarly, the collateral of the firm provide a leverage to raise debt from the market. A reduction in the value of asset pledged as mortgage or collateral reduces the cover for lenders risk thereby increasing the chance of default.

(iv) **Problems in banking sector.** An indicator of financial health of an economy is through its well-developed network of banking systems. Acting as a backbone to financial activity, bank balance sheet curtails lending by banking systems. Out of many reasons, glowing non-performing asset (NPAs) stress out the bank. Fear of failure looms over such banks and if the same is left unaddressed, it could lead to bank failure and bank panic through multiple bank failure, which result in depositors withdrawing their money with fear of safety of their money. Excessive withdrawals by depositors cause bank run. It calls for immediate invention by central banks and consumers lose confidence in financial markets due to adverse selection and moral hazard.

(v) **Government fiscal imbalances.** Progressive economy government adopt debt based development. Foreign debt is usually denominated in foreign currency at lenders ease. Unplanned expenditure or lower government revenues can create problem for the government to resort to subsequent borrowings to finance the existing deficit and subjecting them to debt traps. India, prior to 1991 was a victim of such phenomenon. Failure to pay debt can lead to breakdown of domestic markets. Government's failure sends strong political indications across globe and can have severe repercussions.

CHAPTER-4

M.Y. Khan (Chapter-1)

Q.1. Explain the major function of the financial system in the economy?

Ans. Financial Systems are of crucial significance for capital formation. The process of capital formation involves three distinct functions performed by financial systems:

(i) **Savings.** The ability by which claims to resources are set aside and become available for other purposes.

(ii) **Financial.** The activity by which claims to resources are either assembled from those released by domestic savings obtained from abroad or specially created usually as bank deposit or notes and then placed in the hands of the investors.

(iii) **Investments.** The activity by which resources are actually committed to production

The volume of capital formation depends upon the intensity and efficiency with which these activities are carried on.

Q.2. Explain the concept of Transfer process in the context of financial systems.

Ans. The genesis of the financial system is traceable to the divorce between savings defined as the excess of current income over current expenditure and investments representing expenditure on durable assets. The relationship between saving and investments varies considerably among economic units. Various economic units have been divided into three categories;

(i) **Saving - surplus units.** Those units whose savings are in excess of investments.

(ii) **Saving deficit units.** Economic units whose investments exceed their savings.

(iii) **Neutral units.** In this savings are equal to investment. Financial system act as a link between the savers and the investors thereby facilitating the flow of saving into industrial investment.

Q.3. What are financial intermediaries? Explain the numerous type of financial intermediaries present in the economy.

Ans. Financial intermediaries collect savings from others and issue claims against themselves in return, and use the funds thus raised to purchase ownership or debt claims. Financial intermediaries play a vital role in economic development via capital formation. Their relevance to the flow of savings is derived from what is called transformation effect. This term refers to the ability

of financial intermediaries to convert contracts with a given set of characteristics into contracts with very different feature. This arrangement permits them to tailor contracts to the preferences of both the borrowers and the lenders.

Services offered by financial intermediaries

(i) **Convenience.** Financial intermediaries convert securities into more convenient vehicles for the mobilization of savings, particularly of small savers. This convenience to the savers has two dimensions. One is divisibility. They adjust the denomination of the securities to the suit the requirements of individual savers by offering securities of varying sizes. The other convenience of indirect securities is their ability to transform a primary security of a certain maturity into an indirect security of a different maturity. They create claims which are more liquid than the securities they buy and issue them to savers.

(ii) **Lower Risk.** Indirect securities also have the merit of exposing investor to lower risk as compared to primary securities. Financial intermediaries enable investor to diversify investments widely, thereby reducing the risk of capital depreciation and poor dividends. Since diversification is a function of the size of investible funds as well as market information and superior facilities available to investors, relatively small investor with limited capital can obtain better diversification by purchasing indirect securities than what they could do by direct purchase of securities in the securities market.

(iii) **Expert management.** Indirect securities gave, both large and small investors, the benefits of trained, experienced and specialized management together with continuous supervision, neither of which the investor is as a rule, qualified to supply himself. Thus, in effect financial intermediaries place the small investors in the same position in the matter of expert management as large institutional investors.

(iv) **Economies of scale.** Indirect securities provide economies of scale. As financial intermediaries are continually in the business of purchasing/ selling primary securities, the economies of scale not available to a borrower or to an individual saver are available to them. It's one implication is that they are able to channel funds from the ultimate lenders to the ultimate borrower at a lower cost.

Types of Financial Intermediaries

(a) Commercial banks. These collect savings primarily in the form of deposits and traditionally finance working capital requirements of corporates. The traditional practice of banks supplying mainly short term funds for financing the working capital needs of industry is based on the theory of deposit banking, given the liability characteristic of banks to be always able to repay their deposits on demand. Banks should confine their investments to outlets of self-liquidating nature defined as those which in the normal

course of business generate resources automatically available for the repayment of borrowed funds.

Banks have entered into –

- Term lending business particularly in the infrastructure sector,
- Capital market directly/ indirectly,
- Retail finance such as housing finance, consumer finance and many more.

(b) **Non-Banking Financial Companies (NBFCS).** They provide a variety of funds/asset based and non-funds based/advisory services. Most of their funds are raised in the form of public deposits ranging between one year to seven years of maturity depending on the nature and types of services provided. They are categorized inter-alia into:

- Asset finance companies
- Housing finance companies
- Venture capital funds
- Merchant banking organizations
- Credit rating agencies

(c) **Mutual Funds.** Mutual fund is a special type of investment institution which acts as an investments conduit. It pools the savings of relatively small investors into a well-diversified portfolio of sound investment. Mutual funds issue securities (known as units) to the investors (known as unit holders) in accordance with the quantum of money invested by them. The profits (or losses) are shared by investors in proportion to their investments. A mutual fund is set up in the form of a trust which has;

- a sponsor
- trustees
- Asset Management Company (AMC)
- Custodian

The trust is established by the sponsor who is like promoter of a company. The trustees of mutual fund hold its property for the benefits of the unit holders. The trustees are vested with the general power of superintendence and direction over AMC.

(d) **Insurance Organizations.** Insurance organizations/ companies essentially invest the savings of their policyholders (insurance premium) and in exchange promise them and/or beneficiaries a specified sum at a later stage (on maturity of insurance policy) or upon the happening of a certain event (i.e. death of the policy holder). They differ from a mutual fund in that while the main business of mutual funds and, in fact the only reason for existence, is investments in securities, such investments are only incidental to the main business of insurance organization to provide protection against risk.

Insurance organizations universally occupy a crucial position among all the savings institutions. This is mainly because they are able to collect the small savings of innumerable individuals. The desire to save firms is an important element of saving process and is affected by a variety of motives such as:

- To assist the individual in the creation of an emergency fund to guard his family against financial misfortune.
- To build up a potential family estate, should the current earning power of the head of the family be removed by death and
- To assist in the accumulation of a fund by the time of retirement from active work.

Q.4. What are financial markets? Explain their various types.

Ans. Financial markets are not sources of finance but they are a links between the savers and investors, both individuals as well as institutional. Based on the nature of funds which are their stock in trade, the financial markets are classified into:

(a) **Money markets:** Money market is a market for dealing in monetary assets of short term nature generally less than one year. It refers to that segment of the financial market which enables the raising up of short term funds for meeting temporary shortages of cash and obligations and the temporary deployments of excess funds for earning returns. The major participants in the money market are the RBI and commercial banks.

(b) **Capital markets.** It is a market for long term funds. It focus is on financing of fixed investments in contrast to money market which is institutional source of working capital finance. The main participants in the capital market are mutual funds, insurance, organization, foreign institutional investors, corporate's and individuals. *The capital/securities market has two segments.*

- ***Primary/new issue market:-*** New Issue Market (NIM) deals in new securities, that is securities which were not previously available and are offered to the investors for the first time. Capital formation occurs in the NIM as it supplies additional fund to the corporates directly. *It performs triple service/function, namely;*
  - Origination, i.e., investigation and analysis and processing of new issue proposals.
  - Underwriting in terms of guarantee that the issue would be sold irrespective of public response
  - Distribution of securities to the investors
- ***Secondary stock market/exchange(SE):-*** The SE is a market for old/existing securities, that is those already issued and granted SE listing. It plays only an indirect role in the industrial financing by providing liquidity to investment already made. *The SE discharge three vital functions in the orderly growth of capital formations;*
  - Nexus between savings and investments
  - Liquidity to investors by offering a place of transaction in securities
  - Continuous price formation

Q.5. Explain the various financial instruments that are traded in the financial markets.

Ans. Financial assets represent claims on a stream of income and/or assets of another economic unit and are held as a store of value and for the return that is expected. The maturity and sophistication of the financial system indeed depends on the prevalence of a variety of securities/financial assets to suit the investment requirement of heterogeneous investors. *The financial assets fall into three broad categories; (a) Direct/primary, (b) Indirect/primary and (c) Derivatives.*

(a) Direct/primary securities. It is a security issued by non-financial economic units. *The main types of primary securities are:*

(i) ***Ordinary/ equity shares.*** They are ownership securities and represent risk capital. The owners of such securities bear the risk and are residual claimants on the income and assets and participate in management of the company.

(ii) ***Debenture.*** A debenture is a creditorship security. Their holders are entitled to a pre-specified interest and first claim on the assets of the entity. They have no right to vote in the meetings of the company.

(iii) ***Preferences Shares.*** A preferences shares is a hybrid security and partly the features of both equity and debentures. It combines both ownership and creditorship privileges. The holders of such securities have preference/ prior rights over the equity holders in respect of fixed dividend as well as return of capital.

(iv) ***Innovative debt instruments.*** A variety of debt innovative instruments emerge with the growth of financial system. New features are embedded in the debt instruments to make them attractive to investors.

- *Participating debentures.* They participate in excess profits of the company after the payments of equity dividend.
- *Convertible debenture with options.* They are derivative of convertible debenture with an embedded option. The coupon rate on the debenture is specified at the time of the issue.
- *Third party convertible debenture.* These include a warrant which entitles the holder to subscribe to the equity of another firm at a preferential (lower than market) price.
- Convertible debenture redeemable at premium
- Debt equity swaps
- Zero coupon convertible notes
  - Secured premium notes
  - Non-convertible debenture
  - Zero interest fully convertible debentures
  - Secured zero interest partly convertible debenture etc.

(b) Indirect securities. Indirect securities are financial assets issued by financial intermediaries, such as units of mutual funds, policies of

insurance companies, deposits of banks, security receipts issued by securitization and asset reconstruction companies securitized debt instruments issued by special purpose vehicles.

(c) Derivatives instruments. Financial markets by their very nature are marked by a very high degree of volatility arising out of fluctuation in prices of financial assets/securities. Through the use of derivative instruments, it is possible to partially /fully transfer price risks by locking in asset prices. As instruments of risk management these generally do not influence fluctuation in underlying asset prices.

- **Forward contract.** Forward contracts are private bilateral contracts between sellers and buyers; they obligate the former to deliver and the latter to receive the given assets in the specified quantities of specified grades at a fixed time in the future, at the contracted prices.
- **Future contracts.** They are agreement between two counterparties to fix the terms of an exchange/lock in the price today of an exchange that will take place between them at some fixed future date as highly standardized contracts between sellers and buyers.
- **Options:** Options are contracts that give the holder the right to buy (call option) or sell (put option) securities at a pre-determined price within/at the end of specified period. For the holders of call and put options, the exercise of the right would be worthwhile only if the price of the underlying securities of the respective option rises/falls above/below the exercise option.

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CHAPTER-5

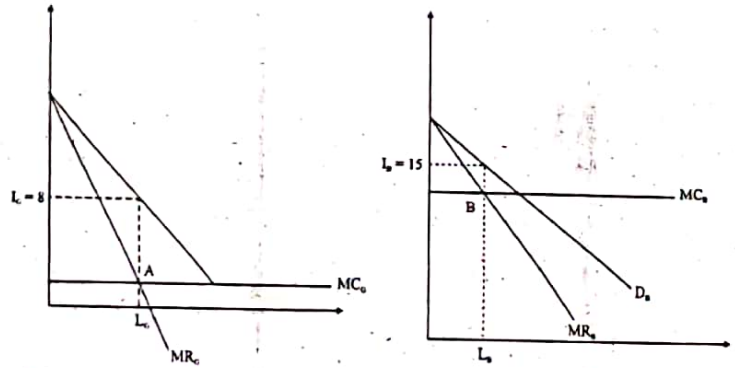
Baye and Jansen (Chapter-5, pp.153-161)

Q.1. Explain Symmetric and Asymmetric information.

Ans. It is commonly assumed that all borrowers are equally likely to repay the loans. In reality, some borrower's fails to repay the loans and this reduces the bank's profits. This happens because banks suffer from imperfect information. They do not know for certain which borrower will and which will not repay their loan.

Symmetric information

A situation in which the borrower and the banks have the same information about whether a loan will be repaid or not is known as symmetric information. Suppose there is 10% chance that a borrower with low income is able to repay the loan while there is 90% chance of repayment in case of high income borrowers. So, when symmetric information exists, then the expected return to the bank for lending to an high income borrower at a given interest rate is greater than that of lending money to a low income borrower. To be willing to lend money to a low income borrower, bank must charge high interest rate to compensate for the additional default risk.



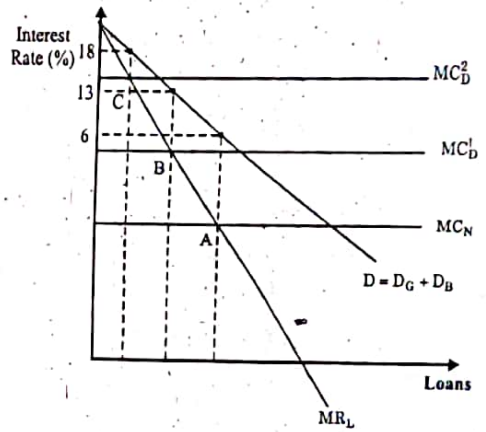
This figure illustrates why a bank with market power will charge a lower loan interest rate from borrowers who are good credit risks and a higher interest rate from borrowers who are bad credit risks. However one component of the marginal cost of providing loans is default risk. Notice that $MC_G < MC_B$ thus at A, $MC_G = MR_G$ thus L_G are issued to borrowers who are good credit risk at an interest rate of $i_G = 8\%$. Similarly, marginal revenue equals marginal cost for borrowers who are bad credit risk at point B.

Asymmetric information and Adverse Selection

Suppose there are two types of borrowers, honest and dishonest. Honest borrowers repay loans 90% of time, whereas dishonest borrowers repay only 10% of the time. Asymmetric information arises because borrowers know their intentions towards repayment of loan while banks do not. Because a bank cannot distinguish between honest and dishonest borrowers, it must charge the same interest rate to both types. This interest rate will be an average of the interest rates it would charge to each type of borrowers, honest and dishonest. Asymmetric information creates a higher interest rate than the bank would charge to honest borrowers if there were symmetric information, but a lower rate than that it would charge to dishonest borrowers if symmetric information were available.

As interest rate rise above the rate honest borrower would have to pay in the presence of symmetric information, some honest borrowers decide not to borrow and the quantity demanded of loans by honest borrower falls. This increases the proportion of loans issued to dishonest borrower thus increasing the number of defaults. As a result the bank raises the interest rate to offset the higher marginal cost of issuing loans. Because of the higher interest rate even fewer honest borrowers seek loans. Ultimately the bank ends up in situation where it issues loans only to dishonest borrowers. This phenomenon is known as adverse selection. Adverse selection also depends on the riskiness of project undertaken by the borrower.

Let's explain adverse selection with the help of a diagram



There is a single demand curve composed of good and bad credit risks. These demand curve is labeled as $D = D_G + D_B$. Marginal revenue curve is denoted by MR_L. Let MC_N denote the marginal cost of issuing loans in case of no defaults. If borrowers never defaulted $i = 6$. Next suppose dishonest borrowers default, but symmetric information precludes the bank from distinguishing dishonest

borrowers. An increase in defaults raises marginal cost to MC^1_D, at point B, where $MC^1_D = MR_L$ the interest are determined to be 13% resulting in reduction of loans issued. Unfortunately honest borrowers demand less and reduce the quantity demanded of loans. But dishonest borrowers who do not have any intention to pay do not care about the high interest rate and default further. This leads to increase in marginal cost from MC^1_D to MC^2_D, at point C MC^2_D = MR and interest rate is determined to be 18%. In case of asymmetric information banks would ultimately refuse to issue any loans at all.

Q.2. Enumerate some banks strategies to counter the asymmetric information problem.

Ans. The following are some of the ways in which banks can deal with the problem of asymmetric information;

(i) **Credit reports.** Banks rely on credit reports for information about loan applicants' credit histories. By examining the past credit history of a potential borrower, bank reduces the level of asymmetric information about the person. In effect, the bank can infer the probability that a potential borrower will default on a new loan by examining the frequency with which the borrower has defaulted in the past. Sometimes potential borrowers do not have a credit history because they have never borrowed funds before. In this case, reports tell the banks nothing and therefore do not reduce asymmetric information.

(ii) **Reputation.** Many banks attempt to build a reputation for being tough on defaulters. Toughness might include foreclosing on the assets purchased with the loan money or seeking legal action to receive payment for the funds in default.

(iii) **Collateral.** Collateral is property or other assets pledged as security against default on a loan. If default occurs, the lender gets the collateral. Collateral is in essence, a "hostage" the bank uses to induce the borrower to repay the loan.

(iv) **Down payments.** To successfully induces borrowers not to default, the collateral must be valuable enough to give individuals an incentive to repay their loans. This can be problem in case of, a mortgage or a new car loan. Suppose a bank agrees to lend a borrower 90% of the value of house and the other 10% must come from the borrower's savings. If borrower defaults and the banks repossess the car, it can sell it and use the proceeds to repay the loan. In this case, the borrower losses the 10% down payment. Thus, a down payment reduces the incentive for even dishonest borrowers to default.

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UNIT

2

Financial Institutions Market Instruments and Financial Innovations:

(b) Money and capital markets; organization, structure and reforms in India; Role of financial derivatives and other innovations

CHAPTER-6

M.Y. Khan (Chapter 9)

Q.1. Write a note on the instruments traded in the money markets.

Ans. The instruments traded in the money market and the sub-markets are as follows:

(i) **Call/Notice Money Market and Short Term Deposits/Term Money Market**

- Deals with overnight/one day (call) money and notice money for period up to 14 days.
- It serves the purpose of balancing the short term liquidity position of banks.
- Market for short term funds are repayable on demand and maturity period varies between one day to a fortnight
- When money is borrowed/lent for one day it is known as call (overnight) money.
- When money is borrowed/ lent for more than a day and up to 14 days, it is known as notice money.
- It is an (OTC) over the counter market without the intermediation of brokers.

Call rates

The interest rate paid on call loans is known as the call rate. The calculation of payable interest would be based on the method suggested by the Fixed Income Money Market and Derivatives Association of India (FIMMDA). The call rate varies from day to day and often from hour to hour.

Factors that influenced call rates are;

- Easy/tight liquidity conditions in the market affect the call rates.
- Reserves requirements relating to the maintenance of CRR affect the call rate. An increase in CRR increases call rates and vice-versa.
- Asymmetric nature of participants in the call market in terms of few lenders and large chronic borrowers also result in fluctuation in call rates.
- Volatile forex market conditions also affect call rates. Banks fund foreign currency positions by withdrawing from the call market leading to a hike in the call rates.

***(ii)* Commercial bills markets**

- It is a short term, negotiable and self-liquidating instrument with low risk.
- It is a written instrument containing an unconditional order signed by the maker directing to pay a certain amount of money to a particular person or to the bearer of the instrument.
- Bills of exchange are drawn by seller on the buyer for the value of goods delivered by him. Such bills are called Trade bills.
- Foreign bills and Inland bills are of two types of commercial bills.
- Inland bills are drawn /payable in India or drawn upon any person residing in India.
- Foreign bills are drawn/ payable outside India, drawn on party/payable in India or drawn in India/ payable outside India. For example; export bills and import bills when bills are accepted by commercial banks they are called Commercial Bills.
- If the seller gives some time for the payment, the bills are payable at a future date. During the holding of the bills, if the seller is in need of funds, he may approach his bank for discounting the bill (Discounted Bill).

***(iii)* Treasury Bills (T-bills) Market:** The features of T-bills are as follows:

- It is an instrument of short term borrowing by the Government of India.
- It is a particular kind of finance bill issued by RBI on behalf of the government.
- They are negotiable securities; they are issued at discount and are repaid at par on maturity.
- Absence of default risk due to government guarantee and RBI's risk willingness to always purchase/ discount them.
- Negligible capital depreciation and assured yield.

(a) Evolution Ad hoc bills

- They were introduced in 1955 to replenish Government's cash balances with the RBI.
- The objective was to give enough independence to the RBI to effectively manage monetary policy

- The ad hoc T-bills were replaced with the Ways and Means Advances (WMAS) in 1997.

(b) 91-days bills

- The RBI issued 91-day T-bills on the basis of weekly auction. The auction system was replaced by on tap basis since 1965 at a discount rate related to change in the bank rate till 1974.
- The major holders of auctioned 91-days T-bills are the RBI, state Government and banks.
- The 91- day bill T- bill are sold/ auctioned on competitive/ non-competitive bids.

(c) 182- day T-bills

- It represented a financial instrument with intermediate maturity between the dated securities of the government on the one hand and the existing 91- day T bills, on the other.
- It had a higher yield combined with liquidity and safety.
- The issue of such bills was discontinued with effect from 2001 – 2002.

(d) 364 days T-Bills

- Introduced by government in 1992 April to stabilize the money market.
- They are sold on the basis of a fortnightly auction.

(e) 14 days intermediate T bills

- Introduced effective from 1996-97.
- The investors were limited to the state governments, foreign central banks and specified bodies.
- The discount rate was set afresh at the beginning of each quarter.
- They have been discontinued now owing to lack of public response.

(f) 28 days T-bills

They were announced in 1998. But they have been discontinued now. The RBI presently issues T-bills only in two maturities namely 91 days and 364 days. The T-bills are issued by RBI through the auction method. The 91 day T-bills are auctioned every Wednesday. The yield of T-bill is calculated as per the following formula;

$$Y = \frac{(100 - P) \times 365 \times 100}{P \times D}$$

Where, Y = Discounted Yield

P = Price

D =Days to maturity

***(iv)* Commercial papers (CP) market**

- It is a short term unsecured negotiable instruments consisting of usance primary notes with a fixed maturity, thus indicating the short term obligation of an issuer.

- Objective is to raise short term debt and by a process of securitization.
- A CP can be issued by a company directly to the investor or through bank/ merchant banks (dealers).

Advantages:

- Simple instrument, hardly need any documentation between issuer and the investor.
- Flexible in term of maturities of the underlying promissory note, which can be tailored to match the cash flow of the issuer.
- Also, CP provides investors with returns higher than what they obtain from banking system.
- CP was introduced in India in 1990 with a view to enable highly rated corporate borrowers to diversify their sources of short term borrowing and to provide additional instruments to investors.

(v) Certificate of Deposits (CDs) market

The certificate issued by a federally chartered bank against deposited funds for a fixed period of time is known as certificate of deposits. They are offered by the banks and are interests bearing time deposits. An individual or company provides the bank an assured sum of money for a definite period of time. The certificate includes the bank's agreement to repay the loan. Certificates of deposits vary from 30 days to six months or longer. A CD is a document of title to a time deposit. Based on the recommendations of the Vaghul committee, the RBI formulated a scheme in June, 1989 for the issue of CDs by scheduled banks (excluding RRBs). The RBI guidelines provide the framework for its operations, RBI guidelines are ;

(a) The CDs can be issue by
- Commercial banks
- Select all India FIS permitted by RBI.

(b) Banks can issue CDs depending on their requirements. An FI may issue CDs within the overall umbrella limit fixed by RBI.

(c) The minimum amount of CD should be ₹ 1 lakhs i.e. minimum deposit that could be accepted from a single subscriber should not be less than ₹ 1 lakhs and in multiples of ₹ 1 lakhs.

(d) The CDs can be subscribed by individuals/corporations/ companies/ trusts/ funds/ association and so on. The NRI's may also subscribe to CDs on a non repatriable basis only. Such CD's cannot be endorsed to another NRI in the secondary market,

(e) The maturity period of a CD issued by banks should be between 7 days (minimum) and one year (maximum). The FIs can issue CDs with maturity of 1-3 years.

(f) The CDs may be issued at a discount on face value. They can also be issued on floating rate basis provided the methodology of the compiling the floating rate is objective, transparent and market based.

(g) Banks have to maintain the appropriate SLR and CRR on the issue price of the CDs.

(h) There is no lock in period for the CDs. The physical CDs can be freely transferred by endorsement and delivery. The demated CDs can be transferred as per the procedure applicable to other demat securities.

(i) Loan against CDs and buy back of CDs by the issuers before maturity are not permitted.

Q.2. Write notes on the following:

(i) Primary Dealers

(ii) Money Market Mutual Funds

Ans.*(i)* Primary Dealers. In accordance with the announcement of monetary policy, on May 14, 1994 to introduce a system of primary Dealers (PDs) the RBI has framed the guidelines for their enlistments as detailed below:

Objectives of PDS

(a) To strength the infrastructure of the government securities market, including the money market, in order to make it vibrant, liquid and broad based.

(b) To ensure the development of underwriting and market capabilities for government securities outside the RBI so that the latter will gradually shed these functions.

(c) To improve the secondary market trading system, which would contribute to price discovery, enhance liquidity and turnover and encourage voluntary holding of government securities amongst a wider investor base.

(d) To make PDs an effective conduit for conducting open market operations (OMOs).

Eligibility conditions for a PD

(a) Subsidiaries of scheduled commercial banks and all India financial institutions dedicated predominantly to the securities business and in particular to the government securities market.

(b) Companies incorporated under the companies Act, 1956 and engaged predominantly in the securities business and in particular in the government securities market.

(c) Subsidiaries/joint ventures set up by entities incorporated abroad under the approval of the Foreign Investment Promotion Board (FIPB).

PDs role and obligations

The PDs are expected to play active role in the Government Securities market, both in its primary and secondary segments.

(a) A PD has to commit an aggregate bid for Government of India dates securities on an annual basis of not less than a specified amount and auction T-bills for specified percentage of each auction.

(b) A PD is required to achieve a minimum success ratio of 40 percent for dated securities and T-bills.

(c) The PDs are collectively offered to underwrite up to 100 percent of the notified amount in respect of all issues where the amounts are notified.

A PD can offer to underwrite an amount not exceeding five times of its net owned funds.

(d) A PD is subject to all prudential and regulatory guidelines of the RBI.

(e) A PD must submit periodic returns as prescribed by RBI.

(f) A PDs investment in G-Sec and T-bills on a daily basis should be at least be equal to its net call borrowing plus net RBI borrowing plus net owned funds of ₹50 crores.

(iii) **Money market mutual funds.** To enable small investors to participate in the money market, a Money Market Mutual Funds (MMMF) works as conduit through with they can earn the market related yield.

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CHAPTER-7

Bhole (Chapter 5)

Q.1. Explain the history and need for financial sector reforms in the context of the Indian economy.

Ans. In order to pull out the Indian economy from its deep economic crisis and resurrect it, Government of India decided to execute concrete changes in its economic policy in 1991. These changes have been termed as economic reforms.

New economic policy (NEP) comprises;

(i) Short term stabilization measures,

(ii) Long term measures emphasizing structural changes in the economy.

Together, these measures were meant to improve productivity and efficiency levels in production as well as trade in a more competitive environment.

NEP was one of the path-breaking efforts of Government of India. Some of the chief objectives of this policy were mentioned below:

(i) To arrest the growth of fiscal deficit and to curtail it with the aim of attaining stability in prices.

(ii) To restrict the dominance of PSEs and to encourage private participation in areas of operation.

(iii) To do away with industrial licensing system in the industries being run by private sector and to make industrial policy more liberal.

(iv) To make efforts to persuade more and more foreign investors and Foreign Financial Institutions (FFIs) to invest in Indian ventures by offering them more concessions or by removing some existing irritants in this sector.

(v) To promote international trade, efforts were to be made for abolishing /reducing tariff duties and quota restrictions in terms of Indian imports. This meant liberalization of trade.

The new economic policy (NEP) of structural adjustments and stabilization programme was given a big thrust in India in June 1991. The financial system reforms have received special attention as a part of this policy because of the perceived interdependent relationship between the real and financial sectors of the modern economy. Immediately after the announcement of NEP, the government had appointed a high level committee on financial system "to examine all aspects relating to the structure organization, function and procedures of the financial system". This Narasimhan committee submitted its main report in November 1991, wherein reforms were implemented/ introduced quite rapidly on a large scale.

a. **Pre-reforms phase.** RBI promoted consolidation, diversification and deregulation of the financial sector. Greater operational flexibility was provided to banks. Money market was the most energetic part of the financial system as it tries to establish equilibrium between short term demand for funds and their supply. The aim was:
   (i) To strike a balance between demand for and supply of short term funds.
   (ii) To provide a situation for Central Banks to intervene for influencing liquidity and interest rates in the economy.
   (iii) To provide an opportunity to borrowers and lenders to fulfill their borrowings and lending requirements at an efficient market clearing price.

b. **Post reform phase.** Reforms which were introduced in banking sector after 1991, were based on the recommendations of the Narasimhan Committee. It recommended that financial services industry should operate on flexibility and functional autonomy with a view to enhance efficiency, productivity and profitability in the economy.

Q.2. Write a note on the systematic policy reforms that took place post 1991.

Ans. The major reforms in systematic policy post 1991 were:

- Most of the interest rate in the economy was deregulated. The system of administered interest rate was largely dismantled and the structure of interest rate was greatly simplified.
- The preemption of banks resources through SLR in favor of the government was brought down and the rate of return on SLR securities was maintained by large at market rates. The SLR on incremental Net Domestic and Time Liabilities (NDTL) of banks were reduced from 38.5 % in 1991-1992 to 2 % now.
- The incremental CRR of 10% was removed. Further, the average CRR was reduced from 15% in 1991-92 to 10% in 1995-96. The CRR of FCNR (B) and NRNR deposit account was removed. The CRR on NRE deposits outstanding as on 27-10-1995 was reduced from 14% to 10% and the CRR on an increase in NRE deposits was also removed.
- Capital adequacy norms for banks, financial institutions and virtually all market intermediaries were introduced. The Basel committee framework for capital adequacy was adopted.
- A Board of Financial Supervision (BFS) with an advisory council and an independent department of supervision was established in RBI. It would supervise, apart from banks, all India Financial Institutions and non-banking financial companies from April – July 1995. A new supervisory reporting system was introduced in February 1995. It would focus attention on critical areas such as capital adequacy, assets quality, management, earnings and liquidity.

Recovery of Debts Due to Banks and Financial Institutions Act, 1993 was passed to set up special Recovery Tribunals to facilitate quicker recovery of loan arrears.

In order to moderate or minimize the automatic monetization of the budget deficit, the agreement to impose a ceiling on the issue of ad-hoc Treasury bills (TBs) and to phase them out in due course was signed by the Government of India and RBI in September, 1994. Subsequently the system of ad-hoc Treasury bills was abolished and replaced by the system of ways and means advances effective from April, 1 1997.

The private sector was allowed to set up banks, mutual funds, money market mutual funds, insurance companies etc. Public sector banks were permitted diversified ownership by law subject to 51 percent holding of government/RBI, SBI, IFCI and IRBI were converted into public limited companies.

Capital Issues (Control) Act, 1947 was repealed and the office of Controller of Capital Issues was abolished.

SEBI was made a statutory body in February 1992.

Convertibility clause is no longer obligatory in the case of assistance sanctioned by term lending institutions.

Q.3. Explain the major Banking reforms that took place post 1991.

Ans. Banking Reforms Post 1991:

Interest rate on deposits and advances of all co-operative banks including urban co-operative banks deregulated. Similarly, interest rate on commercial banks loans above ₹ 2 lakhs and on domestic term deposits above two years, and Non-Resident (external) Rupee Accounts (NRNR) deposits decontrolled.

The State Bank of India and other nationalized banks enabled to access the capital market for debt and equity.

Prudential norms for income recognition, classification of assets and provisioning for bad debts for commercial banks, including regional rural banks and financial institutions introduced. They are required to adopt uniform and sound accounting practices in respect of these matters and the valuation of investment banks are required to mark to market the securities held by them.

The Performance Obligations and Commitments (PO&C) obtained by RBI from each bank; they provide for essential quantifiable performance parameters which lay emphasis on increased but low cost deposits, quality lending, generation of more income and profits, compliance with priority sectors and export lending requirements, improvements in the quality of investment, reduction in expenditure and steeping up of staff productivity. The PO&C are meant to ensure a high level of portfolio quality so that problems such as heavy losses, low profits, erosion of equity does not recur. The non-fulfillment of PO&C entail penalty in the form of higher CRR/SLR,

stoppage of RBI refinance facility, stoppage of further capital contribution by the government, etc.

- Banks required making their balance sheet fully transparent and making full disclosures in keeping with International Account Standards Committee.
- Banks given greater freedom to open, shift, swap branches as also to open extension counters.
- The perceived constraints on banks such as poor credit authorization, inventory and receivables, norms obligatory consortium lending and curbs in respect of project finance relaxed.
- The budgetary support extended for recapitalization of weak public sector banks.
- Banks set free to fix their own foreign exchange open position limit subject to RBI approval.
- Loan system introduced for delivery of bank credit. Banks required to bifurcate the maximum permissible bank finance into loan component (short term working capital loan) and cash credit component, and the policy of progressively increasing the share of former introduced.
- Operational autonomy has been granted to public sector banks.
- Public ownership in public sector banks was reduced by allowing them to raise capital from equity market up to 49% of paid up capital.
- Roadmap has been developed for presence of foreign banks and guidelines were issued for mergers and amalgamation of private sector banks and NBFCs.
- Guidelines on ownership and governance in private sector banks were developed.
- Sharp reduction in pre-emption though reserve requirement, market determined pricing for government securities, disbanding of administered interest rates with a few exceptions and enhanced transparency.

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CHAPTER-8

Fabozzi et.al. (Chpter 26, pp.496-504)

Q.1. What is a futures contract? Explain its functioning.

Ans. A future contract is a firm legal agreement between a buyer and a seller in which;

(i) The buyer agrees to take delivery of something at a specified price at the end of a designated period of a time.

(ii) The seller agrees to make delivery of something at a specified price at the end of designated period of time.

Some common types of financial Futures are;

- Stock Futures
- Index Futures
- Currency Futures
- Commodity Futures
- Interest rate Futures

Functioning of financial futures

- When an investor is a buyer of a particular futures contract the investor is said to have taken 'long position'. Similarly, if the investor initially sells the future contracts, he is said to have attained a 'short position'. When the contract price changes in the future, the difference between the agreed price and contracts actual price results in profit/loss.
- Profits of the investors depends upon the position thus attained;
  - An investor with long position gains when the price of contract increases in the future time period and vice versa.
  - An investor with short position gains if the price of the contract falls in the future time period and vice versa.

Settlement date

- A contract is considered to be 'completely settled' if the party to the contract enters an opposite transaction against his initial position. *The contract is complete only if;*
  - A buyer settles a position by selling the contract.
  - A seller settles a position by buying the contract.
- The contract where the investor does not engage in the counter transaction for settlement are called 'open positions' or 'open contracts'. Each futures contract is listed and is referred with respect to its delivery or expiry date. Most future contracts have deliveries due in last week of March, May, June, September and December months. The

exchange decides the date of beginning and closing of contracts along with its price of listing.

Q.2. Explain the importance of a Clearing house in the context of a futures contract.

Ans. An intermediary in the derivatives market is a clearing house which plays an important role. The role of clearing house is to help the parties to perform transactions.

- During the transaction, each party to the contract requires someone to take an opposite position to help complete the transaction.
- The clearing house undertakes the responsibility to help meet the requirement.
- When a buyer tries to purchase an asset, the clearing house becomes the counter party to the transaction and sells the asset. Similarly, for a seller the clearing house negotiates by buying the asset.
- It later on passes over this asset to someone who is willing to buy it at the existing price.
- Such provisions help in reducing the risk of solvency of counter party as the clearing house.
- By being the buyer to every sale and the seller to every purchase, clearing house helps build confidences amongst the investors.
- It is this very reason that settlements are made easy and investors can liquidate their positions prior to the date of expiry.

A clearing house comprises of members who provide the funds necessary to conduct such operations. The brokers place their orders through these members on behalf of their clients. Each member must maintain a margin account to conduct transactions. Members must maintain the margin on the basis of number of contracts and the movement of prices. Another important function performed by clearing house is record keeping of all contract positions. Clearing house records the total number of closed and open contracts at the end of trading day and calculates the margin required by members and the profit and loss aggregate levels.

Q.3. Explain the concept of margin requirements in the context of future contracts.

Ans. When the position is first taken in the futures contract, the investor must deposit a minimum amount per contract as specified by the exchange. The amount, called **initial margin,** is required as a deposit for the contract. The **equity** in the futures contract refers to the sum of all margins posted and all daily gains less all daily losses to the account.

Maintenance margin is the minimum level to which an investor's equity position may fall as a result of an unfavorable price movement before the investor is required to deposit additional margin. The additional margin deposited is called **variation margin.**

Any excess margin in the account may be withdrawn by the investor.

Q.4. What is the Leverage Effect of futures?

Ans. Comparing the future contract with some real asset reveals an interesting aspect about how futures work. A future contract provides access to the total value of the asset or underlying by just paying a fraction in the form of margin. This enables the investor to expand his ability to invest in large number of opportunities of which he is devoid off when it comes to purchasing the real assets. Consider a case where an investor has ₹ 60,000 to invest and is looking to purchase gold with the expectation of profit. He can do this by either investing in futures contract by buying gold futures or by purchasing the asset from a gold dealer. Further, consider that the price of gold today is ₹ 20,000 per 10 gram of gold and so is the price of December future contract, which is trading of same quantity on the exchange. With this, assume that the margin requirement per contract of 10 grams of gold is 5 percent of the value of the contract. This means that he must deposit ₹ 1,000 to acquire a single long position in the gold futures. Since, he has a larger sum of money; the investor can purchase 30 grams of gold from the gold dealer with total worth equal to 60,000. But consider what if he buys gold futures from this fund? Since, he has to pay margin of ₹ 1,000 per contract to acquire 20,000 worth gold, he can actually buy 60 such contracts each with a value of ₹ 20,000 worth of gold today. This effectively means that with 60,000 to invest the investor can actually acquire a long position in gold future worth ₹ 12, 00,000 which is twenty times the total value in physical market. This leverage is only possible through innovative instruments like derivatives leveraging enables an investor to avoid risk on the overall asset and provides greater opportunities and participation.

Q.5. Differentiate between a forward and a futures contract.

Ans. Following are the Differences between a forward and a future contract.

Futures contracts	Forward contracts
A future contract is an agreement between two parties to exchange a standardized asset on a specific future date and a specific future price on a future exchange.	A forward contract is an agreement between two parties to exchange an asset at a future date for pre-determined mutually agreed price today.
A future contract is traded on the centralized trading platform of an exchange.	A forward contract is not traded on an exchange and is rather traded in an over the counter (OTC) market.
A contract price of a futures contract is transparent as it is available on the centralized trading screen of the exchange.	The contract price of a forward contract is not transparent as it is not publically disclosed.
In a future contract the valuation of open position is calculated as per the official closing price on a daily basis	In a forward contract, valuation of open position is not calculated on daily basis and there is no

and Market to Market (MTM) margin requirement exists.	requirement of Market to Market (MTM) on daily basis. Since, the settlement of the contract is done only on the maturity date of the contract, margin requirement is based on the credit analysis of the client.
A future contract is more liquid than a forward contract as it is traded on the exchange.	A forward contract is less liquid due to its customized nature.
Here, the clearing house provides trade guarantee, thus eliminating the counter party risk.	Counter parts risk is high due to the customized nature of the contract.
A regulatory authority and the exchange regulate a futures contract.	Forward contract is not regulated by any exchange.

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CHAPTER-9

Fabozzi et.al. (Chapter 27, pp.517-529)

Q.1. Define option contracts. Explain their functioning.

Ans. As the name suggests, an option contract is a right and not an obligation. It enables the buyer of an option to purchase or sell an asset without a boundation or obligations, as per will. There are two parties to an option, a buyer of the option and writer/ seller of the option. When the writer or seller of an option contract writes an option on behalf of the buyer, he empowers the buyers to take decision about the asset at his free will. The buyer is not obliged or forced upon to exercise his right. In exchange of this right, the buyer pays the writer of an option, a price which is referred to as 'option price'. The option deals with the right to buy or sell an underlying at a price called the 'exercise price' or 'strike price'.

The option which grants the right to buy an asset is called a **'call option'** and the option which grants the right to sell the asset is called **'put option'**.

On the basis of expiry and exercise, option can be classified into two types. The options which are exercised on or before the maturity or expiry date are called **American option.** The options which can only be exercised on the very date of expiry are called **European option.** The option contracts are available both in Over The Counter (OTC) format and in electronically exchanged traded one.

The options contract differs from futures contract not just on the basis of definition but also on the functioning and returns. The option contract being a right and not an obligation like a future contract, results in minimization of loss.

Q.2. Explain the following with examples:

(a) Buying a call option (or long call)
(b) Selling a call option (or short all)
(c) Buying a put option (or long put)
(d) Selling a put option (or short put)

Ans. (a) Case 1: Buying a call position or (Long Call)

Buying a call option or long call means the investor has purchased the right to buy the asset on a specified date at a specified strike or exercise price. Assume that a call option is purchased by an investor named Aman from other investor named Bindra for an asset with strike price ₹ 1,000. Here, Bindra is the seller or the writer of the option and has to oblige Aman's decision to buy or not to buy the asset from her. Hence, Bindra is the seller of call option. The price paid to acquire, such option or the option price is set at ₹ 30 which is paid today. The current market price of the asset is also ₹ 1,000 for simplicity.

(i) If the market price of asset is less than the strike price of ₹ 1,000 on the date of expiry, it is non-profitable for Aman to exercise the option to buy the asset from Bindra, since he can buy this asset at a cheaper rate from the market. Assuming the market price to be ₹ 950, he will not exercise the option but bears the cost of option. i.e. ₹ 30 of option price. Any price below ₹ 1,000 will attract a constant maximum loss of ₹ 30 of option price.

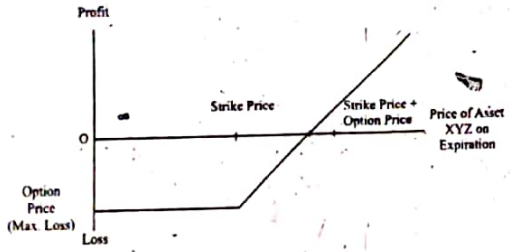
(ii) If the market price of asset is equal to the strike price ₹ 1,000 on the date of expiry. Aman will be indifferent between choosing to buy the asset from the market or buying the asset from Bindra by exercising his option as the two prices on same asset are equal. Also here he has to bear the constant cost of ₹ 30 of option price.

(iii) If the market price of asset is anywhere between ₹ 1,000 to ₹ 1,030. Aman tends to minimize his loss of option price. Suppose the price is ₹ 1,015 Aman can buy the asset from bindra by exercising the option. In doing so, he pays ₹ 1,000 for an asset along with ₹ 30 of option price (already paid in advance) and can sell the same asset in the market for ₹ 1,015. Thus aman makes a loss of ₹ 15. Had aman chosen not to exercise the option his loss would have been ₹ 30.

(iv) If the market price of asset is ₹ 1,030 Aman will exercise the option to buy the asset from Bindra. Here since the price paid to Bindra for buying the asset is equal to the price received by selling the asset in the in the market, we say Aman breaks even. Profit of ₹ 30 is cancelled or offset against the loss of option price of ₹ 30.

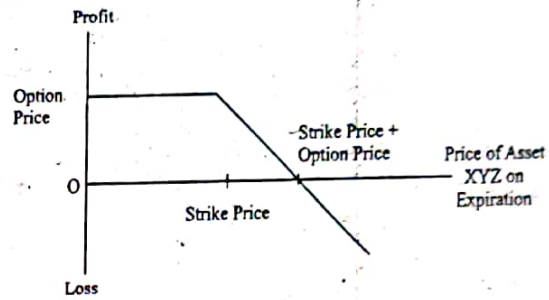
(v) If the market price of asset is anywhere above ₹ 1,030 Aman will exercise the option to buy the asset from Bindra and will result in positive profits after adjusting for the option price of ₹ 30. Suppose the price is ₹ 1,140, Aman can gain ₹ 1,140 – ₹ 1,030 = ₹ 110 from exercising the option and buying the asset from Bindra.

Strike Price ₹1,000	Buying a Call Option	Option Price
Market price of asset on expiry	net profit/ loss	action released to option
₹ 950	– ₹ 30(Maximum Loss)	Not exercise
₹ 1,000	– ₹ 30 (maximum loss)	Indifferent
₹ 1,015	– ₹ 15 (loss minimization)	Exercise
₹ 1,030	– 0 (break-even point)	Exercise
₹ 1,040	– ₹ 10(positive profits)	Exercise



(b) Case 2 : Writing / Selling a call option

The profile of a writer or seller is completely opposite to that of the buyer of a call option. The profits a buyer of call option are infinite with a maximum loss of option price. The profits the writer or seller of call option are maximum upto to the level of option price, whereas the losses are infinite. When the buyer does not exercise the call option, the seller of the option receives the fixed option price. When the buyer purchases the asset from the seller of the call option, he might incur a loss. Here he could have sold the asset in the market for a higher price compared to the fixed strike price agreed between the option buyer and the option seller. Hence, his losses are infinite (less the option price receives). We can visualize the return to the seller of the call option.



It shows that the seller of call option has infinite losses compared to a fixed maximum profit of ₹ 30 of the option price. Since, he is the seller or the writer, he has to oblige the decisions of the buyer with respect to the strategies.

(c) Case 3 : Buying a put option

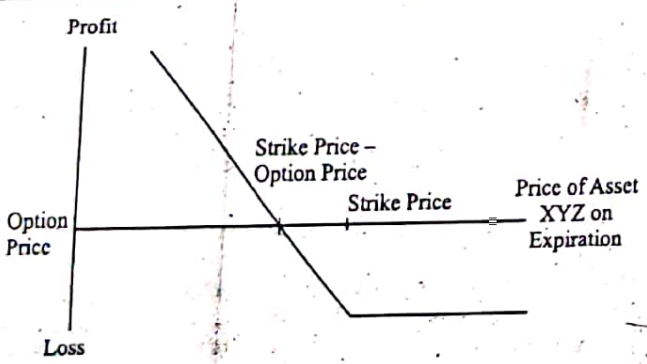
Buying a put option or long put means the investor has purchased the right to sell the asset on a specified date at a specified strike or exercise price. Again assume that a put option is purchased by our investor named Aman from Bindra to sell an asset with strike price of ₹ 500. Here, Bindra is the seller or the writer of the option and has to oblige Aman's decision to sell or not to sell the asset to her. Hence, Bindra is the seller of put option. The price paid to acquire such option or the option price is now set at ₹ 20 which is paid today. The current market price of the asset is also ₹ 500 for simplicity. Here, the option is about selling the asset to Bindra. Let, us again consider a set of five such strategies and look at risk and return for Aman, the buyer of the put option.

- The market price of asset is more than the strike price of ₹ 500 on the date of expiry, it is non-profitable for Aman to exercise the option to sell the asset to Bindra. Since, he can sell this asset at a higher rate in the market.

Assuming the market price to be ₹ 540, he will not exercise the option but amount above ₹ 500 will attract a constant maximum loss of ₹ 20 of option price.

- If the market price of the asset is equal to ₹ 500, Aman will be indifferent between choosing to sell the asset in market or selling the asset to Bindra by exercising his option as the two prices are same asset are equal.
- If the market price of asset is anywhere between ₹ 500 to ₹ 480, Aman tends to minimize his loss of option price. Suppose, the price is ₹ 490, Aman can sell the asset to Bindra by exercising the option. In doing so, he gets ₹ 500 for an asset loss and can buy the same asset in the market for ₹ 490.
- If MP of asset is ₹ 480, Aman will exercise the option to sell the asset to bindra. Here, since the price received from Bindra by selling the asset is equal to the price received from buying the asset in the market we can say Aman breaks even. Profit of ₹ 20 is cancelled or offset against the loss of option price of ₹ 20.
- If the market price of asset is anywhere below ₹ 480, Aman will exercise the option to sell the asset to Bindra and will result in positive profits after adjusting for the option price of ₹ 20. Suppose the price is ₹ 440, for selling the asset to Bindra, five strategies for long put have been shown here:

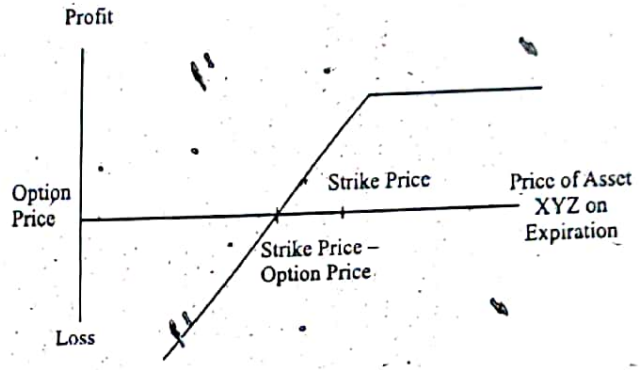
Strike price ₹ 50	Buying a put option	Option price ₹ 20
Market price of asset on expiry	Net profit / loss	Action related to option
₹ 540	– ₹ 20(maximum loss)	Not exercise
₹ 500	– ₹ 20(maximum loss)	Indifferent
₹ 490	– ₹ 10 (loss minimization)	Exercise
₹ 480	0 (breaks even)	Exercise
₹ 440	– ₹ 40(positive profit)	Exercise



(d) Case 4 : Writing / selling a put option

The profile of a writer or seller is completely opposite to that of the buyer of a put option as we saw earlier also. The profits to a buyer of put option are

infinite with a maximum loss of option price, whereas the profits of the writer or seller of put option are limited (maximum up to the level of option price), while the losses are infinite. When the buyer does not exercise the put option, the seller of the put option receives the fixed option price. When the buyer sells the asset from the seller of the put option, the seller of the put option loses, because he could have bought the asset in the market for a lesser price compared to the fixed strike price agreed between the option buyer and the option seller. Hence, his losses are infinite (less the option price he receives).



CHAPTER-10

Fabozzi et.al. (Chapter-20, pp.577-580)

Q.1. Write a note on Interest Rate Swaps.

Ans. A swaps agreement is an agreement between two parties or counter parties to exchange stream of cash flows based on a notational principal amount. Such cash flows are formed on the basis of interest rates or currencies. The purpose for notional amount here is to assess the interest/ currency liability due on each party. The amount of cash flows exchanged on the basis of this notional principle using interest rate or currency are called legs of agreement.

Interest rate swaps :- Interest rate swaps are concerned with timely exchange of interest rate payments computed using notional principal amount. Since, both parties have interest rate cash flows due on them, what is paid is in actual the net onbalance of interest rate payment.

In interest rate swaps, mostly payments are related to exchanging fixed rate payments with floating rate payment. The floating rate agreed is based upon a reference rate (plus some differential). The floating rate is decided using benchmark rates like LIBOR or MIBOR.

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UNIT

3

Interest Rates: Determination, Sources of Interest Rates, Differentials, Theories of Term Structure of Interest Rates, Interest Rates of India.

CHAPTER-11

Baye and Jansen (Chapter 10)

Q.1. Explain the concept of yield with the help of an example. What is a yield curve?

Ans. Consider a one year bond with face value ((*FV*)) of ₹ 1,000 that pays a coupon payment of 6%. To invest in this bond, you have to pay the price of ₹ 950. The current yield on this bond is defined as rate of return on the bond with respect to price paid. Here, since coupon rate is 6%, the amount of coupon payment is 0.06 × 1,000 = ₹ 60. Since, price paid for such bond is ₹ 950, the current yield is defined as;

$$Current\ Yield = \frac{Annual\ Coupon\ Payment}{Price\ of\ Bond}$$

$$= ₹\frac{60}{950} = 0.063 \text{ or } 6.3\%$$

The current yield of 6.3 % is greater than the coupon rate of 6%, since the price paid for ₹ 1,000 face value bond is lower i.e., ₹ 950. The current yield of a bond is not considered as an efficient indicator of return because it does not reflect the actual return. The current yield does not take into account the return of principal amount of investment. To look at the actual return, we calculate Yield to Maturity (YTM). A discountable bond like this pays returns not only in the form of coupon payment, but also principal on maturity. YTM or Yield to Maturity is the rate that makes the present value of the cash flows receivable from owning the bond, equal to the price of the bond. The cash flows here include the coupon payments and the redemption value or the present value.

The yield to maturity for the above example can be calculated as;

$$\frac{₹(60+1000)}{1+r} = ₹950$$

Solving for 'r', we get yield to maturity equal to 11.58%, which is higher than the coupon rate of 6% and also the current yield of 6.3%. We thus, consider YTM as a measure for yield on a bond.

The curve above showing the term structure of interest rate is called the Yield Curve. It represents the relation between the yield and the term to maturity of a bond.

The yield curve is upward sloping to denote higher yields for longer maturity. There have been exceptions to this upward trend. Historical trends have shown that yield curves have also been flat or downward sloping. Countries which experience extreme economic conditions face the trends of yields on government bonds to follow downward path. Yields tend to fall indicating the returns in the short run to exceed the long term yields.

Q.2. Explain expectations Hypothesis and enumerate the assumptions and the implications of this structure of the interest rates.

Ans. The expectation hypothesis asserts that longer term interest rates are an average of the shorter-term increases rates expected to prevail during the life of the longer term asset. For instance, if the current interest rate on one year bonds is 5% and investors expect the interest rate on one year bonds to be 7% next year, the current interest rate on a two year bond will be (approximately) an average of the two one year rates or (0.05 + 0.07)/2 = 6%.

Assumptions

Under the expectations hypothesis, we assume

- Investors view a series of short term bonds as perfect substitutes for long term bonds.
- The only factor that will affect the investor's decisions is the expected return to be earned from purchasing a long term bond compared to that from purchasing a number of short term bonds.
- Investors are risk neutral and thus are willing to pay a premium to lock in a two year interest rate.
- Transactions costs are zero so that the cost of buying is same for both short term and long term bonds.

Implications

- The only way borrower can attract long term funds is to offer a long term interest rate that gives investors the same expected return they could earn on a sequence of short term investments.

Reasoning for term Structure under Expectations Hypothesis

Consider a situation where you have ₹ 1,000 to invest for two year time horizon. At present the one year interest rate on corporate bond of ABZ ltd. is 6%. Assume the rate after one year be (r_1). You decide to purchase this one year corporate bond and wish to reinvest the money for one more year. The return the investment earns after two years is given by

$$RV_{short} = ₹1{,}000(1.06)(1 + r_1)$$

Though you decide to invest your money for one more year, one cannot correctly assess what would be the exact value of interest rate after one year r_1, one can

only guess the rate based upon your limited knowledge about market and economic development. Suppose, you expect next year to be er_1.

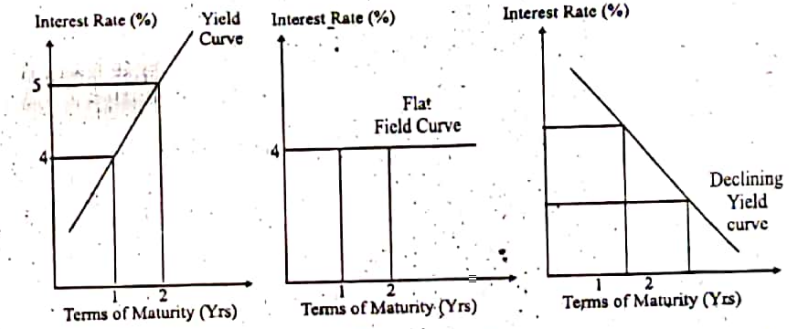
$$RV_{short} = ₹1{,}000(1.06)(1 + er_1) \quad \text{.....①}$$

The magnitude of this rate will alter the magnitude of the expected return one will earn after two years.

The company also wishes to raise funds for long term and plan to issue two year maturity bonds of face value ₹ 1,000 alongside one year bonds, which might be issued for meeting shorter term business obligations and working capital liabilities. At a given two year rate r_2, this investment will yield a total return of

$$RV_{short} = ₹1{,}000(1 + r)^2 \quad \text{.....②}$$

Looking at equation ① and ②, when exactly will the investor be willing to purchase a particular bond? With the assumption that the two bonds are perfect substitutes and the investor is risk neutral we, can arrive at three different sets of conditions depending upon which the investor might choose to decide to hold either the short term or the long term bond.



The risk neutral investor becomes indifferent, when the expected return on the two schemes of investments equates i.e.,

$$RV_{short} = RV_{long} \quad \text{.....③}$$

We can thus evaluate the effect of this condition on the term structure of interest rate as follows. Let us discuss three cases about the expected one year rate.

Using equation ③ we get,

$$RV_{short} = RV_{long}$$
$$= ₹1{,}000(1.06)(1 + er_1) = ₹1{,}000(1 + r_2)^2$$
$$= (1.06)(1 + er_1) = (1 + r_2)^2$$

Case 1. When expected rate is 4 percent on one year bonds in year II

$$(1.06)(1.04) = (1 + r_2)^2$$
$$\sqrt{(1.06)(1.04)} = (1 + r_2)$$

Hence,

$$1 + r_2 = 1.04995 \text{ or } r_2 = 5 \text{ percent}$$

Case 2. When expected rate is 6 percent on one year bonds in year II

$$(1.06)(1.06) = (1 + r_2)^2$$
$$(1.06)^2 = (1 + r_2)^2$$

Hence,

$$1 + r_2 = 1.06995 \text{ or } r_2 = 6 \text{ percent}$$

Case 3. When expected rate is 8 percent on one year bonds in year II

$$(1.06)(1.08) = (1 + r_2)^2$$
$$\sqrt{(1.08)(1.06)} = (1 + r_2)$$
$$\sqrt{1.1448} = 1 + r_2$$

Hence,

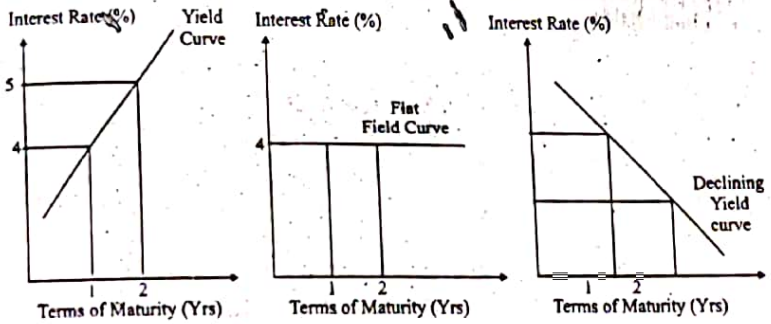
$$1 + r_2 = 1.06995, \text{ or } r_2 = 7\%$$

We can infer from the above exercise that;

- When expected one year future rate is lower than the current one year rate, the long term is lower than current one year rate.
- When expected one year future rate is equal to the current one year rate, the long term rate is equal to the current one year rate.
- When expected one year future rate is higher than the current one year rate, the long term rate is higher than current one year rate.

Thus expectations about short term rate determines the long term rate,

Above, analysis can also be presented through yield curve to explain the shapes of yield curve. The graph below represents the finding of three cases in the box.



It can easily understood from figure that:

- Yield curve slopes downward when expectations about future interest rate are lower.
- Yield curve is flat, when expectations about future interest rates are the same as the current year.

- Yield curve slopes upward when expectations about future interest rates are higher.

Generalization of Expectations Hypothesis

We understood that under expectations hypothesis, long term interest rates are a function of expected short term interest rate. Expectations about future of short term rates determine the path of long term interest rates. This theory provides reasoning for differentiated yield on instruments which vary with respect to term to maturity.

We can provide a general formula to calculate the yield on long term using this hypothesis.

Let 'r' be the current one year rate on an bond and er_t be the expected future interest rate on this one year instrument purchased for 't' year, post the first year. The overall return can thus be written as;

$$(1 + r)(1 + er_1)(1 + er_2)(1 + er_3) \quad \ldots\ldots\ldots(1 + er_{n-1})$$

For a current interest rate of r_n on a bond invested for 'n' year, the overall return can be computed as $(1 + r_n)^n$.

An indifferent investor will consider and compare the returns on re-invested one year bond and 'n' year bond simultaneously and thus equate the two.

So, $(1 + r_n)^n = (1 + r)(1 + er_1)(1 + er_2)(1 + er_3) \quad \ldots\ldots\ldots(1 + er_{n-1})$ .....④

$$(1 + r_n) = \sqrt[n]{(1 + r)(1 + er_1) + (1 + er_2) \ldots\ldots (1 + er_{n-1})} \quad \ldots\ldots\ldots ⑤$$

Equation ⑤ can also be solve using

$$n\, ln(1 + r_n) = ln(1 + r) + ln(1 + er_1) + \cdots (1 + er_{n-1}) \quad \ldots\ldots\ldots ⑥$$

For small values of interest rate, equation ⑥ can be approximate using.

$$nr_n \approx r + er_1 + er_2 + \cdots er_{n-1}$$

or

$$r_n \approx \frac{r + er_1 + er_2 + \cdots er_{n-1}}{n} \quad \ldots\ldots\ldots ⑦$$

From the previous example, we can see that the equation ⑦ holds valid. The current one year rate on corporate bond ABZ Ltd. was 6 percent and the expected interest rate for more than one year was 4 percent. The interest on similar bond or two years was given by r_2 i.e.

$$(1.06)(1.04) = (1 + r_2)^2$$
$$(1 + r_2) = \sqrt{(1.06(1.04)}$$

Solving equation ⑧ for r_2, using expectations hypothesis formula from equation ⑤ we get

$$r_2 = \frac{(0.06) + (0.04)}{2} = 0.05$$

r_2 is therefore equal to 5 percent as confirmed from the result of the example.

Equation ⑦ asserts that or the interest rate on n -year bond will be approximately equal to an average of current one year interest rate and expected future interest rate over n –years.

Evaluation of Expectation Hypothesis

The theory of expected interest rate provided an explanation for the long run interest rate and the shapes of yield curves were based on these rates for overall terms to maturity. Adjusting of expectation tends to alter the shapes of the yield curves.

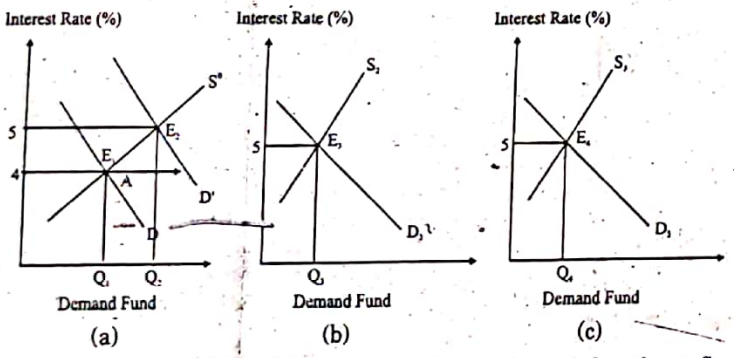
The hypothesis cannot fully explain the trends in interest rates. In the past, yield curve have been upward sloping. Reasoning for this as per expectations hypothesis implies that people would always expect the interest rates to rise in future. Interest rates in the country do fall. It becomes difficult to reason the long term rates through this theory, when there is high volatility in interest rate.

Another problem is about expectations as people tend to account for past experiences and would base future expectations on the basis of such experiences. This would partly explain the long term rates. Expectations if adapted, could cause lack of reasoning for falling or flatter yield curves. An individual investor also lacks information to create an expectation about movement of interest rates.

Q.3. Explain the Segmented Market Hypothesis for determining term structures.

Ans. The segmented market hypothesis states that yield on bonds of different maturity are independent, since the instruments are not substitutes of each other. Rather the yield is determined on the basis of market forces of demand and supply in each market of instruments.

Explanation of Segmented Market Hypothesis



The theory of segmented markets can be explained using the above figure, where we consider three separate bonds with different terms to maturity. In figure 8(a), the market for one year bond has equilibrium at E_1 with Oq_1, quantity of funds being traded at 4 percent rate of interest. This rate is

determined through demand D_0 and supply S_0 of fund in this market. In figure (b), the market for two year bond has equilibrium at E_3 with Oq_3 quantity of funds being traded. An altogether separate market, the equilibrium cost of funds or the interest rate is determined by the demand D_2 and supply S_2 of funds in this market. Similarly, interest rate in the third market in fig (c), for 3 year bond is determined by its independent demand D_3 and supply S_3 of funds for this market. A higher equilibrium at E_3 shows an interest of 6 percent.

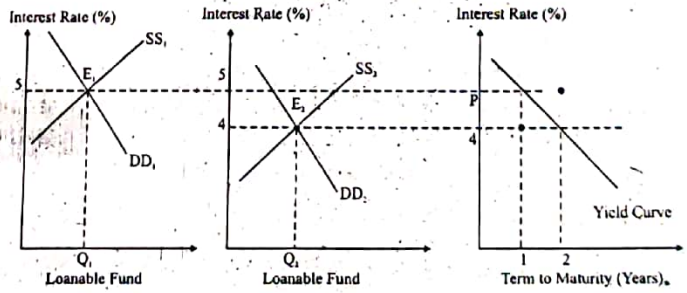
When there is an increase in demand for funds in the one year bond market, the demand curve shifts to D' for a given level of supply of funds. The higher demand causes the cost of fund or the interest rate to rise to 5 percent. This change is independent and does not influence the interest in any other market for bonds. This segmentation or independence in other markets would exist as the participants of these markets do not base their decisions upon other markets. Thus, they are free from any influence.

The segmented market hypothesis uses rationality that people have well defined preferences for investment with respect to the term of maturity. The assumption of risk aversion becomes the reason for sticking to a particular bond of defined maturity. An investor limited by wealth, who wants to invest his money for two years will be reluctant to reinvest his money twice for one year as he/she prefers to have a regular return. He/she would also want to minimize the risk of expected return and the cost of re-investment. If there is an adverse interest rate movement, price movement can force free maturity and loss of returns.

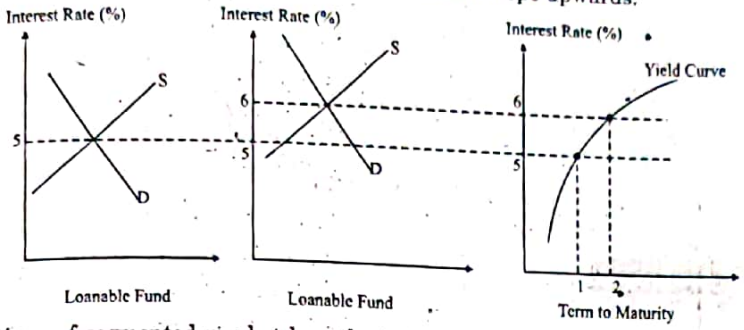
Yield Curve and Segmented Market Hypothesis

The segmented market hypothesis through demand and supply of funds can explain the shapes of yield curve and the 'theory of term structure of interest rate.' The differential in interest rate would then arise between the markets for long term and short term funds, when the demand or supply of funds alters in one market.

The market for 1 year bond has an equilibrium interest rate of 5 percent for given demand DD_1 and supply SS for fund in figure 8.6, the market for two year bonds has a lower interest rate of 4 percent for a given lower relative demand DD_2 and supply SS_2 for funds. This causes the yield curve to in figure 8.6(c) to slope downward for given interest rate and term to maturity.



Similarly, in the following case the yield curve can slope upwards.



Critique of segmented market hypothesis is focused largely on its explanation of the term structure. The theory of segmented market for instruments fails to make predictions about the movement of interest rates or yields in future. Secondly, it strongly assumes the market for funds to be independent of other market for funds with different maturities. Rather, the markets for funds are interlinked. Empirical analysis has shown a pattern of interest rates in long term to be linked with their short term counterpart. Thus, segmented market hypothesis is rendered as partially providing an explanation to the theory of term structure of interest rates.

Q.4. Explain the Preferred Habitat Hypothesis for determining term structures.

Ans. The preferred habitat hypothesis takes somewhat an average or middle path between the expectation and segmented market hypothesis. The hypothesis asserts that participants in financial instruments and markets have a pre-conceived preference. In order to make them choose the undesired, they must be compensated for making such decisions, which divert them their preferences. This compensation is in the form of premium necessary to make investors revise their preferences and choose an asset with different maturity.

Explanation of Preferred Habitat Hypothesis

A risk-averse investor would prefer to align his investment in accordance with the maturity and ultimate investment objective. Those who prefer returns in long horizon would choose to invest in long term maturity instruments. Diverting from such preferences not just adds a cost but can cause interest risk to arise due to re-investment. Conversely a short term investor would prefer short term maturity. By not doing so, they might face lower asset price, which might cause loss due to pre-maturity. In order to choose the job as per the expected income that the job offers, you would be indifferent for the location in case of the offer of an equal pay. As per the segmented market hypothesis, your preference of working in Gurugram would be independent of preference to work at other places irrespective of the pay difference. You might still refuse to work in Beijing for an offer to work in Gurugram, which is your home city. Following the middle path, the preferred habitat hypothesis asserts that you care about

the habitat and the expected pay. Willingness to work in Gurugram shows your preference, but a compensation in the form of pay increment or bonus as premium could convince you to choose Beijing as the location. The premium or compensating work differential is offered for choosing non-preferred habitat over a preferred one.

Extending this analysis to the financial markets, we find that investors have their own preference for bonds of different maturity on the basis of expected returns. In order to convince an investor to buy a bond of non-preferred maturity, the investor must be provided with a term 'premium' that could make good the loss for switching to an undesired instruments of different maturity.

The term structure of interest rate can be explained under the preferred habitat hypothesis using a modified equation ⑤ for a term premium '$\propto n$' paid on a bond with maturity of 'n', years, the yield on an investments can be determined mathematically as;

$$r_n = \propto_n + \frac{r + er_1 + er_2 + \cdots er_{n-1}}{n} \quad \ldots\ldots\ldots ⑨$$

Here,

r_n = is the long term interest rate

r = is the current one year interest rate

e_r = is the expected future interest rates for each year

$\propto_n$ = is the term premium for n year.

Equation ⑨ can be interpreted as the interest rate on 'n' year bond equals to the average of short term interest rates expected to exist over the long term of the bond plus the term premium to convince the investor to hold the bond for 'n' years.

$\propto_n$ represents the premium to compensate for any expected risks or/and transaction costs that might arise due to the buying of an undesired bond.

Yield Curve under Preferred Habitat Hypothesis

Compared to the previous two hypothesis, the preferred habitat hypothesis explains the shape of yield curve in a more precise manner. It gives a sufficient explanation for not just upward sloping, but also flatter and downward sloping yield curves. The equation ⑨ of the hypothesis retains the properties of the expectations hypothesis as explained by equation ⑦, that a long term long rates are an average of short term rates between the two rates along-side the added premium compensate for switching investments. We consider three cases to prove this relation. One year interest rate is 3 % and term premium is 5%. This implies that the current rate of interest on two year bond can be defined as;

$$r_n = \propto_n + \frac{r + er_1}{2} \qquad = 0.005 + \frac{0.03 + er_1}{2} \quad \ldots\ldots\ldots 10$$

We can look at three cases to r_2 derive from equation 10

Case 1. If expected future interest rate on one year bond is 5%, The investors expects the future interest rate to rise. Setting $er_1 = 0.05$, we get

$$r_2 = 0.005 + \frac{0.03+0.05}{2} = 0.045 \text{ or } 4.5\%$$

The yield curve in this case will slope upwards.

Case 2. If expected future interest rate on one year bond is 2%, it implies that investors expect the future interest rate to remain constant. Setting $er_1 = 0.03$ we get

$$r_2 = 0.005 + \frac{0.03+0.02}{2} = 0.005 + 0.025 \quad 0.3 \text{ or } 3\%$$

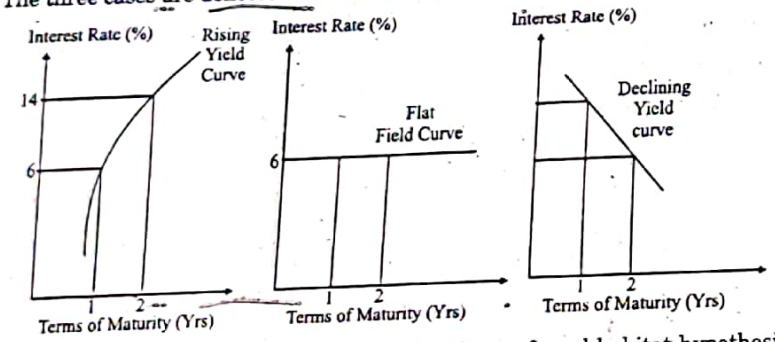
The yield curve will be flat in this case.

Case 3. Suppose, expected future interest rate one year is 1%. This implies investors downgrade their expectations setting $er_1 = 0.01$

$$r_2 = 0.005 + \frac{0.03+0.01}{2} = 0.005 + 0.02 = 0.025 \text{ or } 2.5\%$$

Hence, the yield curve is downward sloping.

The three cases are denoted in the following figure:



The analysis in the above sections shows that the preferred habitat hypothesis effectively explains the theory of term structure of interest rate.

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CHAPTER-12

Annual Report on RBI

Q.1. Assess the implementation and effects of base rate system in India.

Ans. In order to address concerns posed by the non-transparent BPLR system, the Base rate system was introduced on the recommendations of a working group (Chairman; Shri Deepak Mohanty). Since, the inception of the Base Rate System, liquidity in the financial system has remained in deficit mode. During this period, banks have become by and large synchronous and more responsive in their change of Base Rate and to changes in the policy rate by Reserve Bank. This is evident from the fact that as the Reserve Bank progressively increased its repo rate, bank also increased their base rate, initially during July-December 2010, the pace was slower as the system had been migrating for surplus mode to a deficit mode.

The pass- through of reduction in Repo Rate and cumulative reduction in CRR to banks' deposit and lending rate in 2012 was impacted by higher weighted average cost of outstanding deposits, higher government borrowing, increase n NPAs and sustained high inflation.

Overall, the transmission of monetary policy has been strengthened under the Base Rate system as compared with the BPLR system.

Q.2. Explain the pros and cons of the deregulation of the Saving Bank Deposit Interest Rate.

Ans. Deregulation of Saving Bank Deposit Interest Rate-Rationale and Impact– The process of interest rate deregulation which began in the early 1990's was largely completed by 1997. On the liability side apart from the interest rate on current account, the only interest rate that continued to remain regulated was saving deposit interest rate until October 25, 2011. *The discussion paper on deregulation of savings bank deposit rate delineated both the pros and cons of deregulation of saving bank deposit rate as under;*

Pros

a. Deregulation of the interest rate on savings deposit will make the rate flexible along with other interest rates depending on the market conditions.

b. Regulation of savings deposit interest rate not only reduced its relative attractiveness, it also adversely affected the transmission of monetary policy.

c. Saving deposits constitute large proportions of total deposits. However, owing to regulations of interest rate, there was hardly any competition in this segment with both banks and depositors acting passively.

Cons

a. Savings deposits have been a source a cheap funds for banks. In addition, banks treat a large portion of savings deposits as 'core' deposits, which are used to finance long term asserts.
b. Should unhealthy competition result in increase in interest rate and the overall costs of funds, banks might be discouraged from maintaining savings deposits with small amounts due to the associated high transaction costs.
c. If savings deposits interest rate, declines markedly income flow to small savers/ pensioners may get affected adversely.
d. Some banks may introduce some complex products, which may not be so easily understood by savers. This strategy may result in increase in the mis-selling of saving bank products.

Q.3. Explain the impact of deregulation of Saving Banks Deposit Interest Rate.

Ans. Deregulation and its Impact

The discussion evoked wide ranging responses from a cross section of stakeholders, ranging from the suggestion that savings banks deposit interest rate should not be deregulated at all to the suggestion that it should be deregulated completely. The Reserve bank examined the suggestions on balance and it was felt that the time was appropriate to move forward and complete the process of deregulation of rupee interest rates. Accordingly, it was decided to deregulate the saving bank deposit interest rate effective October 25, 2011 subject to the following two consitions:

- First, each bank will have to offer a uniform interest rate on savings bank balance upto ₹ 100 thousand, irrespective of the amount in the account within this limit.
- Second, for saving bank balance over ₹ 100 thousand a bank may provide differential rates of interest, if it so chooses. However, there should not be any discrimination from customer to customer on interest rates for similar amount.

Since the deregulation of savings deposit interest rate, nine private sector banks, ten foreign banks and one cooperative bank have increased their savings deposits interest rate in the range of 100-500 basis points during the period so far.

Any unhealthy competition has not been seen amongst banks so far. This is because 15 SCBs, which have raised saving deposits rate, account for only 4.2 percent of aggregate deposits. However, these 15 banks witnessed above average growth in their savings deposits during the period so far. As a result, the share of these banks to total saving bank deposit of the banking system increased from 1.8 percent to 2.1 percent in the post deregulation period so far up to July 2012 and their contribution to the total growth of savings banks deposits stood at around 5 percent during this period.

UNIT

4

Banking System:
(a) Balance Sheet and Portfolio Management
(b) Indian Banking System

CHAPTER-13

Banking Structure in India by D. Subbarao

Q.1. What are the various banking sector reforms that have taken place in India since 1991?

Ans. Major Banking Sectors Reforms in India

(i) New banks licensed in private sector to inject competition in the system
(ii) FDI + FII upto 74% allowed in private sector banks
(iii) Listing of PSBs on stock exchanges and allowing them to access capital markets for augmenting their equity, subject to maintaining Government shareholding at a minimum of 51%. Private shareholders represented on the Board of PSBs.
(iv) Progressive reduction in statutory pre-emption (SLR and CRR) to improve the resource base of banks so as to expand credit available to private sector. SLR currently at 23% (38.5% in 1991) and CRR at 4% (15% in 1991).
(v) Adoption of international best practices in banking regulation. Introduction of prudential norms on capital adequacy, IRAC (income recognition, asset classification, provisioning), exposure norms etc.
(vi) Phased liberalisation of branch licensing. Banks can now open branches in Tier 2 to Tier 6 centres without prior approval from the Reserve Bank.
(vii) Deregulation of a complex structure of deposit and lending interest rates to strengthen competitive impulses, improve allocative efficiency and strengthen the transmission of monetary policy.
(viii) Base rate (floor rate for lending) introduced (July 2010). Prescription of an interest rate floor on savings deposit rate withdrawn (October 2011).
(ix) Functional autonomy to PSBs.

(x) Use of information technology to improve the efficiency and productivity, enhance the payment and settlement systems and deepen financial inclusion

(xi) Strengthening of Know Your Customer (KYC) and Anti-money Laundering (AML) norms; making banking less prone to financial abuse.

(xii) Improvements in the risk management culture of banks.

Q.2. What were the various post crisis regulatory reforms that took place across the world?

Ans. Post Crisis Regulatory Reforms

- The financial crisis exposed the risk posed by the Global Systemically Important Financial Institutions (G-SIFIs) as these were "too big to fail".
- Post-crisis, US, UK, European Union took initiatives (Paul A Volcker in US, Sir John Vickers Independent Commission on Banking in UK, Erkki Liikanen in the European Union) to recommend as structural reforms in the banking sector to build safeguards against instability.
- The Volcker Rule and the Dodd-Frank Act Wall Street Reform and Consumer Protection Act have brought significant changes to the financial system.
- The Volcker Rule separates investment banking, private equity and proprietary trading (hedge fund) sections of financial institutions from their consumer lending arms. Banks are not allowed to simultaneously enter into an advisory and creditor role with clients, such as with private equity firms. The Volcker Rule aims to minimize conflicts of interest between banks and their clients through separating the different types of business practices financial institutions engage in.
- The Independent Commission on Banking (Vickers Report) in UK has inter alia recommended ring fencing of UK banks, such that the ring fenced banks would be permitted to extend only retail and commercial banking services to limited clients including individuals and small and medium-sized organizations (SMEs) in UK.
- The Liikanen Report for the EU concluded that risky financial activities need to be separated from deposit-taking banks within the banking group, with the objective of making banking groups (mainly deposit-taking and providing financial services to the non-financial sectors in the economy) safer and less connected to trading activities.

Q.3. What were the various issues being faced by the banking sector in the economy as per Dr Duvvuri Subbarao?

Ans. The various issues enumerated by Dr. Duvvuri Subbarao are as follows:

Issue No. 1: Public vs. Private Ownership of Banks

- Abstracting from ideology, from a pragmatic perspective, both public and private banks have respective advantages and disadvantages.

Private ownership brings competition, professionalism and operational efficiency. Public ownership makes it easier to pursue social objectives such as mass banking, financial inclusion etc.

- Private banks have comparatively greater freedom in terms of recruitment, salary and compensation. On the other hand, PSBs are perceived to offer more job security, and consequently, employee turnover is lower.
- PSBs dominate the banking sector in India and will continue to be dominant in the foreseeable future. However, these banks require substantial capital to support growth.
- The critical question is whether the Government, given its limited fiscal space, can meet the enhanced capital needs of public sector banks under the Basel III capital regulations.

Issue No. 2: Consolidation of Banks

- Consolidation assumed significance after the introduction of financial sector reforms starting early nineties.
- Gained momentum after the Narasimham Committee – I (1991) put forward the broad pattern of the banking sector [3 or 4 large banks, 8 to 10 national banks, local banks and rural banks].
- Reiterated by the S.H. Khan Committee (1997), Narasimham Committee – II (1998), Raghuram Rajan Committee (2009), Committee on Financial Sector Assessment (CFSA) (2009) and Committee on Fuller Capital Account Convertibility (2006).
- All Committees viewed that restructuring of the banking system should be market driven based on viability and profitability considerations and brought about through a process of Mergers & Amalgamations.
- Since the first round of nationalization of banks in 1969, there have been a total of 41 mergers and amalgamations. Of these, 17 happened before the onset of reforms in 1991 and 24 after that.

Issue No. 3: Investment Banking

- Post sub-prime crisis, the US investment banking sector collapsed due to high leverage and severe maturity mismatches.
- Soon after, leading investment banks such as Morgan Stanley and Goldman Sachs converted themselves into bank holding companies.
- The term investment bank is not legally defined in India, and no entities are registered as such with SEBI.
- "Investment Banking" is commonly used to define entities that are into asset management, capital raising, trading in securities, portfolio management, merchant banking, underwriting, broking and those offering business and financial advisory services.
- Pure investment entities which do not have presence in the lending or banking business are regulated primarily by the capital market regulator (SEBI).
- Banks are subject to regulatory restrictions on their investments.

Why and how of investment banks

- Pure investment banks have a comparative advantage in corporate structuring and raising capital from the market. As Indian corporate go global, do we need pure investment banks in India to serve their sophisticated financial needs and advisory services?
- Will exclusive investment banks militate against development goals – priority sector lending, financial inclusion?
- Is Investment Banking under the proposed Non-Operative Financial Holding Company (NOFHC) a possible option?
- Need for more extensive debate on the pros and cons of exclusive investment banks in India.

Issue No. 4: Non-Operative Financial Holding Companies (NOFHC)

- There are three types of banking models prevalent around the world.
- Europe has adopted Universal Banking model. In the US, the predominant model is Bank Holding Company (BHC) or Financial Holding Company (FHC). Most other jurisdictions follow the Bank-Subsidiary model.
- India adopted Bank-Subsidiary model till the early 90s, and then moved on to the Universal Banking model.
- RBI had constituted a Working Group, under former Deputy Governor Shyamala Gopinath, in June 2010 to study the different holding company structures internationally and to indicate a roadmap for adoption of the holding company structure in India.
- The Working Group felt that a holding company structure would better enable oversight of financial groups from a systemic perspective.
- The Working Group had also recommended that there should be a separate statute for regulation of financial holding companies.
- New banks in the private sector would be set up under a Non-Operative Financial Holding Company (NOFHC).
- The need is to debate on whether a holding company structure is suited to the Indian banking and financial system.

Issue No. 5: Licensing Policy

- The RBI issues bank licences under section 22 of the Banking Regulation Act, 1949. The licence enables the bank to do banking and other financial services activities listed in the Banking Regulation Act.
- India follows a universal bank licensing regime.

Licensing policy for domestic private sector banks

- Pursuant to the recommendations of Narasimham Committee I in 1991, guidelines on new banks were released in 1993 with a minimum capital requirement of ₹1 billion. 10 new private sector banks were licensed
- Pursuant to Narasimham Committee II (April 1998) on Banking Sector Reforms, a new set of guidelines were issued in 2001 with a capital requirement of ₹3 billion. 2 new private sector banks were licensed.

- In February 2013, fresh guidelines for licensing of new banks were issued, inter alia permitting business/industrial houses to promote banks with a capital requirement of ₹5 billion.

Licensing policy for foreign banks

- At present, foreign banks operate in India as branches of the parent bank. Currently, permission for opening of branches by foreign banks in India is guided by India's commitment to WTO to allow 12 new branches in a year.

Development financial institutions

- Development Financial Institutions (DFIs) do not require a banking licence.
- Post-Independence, DFIs were established mainly to meet the demand for long term finance by the industrial sector.
- They had the benefit of low-cost funds through Long Term Operation (LTO) funds from RBI at concessional rates, funds from multilateral and bilateral agencies duly guaranteed by the Government. They were also allowed to issue bonds, which qualified for SLR status. For deployment of funds, they faced little competition as the banking system concentrated largely on working capital finance and almost totally yielded the term finance space to DFIs.
- Post-financial sector reforms in the 1990s, the privileged access to low-cost funds was withdrawn forcing DFIs to raise resources at market-related rates. On the other hand, they had to face competition in the term finance space from banks offering lower rates. The change in operating environment, combined with high accumulation of non-performing assets, due to a combination of factors put financial stress on DFIs. Today, DFIs are very marginal players in the financial sector.
- Pursuant to the recommendations of the Khan Working Group on Harmonizing the Role and Operations of DFIs and banks, a Discussion Paper was prepared outlining the issues.
- A broad policy framework was outlined in the Mid-Term Review of Monetary and Credit Policy of 1999–2000 of RBI indicating that the desired path was towards universal banking. DFIs were given the option to transform into a bank. The operational guidelines for enabling a DFI to convert to a universal bank were issued in 2001.
- Is it necessary now to review our commitment to universal banking? Should we go in for differentiated licensing?

Issue No. 6: Subsidiarisation of Foreign Banks

- At present, foreign banks operate in India as branches of the parent banks.
- Post crisis lessons support domestic incorporation of foreign banks i.e. subsidiarisation.
- Main advantages of local incorporation are: – Ring fenced capital within the host country – Easier to define laws of which jurisdiction apply –

Better corporate governance, local board of directors – Effective control in a banking crisis and enables host country authorities to act more independently as against branch operations – Regulatory comfort.

- Potential down side risk could be domination of the domestic financial system by Wholly Owned Subsidiaries (WOS) of foreign banks.

Q.4. Give arguments in support and against the consolidation of banks.

Ans. Arguments in support of consolidation

- Higher capital base after consolidation will facilitate increased lending activity and faster GDP growth.
- Boost infrastructure financing from the perspective of enhanced exposure limits for single and group borrowers.
- Meet the banking service demands of Indian corporates, both at home and globally.
- Cost benefits for banks due to economies of scale and economies of scope such as centralised back office processing, elimination of branch overlap and duplication of administrative infrastructure, better manpower planning, optimum funds management, consolidation of operations, savings in IT and other purchases.
- Consolidation will afford focused supervision.
- Larger size means wider and richer experience in financial inclusion.
- Possible to bring larger collective experience to identify successful models.
- International acceptance and recognition.
- Better risk management.

Arguments against consolidation

- Lead to complexity and Too-Big-To-Fail (TBTF) or Too-Connected-To-Fail (TCTF) moral hazards with adverse impact on financial stability.
- Regulatory issues: Significant big banks could resort to monopolistic practices that may result in unequal competition and distortive and even predatory behaviour in the market. Such practices could also blunt the monetary transmission and market mechanism for efficient allocation of resources.
- Could pose problems such as technology migration issues, customer attrition, implementation costs, HR issues (viz. seniority, salary, transfers, promotion, parity in perks etc.) and litigation, will not be able to provide personalized services provided by small banks.

Q.5. An issue related to the debate on consolidation in banking sector is the merits and demerits of large and small banks. In the light of this statement, lay down the various merits and demerits of large and small banks.

Ans. In support of large banks

- Large banks can exploit economies of scale and scope leading to economic efficiency.

- Large banks will have the capacity, resilience and innovative zeal to pursue financial inclusion. They will bring diverse experience to bear on local initiatives.
- Large banks can potentially become significant global players and thereby give a global reach to Indian corporates.
- Large banks with huge capital base can better meet the huge funding requirements of the infrastructure sectors.

Against large banks

- Large banks can become too-big-to fail, leading to moral hazard problems.
- Proliferation of non-core activities, either in the books of the bank or through off balance sheet vehicles such as investment banking, securitisation, derivatives trading, etc. could pose significant systemic risk because of their complexity and opacity.
- Large banks can use power derived from their information monopoly to suppress competing institutions and markets.
- Large banks may dilute the benefits of competition.

In support of small banks

- Small banks have a comparative advantage in the supply of credit to small business units, small farmers and other unorganized sector entities, thereby furthering the cause of financial inclusion.
- Small local banks are more nimble and flexible. They can effectively cater to unbanked areas and meet localised needs. Can be more efficient in financial inclusion.
- Small banks with limited area of operation would require less infrastructure, staff and hence the operational expenses would be low.
- Failure of a small bank will not have any systemic impact and resolution would be easier.

Against small banks

- Small banks are potentially vulnerable to sector concentration risk. For instance, community banks in the US suffered losses due to their excessive reliance on lending to commercial real estate.
- Small banks are vulnerable to geographic concentration risk from the local economy and hence require higher level of CRAR.
- Small banks are not big enough to finance big investments, including infrastructure.
- Small banks are prone to local influence capture.
- A large number of small banks put pressure on the supervisory resources of the central bank.

Q.6. Differential licensing is another issue being faced by the banking sector in India. In the light of the same, lay down the various advantages and disadvantages of the same.

Ans. Arguments in support of differentiated licensing

- Specialized entities have expertise in risk assessment and structuring of infrastructure finance.
- Core competency could be better harnessed leading to enhanced productivity in terms of reduced intermediation cost, better price discovery and improved allocative efficiency.
- With differentiated licences, we can get around issues of conflict of interest that arise when a bank performs multiple functions.
- Customised application of supervisory resources according to the banking type could result in optimisation of scarce resources.

Argument against differentiated licensing

- Given the extent of financial exclusion in India, is it advisable to create a regime where some banks are freed of the obligation of financial inclusion?
- A universal bank will be able to cross subsidise across sectors to optimize utilization of resources and ensure better profitability of banks.
- Will specialized banks could be prone to concentration risk because of narrower business models.

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CHAPTER-14

Implications of Basel III for capital, Liquidity and Profitability of Banks by B. Mahapatra

Q.1. What were the causes of the Global Financial Crisis? What were its consequences?

Ans. The major causes of the Global Economic Crisis are as follows:

- The Crisis has been attributed to the persistence of global imbalances. It is often said that the solution to a previous crisis becomes the causes for the next crisis. Asian crisis of 1997-98 taught the Asian countries to build a war chest of foreign exchange reserves to fight against the attack on the country's currency.
- The huge amount of capital that flowed from the emerging economies the advanced economies, depressed yields in the financial markets of advanced economies. In the search of yield to improve returns on investments, market players indulged in financial innovation and engineering. They developed structural financial products like securitization and re-securitization based on sub-prime mortgage backed securities (MBS), Collateralized Debt Obligations (CDOs) and CDOs squared etc.
- Another cause of the crisis was attributed to the socio-economic and political factors in the USA. Dr. Raghuram Rajan in his book 'fault lines' has highlighted that the income of average American was stagnant for quite some time and poverty and inequality were increasing. The politicians could not improve the income of the people but devised policies to encourage them to fulfill the dream of owning a house by taking loans from banks and financial institutions at the prevailing low interest rates. Thus, the birth of the toxic product 'subprime mortgage' took place.
- At the micro level, the business models of banks and financial institutions also contributed to the fermentation of the crisis. The 'orginate – to – distribute' model of sub-prime mortgage did not create any incentive for banks for better appraisal and supervision of such mortgage.
- The crisis has also been attributed to the inadequate corporate governance and inappropriate and perverse incentive system in the financial sector. There were several weaknesses in corporate governance in the run upto crisis.
- Banks entered the crisis with inadequate capital. The Basel requirement of common equity was a low as 2 percent of Risk-Weighted

Assets (RWAs). Banks did not calculate the risk based capital properly. The Basel capital rules favoured lower capital for the trading book and higher capital for the banking book.

- The growth of the 'shadow banking' system in the run up to the crisis was unprecedented. One estimate suggests that the size of shadow baking system was also almost three times the formal banking system. They coupled with their dependence on the wholesale funding market compounded the crisis.
- Supported by unprecedented innovation and engineering the financial sector become too big in relation to the real economy, but the regulatory and supervisory system was found wanting . The regulators and supervisory did not look at system wide build-up of risk. They reposed faith in free markets and believed in self-correction of market excesses.

Consequences

- The inter correction between banks in the financial system propagated it into a systematic crisis. Banks deprived of liquidity, started to deleverage and stopped leading to the real sector. The financial crisis, thus become a full scale economic crisis. Since banks are essential to an economy and their failure affects the real sector, particularly when they are too big, the public authorities had no alternative but to rescue the banks by injecting capital, guaranteeing their liabilities and purchasing their toxic assets.
- The amount of support to the Systematically Important Financial Institutions (SIFIs) during the crisis was about 25% of GDP. The Government debt of these countries is projected to rise by 40% of GDP during 2008-15. Cumulative output loss in these countries is estimated to be about a quarter of their GDP.

Q.2. Write a note on the micro- prudential elements of Basel III.

Ans. The Basel committee published its Basel III rules in December 2010. The objectives of Basel III are to minimize the probability of recurrence of financial crisis of such magnitude as occurred in 2008.

Micro – Prudential elements of Basel III

***(i)* Definition of capital.** The existing rules require a capital adequacy ratio of 8% to RWAs. Rules allow Tier-1 Capital at a minimum of 4% of RWAs and Tier-2 capital comprising of debt instruments of medium term maturity of atleast 5 years at a maximum of 4 percent of RWAs. Tier-3 capitals with short maturity of atleast 2 years can also support Tier-2 capital to some extent. Common equity in Tier-1 capital can be as low as 2 percent of RWAs.

- Innovative features such as stop up option are allowed in capital instruments. The regulatory adjustments to capital are affected both at Tier-1 and Tier-2 capital in equal measures.
- The existing definition of capital is thus, flawed. Capital is not only deficient in quality of equity capital, but also contains elements of debt which do not support the bank as going concern.

***(ii)* Enhancing risk coverage of capital**

- Banks must determine their capital requirement for counterparty credit risk using stressed inputs. Banks will be subject to a Credit Valuation Adjustment (CVA), Capital charge to protect themselves against the potential market losses associated with determination in the credit worthiness of the counterparty. The CVA is a measure of diminution in the fair value of a derivative position due to determination in the credit worthiness of the counterparty.
- Thus, the Basel III framework will have enhanced risk coverage. This is necessitated due to the excessive exposures of banks to derivatives products, whose risks were not captured comprehensively under Basel I or Basel II framework.

***(iii)* Leverage ratio**

Pre-crisis, the leverage of some of the internationally active banks were at high level of about 50 times of the capital, even though such banks complied with the capital adequacy requirement. The risk of leverage, particularly when built up with short term borrowings, and the consequent impact of deleveraging during periods of stress by withdrawing credit of the real sector, accentuated the crisis. The Basel committee has, therefore introduced a simple, transparent, non-risk based leverage ratio as a supplementary 'backstop' measure to the risk based capital requirement.

***(iv)* International liquidity framework**

Despite liquidity being central to the functioning of financial markets in general and banks in particular, liquidity regulation did not receive adequate attention until recently. There were no internationally agreed and harmonized liquidity standards. The regulation of banking sector during the past two decades largely revolved around Basel I and Basel II capital regulations. The financial crisis has highlighted he importance of robust liquidity risk management by banks.

Q.3. What are the Macro prudential elements of Basel II?

Ans. The changes in definition of capital and enhancement of capital requirement for trading book under Basel II.5 inclued mentions that would raise the collective resilience of banks and would in a way contribute to reduction in systematic risk. However, in extreme situations this alone would be inadequate to ensure the financial stability. Therefore, ensuring the financial stability would seek to address issues relating to systematic risk through various measures including:-

(i) **Leverage ratio.** It has the objective of protecting against system wide build-up of leverage that results in de-stabilishing unwinding process during stress. It also protects against perverse incentive to pile on 'low risk' assets, which may not remain as such under extreme situations producing systematic risk.

(ii) **Capital conservation Buffet.** Drawing lessons from the crisis that banks were distributing earnings even during periods of stress, Basel III prescribes that a capital conservation buffer of 2.5 percent of RWAs, comprising common equity Tier-1 capital, over and above the minimum common equity requirement of 4.5 percent and total capital requirement of 8 percent, needs to be built up outside period of stress.

(iii) **Counter Cyclic Capital Buffer.** The counter cyclic capital buffer is aimed at ensuring that banking sector capital requirements take account of the macro-financial environment in which banks operate. National authorities will monitor credit growth and other indicators which may signal a build-up of system wide risk. Banks will have to ensure that their countercyclical buffer requirements are publically disclosed at least with the same frequency as their minimum capital requirement.

(iv) **Addressing procyclicality of provisioning requirements.** In order to address the procyclical issues, the Basel Committee is working closely with the International Accounting Standards Boards towards an expected loss approach to loan loss provisioning instead of the current practice of the incurred loss approach.

(v) **Addressing Interconnectedness.** Interconnectedness among banks, especially the large ones, is sought to be addresses through various measures such as enhanced regulatory framework for global systematic important banks (G-SIBs), prescription of higher asset value correlation under the Internal Ratings Based (IRB) approach for exposures to large financial institutions with assets of US $ 100 billion and with unregulated institutions.

(vi) **Addressing too-big-to-fail problem.** The Basel committee will group GSIBs into different categories of systematic importance based on the score produced by the indicator based measurement approach. GSIBs will be initially allocated into four buckets based on their scores of systematic importance with varying levels of additional loss absorbency requirements applied to the different buckets based on policy judgement derived from various empirical analysis.

(vii) **Addressing reliance on external credit ratings.** To reduce the reliance on external ratings of the Basel II framework, measures have been proposed that include requirements for bank to perform their own internal assessment for externally rated securitization exposures, the elimination of certain 'cliff effects' (sharp increase in applicable risk weights) associated with credit risk mitigation practices, and the incorporation of key elements of the International Organizations of Securities Commissions (IOSCO) code of conduct fundamental for credit rating agencies into the committees eligibility criteria for the use of external rating in capital framework.

(viii) **Transition and phase-in.** In view of the large scale reforms and their impact, Basel III will be phased in and implemented over a long period of time, starting from January 1, 2013 to January 1, 2019. Capital instruments that no longer qualify for non-core Tier-1 capital or Tier-2 capital, will be phased out over a ten year period starting from 2013. The final calibration of liquidity ratios and leverage ratio will be made after further quantitative impact study and observation.

Q.4. What are the Macroeconomic impacts and implications of Basel III?

Ans. Assuming that banks may be able to raise the increased capital requirement under Basel III from the market, questions have been raised as to its impact on economic growth and profitability of banks. In general, the increase in equity capital requirement is likely to increase the weighted average cost of capital. Banks would partly pass on the increase cost of capital to the borrowers as higher lending rates. Thus the equilibrium lending rates are likely to be marginally higher and as consequences; credit growth could be a little lower than in the last few years.

Implications of Basel III

In general, higher capital and tighter liquidity requirement under Basel III will increase the capital requirement in Indian Banks, as in other countries. However, the actual impact would vary in different countries depending upon the amount of exposures impacted under Basel III, existing capital structure of banks, i.e. extent of reliance on non-common equity capital elements existing rules relating to regulatory adjustments, credit growth experienced by the economies and existing credit to GDP ratio. The impact would depend upon sensitivity of lending rates to capital structure of banks and sensitivity of the credit growth to the lending rates.

Capital

Under Basel III, the trading book exposures, especially those having credit risk and re-securitization exposures in both banking and trading book attract enhanced capital charges. The CVA for OTC derivatives will also attract additional capital. Since, the trading bank and OTC derivatives portfolio of Indian banks are very small and they are not exposured to re-securitized instruments, impact of these changes in capital regulation on their balance sheet is insignificant.

- The average Tier-1 capital ratio of Indian banks is around 10% with more than 85 % of its comprising common equity. The regulatory adjustments will reduce the available equity capital only marginally for various reasons.
  - First, items such as goodwill, Deferred Tax assets (DTAs) etc., are already deducted from Tier-1 capital for Indian banks.
  - Secondly, some other items are subject to deduction such as mortgage servicing rights, treasury stocks, gains on account of fair valuation of liabilities which exists in India.
  - Thirdly, reciprocal cross holdings of capital and other investments in the capital of banking.

- Financial insurance entities are insignificant because these investments are restricted due to existing regulatory limits. Thus, Indian banks will have high common equity capital ratio even under Basel III which will stand them in good stead.
- Bank credit to GDP ratio of India is around 55 percent which is relatively lower as compared with that in many other countries. However, the past trend shows that it is likely to increase in the future as the credit penetration in the economy has been steadily increasing. The Indian economy is also expected to grow at an annual growth rate of 8-9 % for next 10 years or so.
- Government of India has progressively reduced its shareholdings in public sector banks and in case of many of these banks, the government shareholdings' is close to 51 percent. This means that in future the Government of India would provide the matching contribution to meet the additional equity requirement of banks, in contrast to the past of additional equity requirements to be met from the market by letting its shareholdings' fall from 100 percent to 51 percent.

Liquidity issues relating to SLR and LCR

In India, banks are statutorily required to hold minimum reserves of high quality liquid assets. Currently, such reserves are required to be maintained at minimum of 24 percent of net demand and time liabilities. Since these reserves are part of the minimum statutory requirements. The RBI faces dilemma whether and how much of these reserves can be allowed to be reckoned towards the LCR. If these reserves are not reckoned towards the LCR and banks are to meet the entire LCR with additional liquid assets in total, assets of banks will increase significantly.

Profitability

Basel III requirement will have a substantial impact on profitability. One such study conducted by Mckinsey & Company suggests that all other things being equal, Basel III would reduce Return on Equity (ROE) for the average bank by about 4 % points in Europe and about 3 % points in the United States. The retail corporate banks will be affected primarily in specialized lending and trading finance. Investments banks will find several core business profoundly affected, particularly trading and securtisation businesses. Banks are already seeking to ROE in the new environment by balance sheet restructuring and business model adjustments could potential mitigate upto 40 % of Basel III's ROE impact, on an average.

Q.5. What will be the benefits if the Basel III norms are successfully implemented?

Ans. Benefits of Effective Implementation of Basel III

- Effective implementation of Basel III will demonstrate to regulators, customers and shareholders that the banking system is recovering well from the global financial crisis of 2008 and has been developing resilience to future shocks. A smooth implementation will also

contribute to a bank's competiveness by delivering better management insight into business, allowing it to take advantage of future opportunities.

- Sometime a question is asked whether it is appropriate for the countries which neither contributed to the crisis nor have exposures to the toxic assets need to implement Basel III. The answer is clear 'yes'. The reason is that is the present day globalized world, it is difficult for any local financial and economic system to completely insulate itself from the global economic shocks. The indirect effects of events happening in any part of the world can very well be transmitted throughout the world through various channels.
- Indian banks should minimize cost by retaining maximum amount of earnings in the initial year of implementation even though they might have the capital requirements at that point in time with smaller retentions. This would avoid costs involved in fresh issuances. Indian banks are also comfortably placed in terms of liquidity requirement as they have a large reservoir of liquid government securities to meet the SLR stipulation. The RBI is considering how much of it can be allowed to be reckoned towards compliance with the LCR. It is also expected that as the proportion of equity in the capital structure of bank rises, it would reduce the incremental costs of raising further equity as well as non-common equity capital.
- The RBI has issued the draft guidelines on capital and liquidity rules of Basel III on December 30, 2011 and February 22, 2012 respectively. The Reserve Bank's approach has been to adopt Basel III capital and liquidity guidelines with more conservation and at a quicker pace.

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UNIT

5

Central Banking an Monetary Policy

CHAPTER-15

Baye and Jaysen
(Chapter 19 : An Introduction to Monetary Policy)

Q.1. Write a short note on policy targets and instruments.

Ans. The government can influence the economy in two major ways:

(i) When Government changes government spending, taxes and transfers, *this is called a fiscal policy action.*

(ii) When government changes money supply, *it is called a monetary policy action.*

All actions that a government undertakes are to achieve an end goal.

- Variables the policy maker can control are known as policy instruments.
- Variables that represent the policy maker's goals are called policy goals or targets.
- Policymakers can directly control the policy instruments but not policy goals or targets.
- Instead of directly aiming instruments at a target, the policymaker might adopt an intermediate target. It lies between the instruments of policy and the final target.
- In monetary policy discussions, the instruments are often such variables as the sale or purchases of government bonds via open market operations, while the final target might be '4%' unemployment rate, 3% rate of output growth, or a 5% inflation rate. The linkage between instruments and final targets is long and complex, making it convenient to describe policy via an intermediate target such as money stock.
- An operating procedure is a combination of intermediate targets and procedures for using the policy instruments to achieve the targets.
- Monetarists might choose a particular level of the money supply M1 as an intermediate target and use certain open market operations to achieve it.

Q.2. Explain the major monetary policy goals or targets.

Ans. The four major monetary policy targets are enumerated below:

(i) **Economic Growth.** Growth rate of real GDP, real personal income, or even the size of investments in capital structures and equipments that will lead to future growth.

(ii) **Price Stability.** The price stability entails both a low inflation rate-perhaps zero and a stable inflation rate. So, that the inflation rate is not just jumping from 2 to 4 to 6 percent and back to 2 % in successive months.

(iii) **Stabilization of business cycle.** The policy marker want to counter the effects of business cycle especially the rise in unemployment and the fall in output during recessions. Policy action aimed at counteracting business cycle influences on the economy is called a countercyclical policy.

(iv) Set of **all other goals** not contained in the first three categories are included in this fourth category. One such goal is Interest Rate Stability. Another variable is exchange rate because exchange rate influences exports and imports and hence the trade balance.

Apart from these macroeconomic goals, there might be some financial sector goals since the Federal Reserve is charged with maintaining stability in this sector.

Q.3. Explain the various monetary policy instruments and how they operate towards achieving the monetary policy targets.

Ans. The following are the major monetary policy instruments that are used by the Central Banks:

(a) **Open Market Operations.** Open Market is a purchase or sale of government securities by the RBI/ Central bank. An open market purchase occurs when the RBI buys the securities, thereby increasing the monetary base in the economy while a sale occurs when RBI sells securities and thereby decreases the monetary base.

(b) **Discount Rate and Discount Window Policy.** The discount rate is the interest rate RBI charges commercial banks and other depository institutions to allow them to borrow reserves directly from RBI. Raising the discount rate tends to reduce discount borrowing. Also, RBI regulates the interest rate and amount borrowed thus imposing both price and quantity controls on discount borrowing.

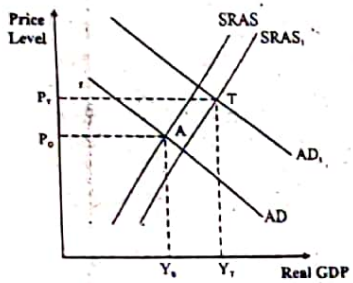
(c) **The Required Reserve Ratio.** The required reserve ratio is a powerful but imprecise policy instrument. Since small changes in the reserve ratio can have large effects on the money multiplier and the money supply and large short run effects on bank profitability and stability of the financial sector, it is seldom used a s a macroeconomic policy instrument.

(d) **Selective Credit Controls.** RBI has the ability to alter selective credit controls. These are price ceiling and price floors on interest rates in selected financial markets or quantity restrictions in selected markets.

Q.4. Can a single monetary instrument achieve all the monetary targets set by the Reserve Bank? Explain with the help of diagrams.

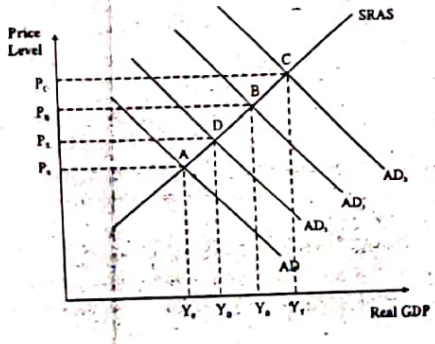
Ans. No, a single monetary instrument cannot achieve all the targets set by RBI.

- To achieve a certain number of targets are required at least the same number of instruments as targets. Moreover, if the targets are distinct, the instruments must exert distinct influences on them.
- The impact of this on the Fed's ability to achieve targets is illustrated below.



- The economy is initially at point A where Ad and SRAS intersects with price level of Po and real output of Yo. We assume that policymaker has two targets; one for the price level and one for the real output.
- The target for the price level is P_T and the target for output is Y_T as indicated by point T.
- It requires shifting aggregate supply to right, from SRAS to SRAS and shifting aggregate demand to the right from AD to AD
- Thus, in this example two instrument: one that changes aggregate demand and one that changes aggregate supply are sufficient to achieve two targets.

Now, suppose central banks can only change the aggregate demand but cannot change the aggregate supply. How will the central bank reaches the target level?



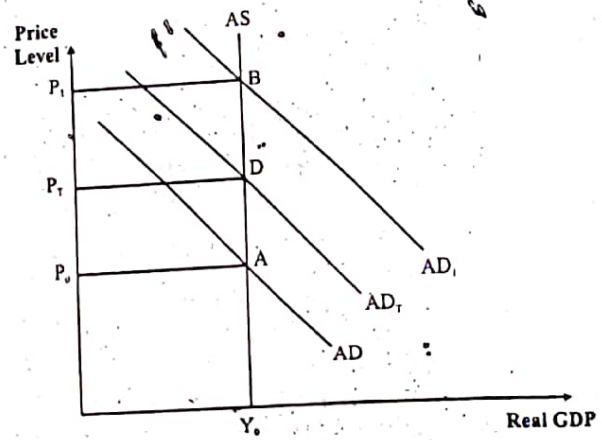
- As you can see no shift in aggregate demand alone, with aggregate supply fixed, will move the economy from point A to point T.
- The RBI can achieve targeted level P_T by shifting AD to AD_3 but output level will be Y_D at this point, which is below the target level of Y_T.
- The RBI can achieve Y_T by shifting AD_3 to AD_2 but the equilibrium at point C achieves the output target with a price level Pc that is above the targeted level.
- Finally RBI may choose equilibrium at point B where price level is P_B and output level is Y_B.
- Here both price and output targets are missed but the output miss is less than at point D, and the price level miss is less than at point C.

So this explain Tinbergen's claim that it is not merely the number of instruments that is important, but the number of instruments exerting independent effects on the target variables have an important role to play.

Q.5. Explain the link between money and policy targets.

Ans. While RBI should change the money supply to deal with economic upheavals, it is important to keep the underlying economic model in mind.

Long Run:

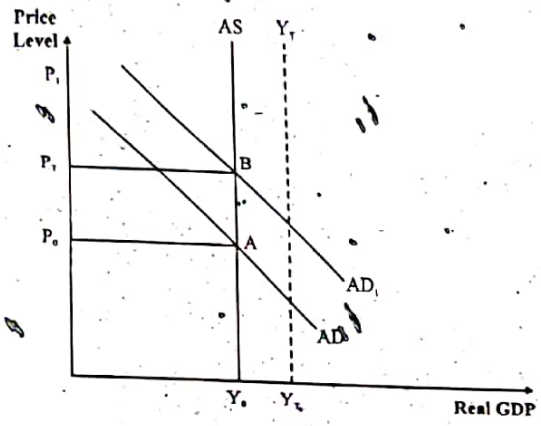


This figure illustrates the achievement of a price level target in the long run model. Remember that increases in the money supply shift AD to the right and reduction of money supply shifts the AD curve to the left.

- The price level target is P_T and the economy starts in equilibrium at either point A, with aggregate demand AD, or point B, with aggregate demand AD_1.
- At either A or B equilibrium outpour is Yo.
- If the initial equilibrium is at point A, aggregate demand must be increased to AD_T to achieve the target price level, P_T, whereas if the

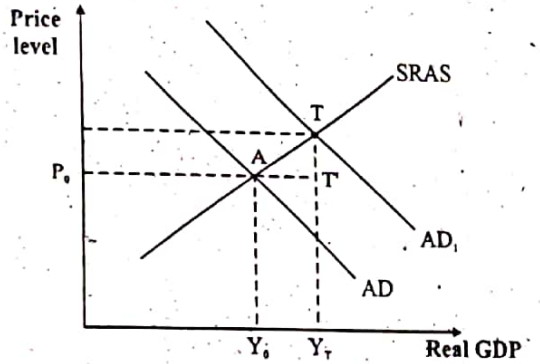
initial equilibrium is at point B, aggregate demand must be decreased to AD_T to achieve the target level

The RBI has no control over long run aggregate supply curve so it cannot change the output or cannot achieve higher output level. Hence, the AS curve is vertical.



Short Run:

In the short run AS is not vertical. It is depicted as below:



- Here we begin with equilibrium at point A, with price level Po and output Yo. The target level of output is Y_T.
- Now the RBI can increase the money supply, thereby shifting the aggregate demand to the right and moving the equilibrium to point T, where output equals the target Y_T.
- SRAS is influenced by the fact that input prices are held constant and the level of input prices is determined largely by expectations about the price levels.

Achievement of Targets:

When workers and firms expect a rising price levels, they are more likely to agree to a rising nominal wage rate.

- If there are two targets, Y_T and Po, the target of policy is the point labeled T.
- The RBI cannot achieve both Y^T and Po by manipulating the money supply and hence, aggregate demand.
- In this case, the RBI faces a choice between point A, where the price level target is achieved but the output target is missed and Point T, where the output target is achieved but the price level target is missed or some point on the line segment AT on the aggregate supply curve, where both targets are missed by some amounts smaller than the largest miss at A or T.

Q.6. What are Intermediate Targets? Explain the various intermediate targets that the RBI has adopted.

Ans. Intermediate targets are targets that the RBI attempts to achieve because doing so will help attain final policy targets. They are aimed at ensuring better chances of hitting the final target.

- Issues like the unemployment rate goal, the output growth goals, or the inflation rate goal are debated over as goals for intermediate targets.
- Intermediate targets provide timely information on the state of the economy, and the RBI's success at achieving those targets is useful information for RBI.

The properties of intermediate targets are as under:

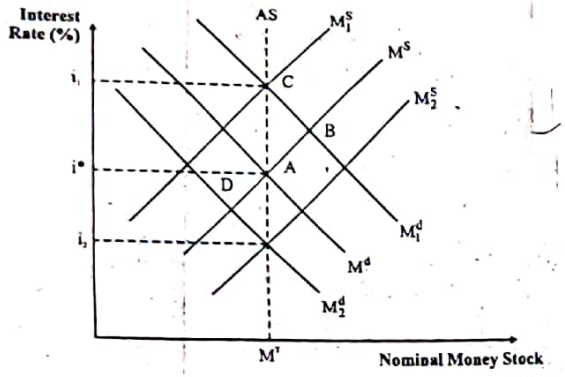
- Intermediate target policy must be consistent with RBI's final goals for policy.
- The intermediate target must be accurately measureable on timely basis.
- The intermediate target must be controllable so that the RBI can actually hope to achieve it, or at least move in the direction of achieving it.

Money aggregate as an intermediate target

Consider a situation in which RBI wants the inflation rate to be 4 percent and expects real GDP to grow at 3 percent. Nominal GDP would grow at 7 percent. The RBI might expect the nominal interest rate to be fairly stable at 6 percent, a 2 % real interest rate and 4 % expected inflation rate.

Real money demand would grow at the rate of real GDP growth, 3 percent and demand for nominal money balances would grow at the rate of nominal GDP growth, 7 percent. If all this worked out as expected, velocity would be stable, showing no growth or decline over the year.

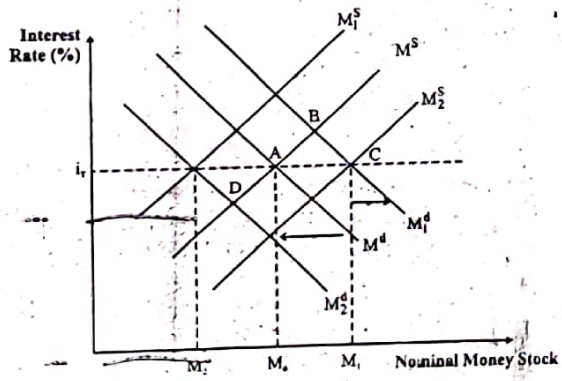
With these goals and expectations the RBI might adopt an intermediate money target of 7 percent more money than last year.



Notice that the money demand and supply curves are drawn with the nominal money stock on the horizontal axis. Increases in the price level will shift the money demand to the right and vice-versa for decreases in the price level. Once the RBI adopts an intermediate target, it manipulates its policy instruments to keep the money supply at intermediates target level. If money demand increases from M^d to M^d_1, the equilibrium tends to change from point A to point B, with a higher equilibrium money stock. The RBI will counter this by reducing money supply to M^s_1, changing the equilibrium to point C.

Interest Rates As An Intermediate Target

Now, suppose RBI wants 4 % inflation, expects 3 % real GDP growth and expects the nominal interests to be 6%. Again money demand is expected to grow at the rate of nominal GDP growth, 7 %. Instead of worrying about money growth, the RBI decided to adopt an intermediate target of 6% interest rate. As long as the RBI's forecast of money demand is accurate, this interest rate will result in a quantity demanded of money that is 7 % greater than last year's money stock.



- The equilibrium is at point A, the intermediate interest rate target will achieve interest rate of L_T and a money stock of M_0.
- However, if money demand increases to M^D, the equilibrium will tend to shift from point A to point B, with a rise in interest rate.
- In response the RBI will increase the money supply, moving the equilibrium to point C, where the interest rate is L_T but the nominal money stock is M_1.
- Thus, the intermediate interest rate target is maintained at the cost of an increase in the money stock.
- Similarly, a fall in money demand to M_2^d would require a decrease in the money supply to M^s_2 to maintain interest at the target level at point D, but as a result the money stock would fall to M_2.

Q.7. Explain the pros and cons of interest rate and money as intermediate targets of monetary policy.

Ans. The two cases with their pros and cons have been explained as below:

Case 1:

(i) For Intermediate Interest Rate.

- One important effect of interest rates is that on consumption and investment demand, two large components of aggregate demand. Increases or decreases in the interest rate affects these components and hence lead to shifts in aggregate demand, resulting in changes to both the price level and the level of output in the short run. Intermediate interest rate targets hold the interest rate constant and tend to reduce variation in consumption and investment due to interest rate changes.
- In addition, keeping the interest rate stable reduces the impact of changes in money supply demand on real GDP and the price level. A change in the interest rate shifts the aggregate demand. Thus, variations or instabilities in money demand translate in to movements in the price level and real GDP.

(ii) Against Intermediate Interest Rate Target.

- If consumption or investments demand increases for reason other than interest rate changes, the intermediate interest rate target will actually exacerbate the effect on aggregate demand.
- Intermediate interest rate target tends to take on a life of their own, becoming a final target instead of an intermediate target. Because many voters favour low interest rates, any move by RBI to raise its intermediate interest rate target is likely to incur wrath of voters.
- The third argument is that interest rate targets cannot be maintained indefinitely. Basically, it is based on the fisher equation and the idea is that in the longer run, the real interest rate is determined by real factors in the economy that the Fed cannot control. Because the nominal interest rate equals the real rate plus the expected inflation rate, any successful long run intermediate interest rate target must

imply a stable expected inflation rate at a rate implied by the interest rate target and the real interest rate.

Case 2:

(i) For Intermediate Money Target

- An intermediate money target allows the interest rate to rise in response to shifts in investment demand or consumption demand not caused by interest rate movements, thus reducing fluctuations in aggregate demand from those causes.
- An intermediate target is less likely to take on aspects of a final target, because voters are not very concerned about the size of aggregate money stock.
- Finally there are no reasons to thin that the RBI will be unable to achieve an intermediate money target even in the long run.

Causes against an intermediate money target

- Choosing among the alternative money aggregate such as M1, M2 and M3 and even these definitions change over time. There is considerable debate over which should be chosen as the aggregate to target. The various measures often do not indicate that policy is moving in the same direction.
- The second argument against intermediate money targets is that they can lead to much interest rate variability.

Q.8. Write a note on the Central Bank Operating Procedures.

Ans. The central bank operating procedure operates as follow:

(i) The Central Bank sets policy targets to be achieved such as increase in Real GDP, reduction in unemployment rate, reduction in inflation rate etc.

(ii) It then decides the policy instruments to be used to achieve these targets such as open market operations, discount window policy, reserve requirements etc.

(iii) In order to achieve the targets, the bank sets operating targets and intermediate targets. An operating target is an immediate target of policy – a target for a variable the RBI can definitely control on a daily or weekly basis, such as the category of reserves or a short run interest rate.

(iv) These operating targets work towards the achievement of intermediate targets related to money stock, interest rate, price level etc. which finally help in the achievement of final targets.

Q.9. What are the problems in Monetary Policy making?

Ans. These includes the time lag between economic events that call for a policy response and the eventual response of the macroeconomic, as well as problems caused by conflicting goals held by a single policy maker and even conflicts among policymaker.

1. Lags. There are number of sources of lags between the occurrence of an event that brings forth a policy response and the eventual response of the economy. *These lags are called implementation lags and effectiveness lags.*

(a) Implementation lags. Lags occur between the time that policy action is needed and the time the action occurs. Such lags are called implementation lags and can be subdivide into three categories.

(i) ***Information lags.*** Lags in the availability of information about the state of the economy.

(ii) ***Recognition lags.*** Lags in the recognition by the monetary policy maker that a policy action is needed, based on the information available to it.

(iii) ***Legislative Lags.*** Lags in the enactment of the appropriate legislation needed for a policy action to occur.

Even after the data becomes available, lags occur in the policy maker's recognition of the state of the economy. These recognition lags are compounded by the fact that some data arrive monthly while other data arrive only quarterly. Sometimes it is clear that output has fallen or that the price level has increased, but other times the data gives conflicting messages.

(b) Effectiveness Lags. An effective lag is the time between when a policy action is made and when the action results in changes in economy. Sometimes it takes many moths for a policy action to have the desired effect, and these months make up the effectiveness lag.

(i) **Instruments instability** can arise when a change in the instrument affects the targeted variables over a number of future periods.

(ii) **Inaccurate macroeconomic models.** Policy decisions that appear correct based on a particular macroeconomic model may turn out badly because the model used to formulate the policy is only an approximation of reality and perhaps a poor one at that. This gives policy maker another reason to move slowly since, gradual moves will not lead to catastrophes and can be reversed if a problem occurs.

(iii) **Conflicting goals.** We have seen how price level goals and output goals cause conflict when a change in aggregate supply occurs, since the policy action that achieves the price level target exacerbates the failure to achieve the output target and vice-versa.

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CHAPTER-16

Jadhav (Chapter 9.2, 9.3 except 9.3.7)

Q.1. What are intermediate targets?

Ans. The RBI now monitors a set of macroeconomic indicators for the process of monetary policy formulation, having formally switched to a multiple indicator approach in April 1998 from a monetary targeting framework. Apart from money supply, which remains an important information variables the central bank's information set now spans a number of macroeconomic variables such as interest rates or rate of returns in different markets along with such data as an currency, credit extended by banks and financial institutions, fiscal position, trade, capital flows inflation rate exchange rate, refinancing and transactions in foreign exchange available on high frequency. These are juxtaposed with output data for drawing policy perspectives. It is in this context that the Chakravarty committee recommended a monetary targeting framework to target an acceptable order of inflation, in line with output growth (RBI, 1985). Given a reasonably in a reasonably stable relationship between money, output an prices the reserve bank could estimate the money supply necessary to target an inflation rate through a money demand function.

$$(\Delta M/M) = \alpha(\Delta Y/Y) + \beta(\delta P/P)$$

- Where α is the income elasticity of demand for money which was estimated initially at 1.8.
- β is price elasticity of demand for money approximately unity in line with the assumption of lack of money illusion.

Q.2. Mention the various tools of regulating monetary policy in the economy.

Ans. Money targeting

The case for stable money demand moreover is buttressed by the fact that the velocity of money continues to be reasonably stable. The M_3 velocity has, in fact continued to trend downwards, in line with the long term trends, suggesting that the process of monetary depending is still not complete. Financial innovations, once they are sufficiently deep, should enable a smaller money stock to support a larger nominal demand and induce an increase in the income velocity of money which was actually a case for a brief period in the mid-1990s. The room for doubt arises by the fact that is it is not very clear if breaks in late 1990s, if any are picked up by the various tests in view of parcity of data. Most of the studies on the money demand function appear to have ended in the late 1990s. Besides the most dramatic evidence in support of money targeting, the

simulations sharp increase in both money and inflation in 1994-95 followed by a steep drop in 1995-96, turn out on closer inspection to be a bit of mirage.

Interest Rate

The cade for interest rates as a monetary target is pretty much as finally balanced as that of money. The principal selling propositions is that interest rates undoubtedly serve as effective instruments of monetary policy during episodes of volatility in financial markets. The Reserve Bank is able to derive domestic interest rate above the interest rate implied by the forward agreement and thus change the relative attractiveness of domestic currency vis-à-vis the international economy. This has been effectively demonstration in several episodes of financial market volatility since the late 1990s.

Bank Credit

The shift to monetary targets in the 1980s was, in fact an issue of much debate although it was held that the act of money creation was simultaneously an act of credit creation, in view of relatively autarkic character of the economy. The Reserve Bank monetary and credit policy statements the nomenclature was probably significant in itself- set credit targets alongside monetary targets throughout the 1990s.

(i) Flow of credit has been changing with the introduction of new instruments of corporate resource mobilization, such as commercial paper and a paralleled relaxation in banks investments in money market and capital market instruments.

(ii) The linkages between money, credit and output has been weakening in the 1990s with the opening up of economy. The link between the process of money and credit creation was almost axiomatic till the mid-1990s because banks surrendered the foreign currencies they realized in the form of non-resident deposits and current account transactions.

(iii) Domestic credit velocity has been falling since 1970s barring a few years of large scale capital issues during the mid-1990s. Commercial credit velocity has been declining as well. This probably reflects the gradual substitution of bank financing for other informal sources of finance in the economy. The puzzle is why there should be a decline in the velocity of credit to Government given that such a switch did not take place in case of fiscuuless it reflects, in part the decline in productivity of funding public expenditure.

(iv) Credit should lead to industrial activity; causality tests are not very definitive. There are number of studies, which posit that bank credit is leading indicator of economic activity. At the same time, there is some evidence to the contrary that suggests that credit is sometimes a lagged or at best a coincident indicator of the movement in the index of industrial production.

Multiple Indicators

It is thus, in the absence of clear correlation intermediary targets with final objectives that the Reserve bank has turned to the multiple indicator approach, which tends to water down the concept of a nominal anchor for monetary policy.

It is certainly true that a single intermediate target is much more theoretically appealing and operationally easier. At the same time it is very difficult to find a variable which would be able to encapsulate the large number of factors.

Q.3. What are the various challenges in the implementation of monetary policy in the economy?

Ans. The various challenges are as under:

The Challenges Of Financial Liberalization

The process of financial liberalization during the 1990s necessitated a complete re-orientation of the operating policy framework. The Reserve Bank had to develop an array of monetary policy instruments, which could effectively modulate monetary conditions in alignment with the rejuvenated process of price discovery. The Reserve bank instituted an Interim Liquidity Adjustment Facility in April 1999, which later evolved into a full-fledged liquidity adjustment facility in June, 2000. The LAF, which allows the reserve bank to manage market liquidity on a daily basis and also transmit interest are signals to the market is now emerging as the principal operating instruments of monetary policy. There is now evidence that the reserve bank is able to influence short term interest rates by modulating in the system.

Challenges of Transition

The first set of dilemmas arise because of the simultaneously operation of multiple channels of monetary policy transmission, both quantum as well as rate. This implies that the ability of the reserve bank to target a growth of the monetary base in line with the monetary projections is constrained by the liquidity impact of the interest rate. At the same time, the central banks scope for defending a certain level of interest rate is also curtailed by the monetary impact of its operations in the money and government securities market.

The reserve to deposit ratio has actually gone up because of the cut in reserve requirement as a result of the shift from direct to indirect instruments of monetary control. At the same time, it is equally true that the indirect sensitivity of bank reserves can be now higher with;

(i) Averaging instrument, allowing banks to allocate their portfolio across financial instruments and their balances with the reserve bank depending on the evolving liquidity situation and

(ii) A parallel development of money, foreign exchange and government securities market.

The Fiscal Constraint

- The critical issue in this regard is whether the central bank will be able to contain the volume of its support – primary and secondary combined – to the Government. If the past is any guide, banks could be logically expected to offload their surplus holding of Government paper once liquidity conditions change – either because capital flow dries up or domestic credit demand picks up.

- Another issue relates to the conflict between the conduct of monetary policy and the management of public debt takes several interesting forms.
- The third issue arises as the RBI has to increasingly respond as much to stabilization of markets as to the medium- term objectives of the monetary policy.

Efficacy of Instruments

The issue centers around the relative effectiveness of the various policy instruments at the disposal of the RBI. The issues are as follows:

(i) There is the question of reserve requirements, best analysed in terms of two inter- related sets of issues: the optimal level of CRR balances, on one hand, and the appropriateness of CRR as monetary policy instrument in the market on the other.

(ii) The second and most controversial issue is the impact that cash reserve ratio has on a market oriented economy.

Challenges of Liquidity Management

Another critical issue is the assessment of market liquidity for the conduct of monetary policy. The issues in this are as follows:

(i) Given the regime of average reserve requirement with stipulated minimum, the computation of excess reserves itself poses conceptual problem.

(ii) The demand for settlement balances are equally hard to estimate because the process of market development makes inter- temporal comparisons difficult.

Management of Capital Flows

Monetary flow of capital flows is woven around a strategy of absorbing the foreign exchange in the Reserve Bank's balance – sheet, in order to stabilize the foreign exchange market and then sterilizing the monetary impact by disposing off domestic assets.

The challenge of sterilization in the Indian case is not very acute because the large order of fiscal deficit allows the banking system to park the surplus liquidity from capital flows in gilt edged paper. The problem in this regard is really technical in nature because of the limited degree of maneuverability available to the RBI unset the Reserve Bank of India Act, 1934. It is in this context that the Reserve Bank is now seeking legislative amendments.

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CHAPTER-17

M.Y. Khan (Chapter 9)

Q.1. What are the objectives of the money market? State their various features.

Ans. The broad objectives of the money market are to provide

(i) An equilibrating mechanism for evening out short term supplies and deficiencies.

(ii) A focal point of central bank (RBI) intervention for influencing liquidity in the economy and

(iii) A reasonable access to the users of short term funds to meet their requirements at realistic/reasonable price/ cost.

Features of Money Market

(i) Operations are for short term duration (normally up to one year).

(ii) It is institutional source of working capital in the industry while the focus of capital market is on financing fixed investment.

(iii) There are large numbers of participants in the money market. In addition, the money market is a wholesale market.

(iv) General, the transactions are on a 'same day settlement' basis.

(v) The money market consists of sub-markets such as call market, the commercial bill market, the treasury bill market etc.

Q.2. Write a note on the functions and role of the Reserve Bank of India (RBI).

Ans. The RBI, as the central bank of the country is the nerve center of the financial and monetary system and the main regulator of the banking system.

Functions

(i) To maintain monetary stability and ensure sound financial institutions so that monetary stability can be safely pursued and economic units can conduct their business with confidence.

(ii) To maintain stable payment system so that financial institutions can be safely and efficiently executed.

(iii) To promote the development of the financial infrastructure in terms of market and systems and to enable it to operate efficiently, that is to play a leading role in developing a sound financial system so that it can discharge its regulatory function efficiently,

(iv) To ensure proper credit allocation by the financial system

(v) To regulate the overall level of credit and money in the economy

Roles of RBI

a. **Note issuing authority/ issuer of currency.** The RBI has the sole right/ authority/ monopoly to issue currency notes other than one rupee notes/ coins and coins of smaller denominations. In fact, issue of currency notes is one of its basic functions.

b. **Government banker.** The RBI is the banker to the central and state governments. It provides in this capacity to the government(s), all banking services such as acceptance of deposits, withdrawal of funds by Cheques, making payments as well as receiving/collecting payments on their behalf, transfer of funds, management of public debt and so on.

c. **Bankers bank.** As a Bankers bank, the RBI has a very special relationship with banks and the major part of its business is with these banks. It controls the volume of their reserves (SLRS and CRRs) and determines their deposits credit creation ability.

d. **Supervising authority/ Regulatory and supervisor.** As a regulator and a supervisor, RBI provides broad parameters within which the banking and financial system of India functions. It regulates and supervises the banking system in India according to the provision of the RBI act and the Banking Regulation Act. The Non-Banking Financial Companies (NBFCs) are regulated by the RBI under the provisions of chapter 111-B of the RBI Act.

e. **Exchange Control (EC) Authority.** As the Exchange control authority, the function of the RBI is to develop and regulate the foreign exchange market. Its role is to facilitate external trade and payment and provide or orderly development and maintenance of foreign exchange market within the framework of the Foreign Exchange Management Act (FEMA).

f. **Promotional functions.** The promotional /development functions of the RBI refer to its efforts to strengthen the financial system. It has played a highly commendable role in diversifying the institutional structure of the financial system in India. The financial institutions were either created by it or it advised and rendered help in setting them up.

g. **Regulator of money and credit/ monetary Authority.** The RBI, as the Central bank of the country, formulates and conducts the monetary policy. Monetary policy refers to the use of the techniques of monetary control to achieve the broad objectives of
   - Maintaining price stability
   - Ensuring adequate flow of credit

Q.3. What are the important instruments of money control adopted by the RBI? Explain their functioning.

Ans. Open Market Operation (OMOs). The OMOs refers to the sale and purchase of securities of the Central and State Government and Treasury Bills (T-Bills). *The multiple objectives of OMOs, inter-alia are;*

(i) To control the amount of and changes in bank credit and money supply through controlling the reserve base of India.
(ii) To make the bank rate policy more effective.
(iii) To maintain stability in the Government securities/ T-Bills Market.

Bank rate

The Bank rate (B/R) is the standard rate at which the RBI buys/rediscounts bills of exchange commercial banks. It is the rate that the RBI charges on advances on specific collaterals to banks. AN increase or decrease in the bank rate would increase or decrease he volume of credit. An increase in B/R would result in an increase in the lending rate of banks and vice versa. Thus, B/R technique regulates the cost/ availability of finance and to the extent, the volume of funds available to the banks and the financial institutes.

Refinance

The RBI uses thus instrument to relieve liquidity shortages in the system, control monetary and credit conditions and direct credit to selective sectors. Currently there are only two refinance schemes available: export credit refinance and general refinance.

Cash reserve ratio

Demand liabilities of banks include all liabilities payable on demand namely current demand position of savings deposits, margins hold against letter of credit/ guarantee, balances in overdue fixed deposits, cash certificates and cumulative/recurring deposits. Tem Liabilities are payable otherwise than on demand.

In order to improve the cash management as a measure of simplification, there is a lag of a fortnight in maintaining the CRR. With a view to providing flexibility in choosing an optimum strategy of holding reserves depending on their inter- fortnight cash flows, banks have to maintain minimum CRR upto 70 percent of the average daily requirement for a reporting fortnight on all days. The RBI does not pay interest on the CRR balance.

Statutory Liquidity Ratio (SLR)

While the CRR enables the RBI to impose primary reserve requirement, the SLR enables it to impose secondary and supplementary reserves requirements on the banking system. *The objectives of SLR are three fold;*

(i) To restrict the expansion of bank credit.
(ii) To augment a banks investments in governments securities.
(iii) To ensure solvency of banks.

Liquidity Adjustment Facility (LAF)

A liquidity adjustment facility (LAF) is a tool used in monetary policy, primarily by the Reserve Bank of India (RBI), that allows banks to borrow money through repurchase agreements (repos) or for banks to make loans to the RBI through reverse repo agreements. This arrangement manages liquidity pressures and assures basic stability in the financial markets. In the United

States, the Federal Reserve transacts repos and reverse repos under its open market operations.

The RBI can use the liquidity adjustment facility to manage high levels of inflation. It does so by increasing the repo rate, which raises the cost of servicing debt. This, in turn, reduces investment and money supply in India's economy.

Conversely, if the RBI is trying to stimulate the economy after a period of slow economic growth, it can lower the repo rate to encourage businesses to borrow, thus increasing the money supply. For example, analysts expect that RBI is likely to cut the repo rate by 25 basis points in April 2019 due to weak economic activity, benign inflation, and slower global growth. However, analysts expect repo rates to resume rising in 2020 as growth accelerates and inflation picks up.

Merits of LAF

(i) It is a short term liquidity management technique
(ii) It is a flexible instrument in the hands of the RBI to modulate, even out, adjust or manage short term market liquidity fluctuations
(iii) It helps authorities to transmit short – term interest rate signals to other money markets, financial markets and the long end of the yield curve.
(iv) It is an outlet for short term liquidity and optimizes the return on short term liquidity funds.

Repos/Reverse Repos

A Repo/reverse repo/ready forward/repurchase (buy-back) is a transaction in which two parties agrees to sell and repurchase the same security. The seller sells specified securities with an agreement to repurchase the same at a mutually decided future date and price. The same transaction is repo from the viewpoint of the seller of the securities and reverse repo from the viewpoint of buyer of securities.

RBI Repos

The RBI undertakes repo/reverse repo operations with banks and PDs as part of its OMOs, to absorb/ inject liquidity with the introduction of the LAF. The RBI has been injecting liquidity into the system through repos on a daily basis.

Market stabilization scheme

To manage the Forex rate, RBI intervenes in the forex market by buying dollars following into the economy. This leads to release of large rupee supply in the system resulting in a flood of rupee liquidity.

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CHAPTER-18

Reserve Bank of India, Annual Report of RBI 2014-15 (Chapter 3)

Q.1. Write a note on the implementation status of the agenda set in the RBI report of 2014-15.

Ans. Agenda 2014-15: Implementation Status

Disflation Consistent with the glide path

(i) It announced disinflationary glide path for bringing down CPI inflation to below 8 % by January 2015, and to below 6 % by January 2016.

(ii) RBI introduced a revised Liquidity Management Framework that brought flexibility and transparency to liquidity management operations, while aiming at strengthening transmission in money market.

(iii) A landmark agreement was signed between the Government of India and the Reserve Bank in February 2015 that provided the formal architecture for conducting monetary policy operations consistent with FIT and related Institutional and accountability process.

(iv) By quarter II, perseverance with anti- inflationary policy stance had yielded a softening-bias to inflation outcomes. It was supported by a host of other factors that created room for a softer stance for monetary policy. Besides temporary base efforts pulling down headline inflation, international commodity prices particularly of crude oil (Indian Basket), declined sharply by about 57 percent between June 2014 and 2015, aiding the deflationary momentum.

(v) Taking into account the development in 2015-2016 and the balance of risks as also the front leaded policy action of June, the third bi-monthly policy on August 4, 2015. Kept the policy unchanged while maintaining the accommodate stance of monetary policy. The statement noted that the short term real risk free rates were supportive of borrowing by interest rate sensitive consumer segments such as housing and automobiles.

Imported Transmission in Money Market

In India, currently the WACR is the operating target of monetary policy. Recognizing the long and variable lags in transmission of monetary policy, inflation forecasts or the projected baseline inflation path are used as the intermediate target. This makes monetary policy proactive and forward looking.

In this line with the recommendations of the expert committee, Quarter III of 2014-15 saw the implementation of a revised liquidity management framework aimed at making liquidity management operations flexible, transparent and predictable.

On February 20, 2015 the GOI and RBI signed an agreement on the monetary policy framework. The agreement makes the price stability numerically- below 6% CPI inflation for 20515-16 (to be achieved by January 2016) and 4 +/- 2 percent for all subsequent years. Set out what will constitute a failure in achieving the target; and specifies that the RBI in the event of failure will report to the government on;

(i) reasons for deviation of inflation from the target over three consecutive quarters,

(ii) remedial measures and,

(iii) an estimated time frame over which inflation will be brought back to the target.

Monetary Policy Reports and Transparency

In pursuance of the recommendations of the expert committee, the first time issue of the MPR was released along with the fourth bi-monthly monetary policy statement in September 2014, providing a medium term outlook and the balance of risks around a variety of potential shocks with the implications of MPR, India joins a select band of countries that lay emphasis on transparency and forward looking communications to ensure public understanding and accountability of monetary policy formulation and operations.

Forward guidance provided in the fifth bi-monthly policy statement in December 2014, indicated the possible commencement of an easing cycle by early 2015, if the disinflationary process moved along with expected trajectory.

Monetary Policy Transmission to Lending and Deposits Rates

The transmission of monetary policy is typically characterized by long, variable and uncertain time lags with asymmetric market responses to policy impulses in terms of magnitude and or direction across segments in different phases of liquidity conditions. Further, the transmission of policy rate changes to deposit and lending rates of banks is lagged and less complete relative to money market rates. This reflects the presence of structural rigidities in the credit market. Therefore, improving the efficacy of monetary policy impulses to their fullest effect remains incomplete even as some degree of pass through of rate reductions in the recent period has been translated into lending rates. The Reserve bank announced a number of initiatives and measures during the year to incentives banks to improve transmission at their end. Progress in this direction is expected to be seen going forward.

While the response of commercial banks to a reduction in the policy rate by 15 bps is still unfolding, the movement of lending rate across various sectors is uneven, presumably reflecting the differential risk assessment of banks.

The base rate system introduced in 2010, has been an improvement over the Benchmark Prime Lending rate (BPLs) system, disallowing sunctioning of a large proportion of the loan at sub-prime rates. Banks are free to determine their lending based on cost of funds or any other relevant market based benchmark. Base rates have converged to a narrow range of 9.70-10.15 percent for Public Sector Banks (PSBs). However, the base rates are found to be sticky and impeding transmission of monetary policy.

Projected and Actual Trajectories of Growth and Inflation

The Reserve bank's growth and inflation projections are prepared under considerable uncertainty and shifting balance of risks. While common assumptions (covering some of the key determinants of inflation and growth) are used to generate the baseline projected paths, upside/ downside risks along with the resultant likely derivation of the inflation and growth path from the baseline are presented as part of the assessment of balance of risks in the MPRS.

Anchoring Inflation Expectations

The monetary policy framework of the Reserve bank aims at anchoring inflation expectations as close as possible to the target. During 2014-15, anchoring expectation especially breaking the rigidities that had set in from the experience of 2009-13 turned out to be a major challenge.

Large Divergence Between the Wholesale Price Index

WPI and CPI inflation in the first half of 2015 also posed a major challenge for monetary policy communications, given the formal adoption of CPI-C inflation target against the back drop of glowing expectations of a highly accommodative monetary policy stance based on deflationary WPI. The expert committee has examined all the policy relevant issues involving WPI and CPI.

Uncertain and Time Varying Macro Dynamics

Modern day monetary policy operating frame-words focus on price stability under dynamic liquidity and financial condition. Macro-financial linkages can however change significantly. The conduct of monetary policy should recognize this and respond in a timely manner. As assessment of the natural real rate of interest rate assumes critical importance in the context under the explicit recognition that is not static and may vary over time. Model based estimates of natural real interest rate of Indian in Quarter IV of 2014-15 suggest a range of 0.6 percent to 3.1 percent, with +/- one standard ercor of about 50 bps.

(i) Efforts for a better assessment of intra-day liquidity conditions to support more effective fine- tuning of liquidity operations were handicapped by the uncertainties involved in predicting government cash balances.

(ii) Capacity to assess the impact of external spillovers on the domestic economy was also limited owning to the suddenness characterising various international developments, particularly, blurred assessment worldwide on the magnitude and timing of these events.

(iii) The transmission of repo rate cut to deposit and lending rates remained incomplete. Further, credit growth continued to be shuggish in an easing cycle of monetary policy, besides the several factor mentioned earlier and various steps taken by the Reserve Bank, the lower share of wholesale funding of banks in India has also partly hampered effective transmission of the policy rate to deposit and lending rate.

Q.2. Write a short note on the agenda for RBI for the year 2015-16.

Ans. Agenda for 2015-16

The focus of RBI's monetary policy stance during 2015-16 will be on fostering a gradual and durable disinflationary process towards the target of below 6 percent by January, 2016 in order to achieve the centrally projected rate of 4 % by the end of 2017-18. At the same time, the efficacy of the monetary policy transmission mechanism needs to improve since the pass through of recent cuts in policy rate to the bank lending rate has been partial, reflecting constraint in transmission under the existing base rate system.

November 2016

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Name of Paper : Money and Banking
Name of Course : G.E. for Hons. Economics – CBCS
Semester : III
Duration : 3 hours
Maximum Marks : 75
Attempt any five questions

Q.1.*(a)* Consider a situation in which the required reserve ratio is 15 percent and each bank individually decides to hold 5 percent of every deposit against emergency withdrawals, in addition to the legally mandated reserves. There is no holding of cash. If there is an open market purchase of ₹ 5,00,000. What would be the effect on total deposits of banking system?

***(b)* Derive the money multiplier when money is defined as broad money. Discuss the sources the change in money multiplier. (5+10)**

Sol.*(a)*

$rr = 0.15$

$e^d = 0.05$

$c^d = 0$

Change in Money Supply = ₹ 5,00,000

Now we know that the complete deposit multiplier is denoted as;

$$D = \left(\frac{1}{e^d + c^d + rr}\right) \times MB$$

So,

$$D = \frac{5,00,000}{0.20}$$

= ₹ 25,00,000

Hence the deposits in the economy increase by ₹ 25,00,000

Sol.*(b)* See Q.3 [Page No.18]

Q.2.*(a)* 'Equity contracts are subject to a particular type of moral hazard called principal-Agent Problem'. Explain this statement. How have debt contracts emerged as a feasible alternative to equity contracts in partially solving the problem of moral hazards?

***(b)* How do banks function when there is asymmetric information in the market? (10+5)**

Ans.*(a)* See Q.5 [Page No.24]

DEBT CONTRACTS AND THE MORAL HAZARDS PROBLEM

If a contract could be structured in a way that there is little need to monitor the management, it reduces the moral hazard problem. The debt contract has these

attributes because it is a contractual agreement by the borrower to pay the lender fixed dollar amounts at periodic intervals. When the firm has high profits, the lender receives the stipulated mounts and does not need to know the exact profit of the firm. If the management is hiding profits or is carrying out activities that are beneficial to them, the lender does not care as long as the ability of the organization to pay his/ her due is not hampered. Only when there is a default do they need to verify the state of the firm's profits. Thus in the case of debt contracts, the moral hazard problem is rectified partially.

Ans. ***(b)*** See Q.2 [Page No.36]

Q.3.*(a)* Explain the risk and return characteristic options, when the option is ₹ 5 and strike price is ₹ 100 in the following cases;

***(i)* In the case where investor has long a put option**

***(ii)* In the case where investor has short a call option**

***(b)* Explain the role of future contracts in financial markets. Distinguish between a futures and a forward contract. (6+9)**

Ans. ***(a)*** ***(i)*** When the option price is ₹5 and strike price is ₹100 and the investor has a long put option (buying a put option)

Buying a put option or long put means the investor has purchased the right to sell the asset on a specified date at a specified strike or exercise price. Again assume that a put option is purchased by our investor named Aman from Bindra to sell an asset with strike price of ₹ 100. Here, Bindra is the seller or the writer of the option and has to oblige Aman's decision to sell or not to sell the asset to her. Hence, Bindra is the seller of put option. The price paid to acquire such option or the option price is now set at ₹ 5 which is paid today. The current market price of the asset is also ₹ 100 for simplicity. Here, the option is about selling the asset to Bindra. The investor Aman will sell the asset to Bindra only if the selling price of asset is higher than the market on the date of expiry. So, he sells the instrument to Bindra and buys it back at a cheaper rate from the market. Strategies will change with respect to the market price of the asset thus resulting in profit or loss for Aman and Bindra. Let, us again consider a set of five such strategies and look at risk and return for Aman, the buyer of the put option.

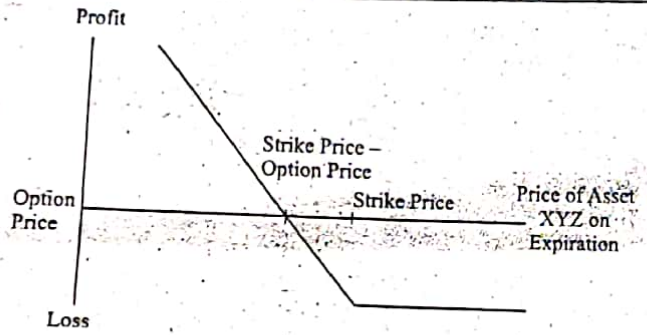
- The market price of asset is more than the strike price of ₹ 100 on the date of expiry, it is non-profitable for Aman to exercise the option to sell the asset to Bindra. Since, he can sell this asset at a higher rate in the market.

  Assuming the market price to be ₹ 140, he will not exercise the option but amount above ₹ 100 will attract a constant maximum loss of ₹ 5 of option price.
- If the market price of the asset is equal to ₹ 100, Aman will be indifferent between choosing to sell the asset in market or selling the asset to Bindra by exercising his option as the two prices are same asset are equal.
- If the market price of asset is anywhere between ₹ 100 to ₹ 95, Aman tends to minimize his loss of option price. Suppose, the price is ₹ 97, Aman can

sell the asset to Bindra by exercising the option. In doing so, he gets ₹ 100 for an asset less the amount of option @ Rs. 5 and can buy the same asset in the marke for ₹ 97.

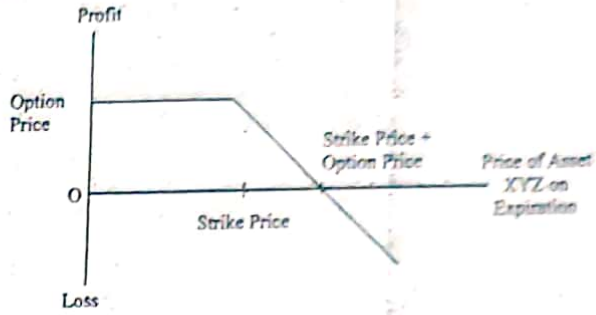
- If MP of asset is ₹ 95, Aman will exercise the option to sell the asset to Bindra. Here, since the price received from Bindra by selling the asset is equal to the price received from buying the asset in the market we can say Aman breaks even. Profit of ₹ 5 is cancelled or offset against the loss of option price of ₹ 5.
- If the market price of asset is anywhere below ₹ 95, Aman will exercise the option to sell the asset to Bindra and will result in positive profits after adjusting for the option price of ₹ 5. Suppose the price is ₹ 100, for selling the asset to Bindra, five strategies for long put have been shown here:

Strike price ₹ 50	Buying a put option	Option price ₹ 20
Market price of asset on expiry	Net profit / loss	Action related to option
₹ 140	– ₹ 5(maximum loss)	Not exercise
₹ 100	– ₹ 5(maximum loss)	Indifferent
₹ 97	– ₹ 2 (loss minimization)	Exercise
₹ 95	0 (breaks even)	Exercise
₹ 90	– ₹ 40(positive profit)	Exercise



(ii) When the investor has a short call option (selling a call option)

The profile of a writer or seller is completely opposite to that of the buyer of a call option. The profits a buyer of call option are infinite with a maximum loss of option price. The profits the writer or seller of call option are maximum upto to the level of option price, whereas the losses are infinite. When the buyer does not exercise the call option, the seller of the option receives the fixed option price. When the buyer purchases the asset from the seller of the call option, he might incur a loss. Here he could have sold the asset in the market for a higher price compared to the fixed strike price agreed between the option buyer and the option seller. Hence, his losses are infinite (less the option price received). We can visualize the return to the seller of the call option.



It shows that the seller of call option has infinite losses compared to a fixed maximum profit of ₹ 5 of the option price. Since, he is the seller or the writer, he has to oblige the decisions of the buyer with respect to the strategies.

Ans. *(b)* Future contracts are transferable specific delivery forward contracts. They are agreement between two counter parties to fix the terms of an exchange/lock in the price today of an exchange that will take place between them at some fixed future date as highly standardized contacts between sellers and buyers.

Role of Future Contracts in Financial Markets

1. The key role of futures contracts is that, in a well – functioning futures market, these contracts provide a more efficient means for investors to alter their risk exposure to an asset.
2. A futures market will be the price discovery market when the market participants prefer to use this market rather than the cash market to change their risk exposure to the asset.
3. The futures market and the cash market for an asset are tied together by an arbitrage process.
4. The argument that futures markets destabilize the prices of the underlying financial assets is an empirical question, but greater price volatility by itself is not an undesirable attribute of a financial market.

See Q.5 [Page No.49]

Q.4.*(a)* What do you mean by restrictive convenant? What are the various types of restricted convenant used in the debt contracts? And why?

***(b)* Discuss in brief the recent banking sector reforms in India.** (S+7)

Ans.*(a)* See Q.6 [Page No.25]

Ans.*(b)* See Q.3 [Page No.45]

Q.5.*(a)* Explain how the expectations Market Hypothesis and Segmented-Market Hypothesis are extreme versions of the Preferred-

Habitat Hypothesis. Preferred-Habitat Hypothesis explains the generally upwards sloping yield curve, based on the empirical evidence. Discuss.

***(b)* The interest rate on one year government bond is 4 percent, the rate on a two year bond is 7 percent, and the rate on a three year government bond is 9 percent.**

***(i)* Describe the shape of the yield curve.**

***(ii)* Use the expectations hypothesis to determine the markets' forecast of the one-year rate next year.**

***(iii)* What is the market's forecast for one-year rate in two years?** **(9+6)**

Ans.*(a)* See Q.4 [Page No.64]

(b) Rate on one year government bond = 0.04

Rate on two year government bond = 0.07

Rate on three year government bond = 0.09

(i) As the rate on interest keeps increasing as the term of maturity increases, the yield curve is upward sloping.

(ii) Let the rate of one year government bond in the second year be R

We know that $(1+r_n) = \sqrt[n]{(1+r)(1+er_1)(1+er_2)....(1+er_{n-1})}$

In this case, $(1+0.07)(1+0.07) = (1+0.04)(1+R)$

$(1+R) = (1.07)(1.07)/(1.04)$

$R = 1.100 - 1$

$R = 10\%$

(iii) Let the rate of one year government bond in the third year be r

As above,

$(1.09)^3 = (1.04)(1.07)(1+R)$

$R = 16.375\%$

Q.6.*(a)* Discuss different issues relating to Indian Banking structure that promotes fast and inclusive growth.

***(b)* What are the implications of Basel-III for Indian Banks?** **(8+7)**

Ans.*(a)* See Q.3 [Page No.70]

Sol.*(b)* See Q.4 [Page No.81]

Q.7.*(a)* What are the intermediaries targets? Critically examine rate of interest and money aggregates as intermediate targets.

***(b)* 'It is not merely the number of instruments that is important but the number of instruments exerting independent effects on the target variables'. Explain this statement in the context of monetary policy instruments targets.** **(7+8)**

Ans.*(a)* Intermediate targets are targets that the RBI attempts to achieve because doing so will help attain final policy targets. They are aimed at ensuring better chances of hitting the final target.

- Issues like the unemployment rate goal, the output growth goals, or the inflation rate goal are debated over as goals for intermediate targets.
- Intermediate targets provide timely information on the state of the economy, and the RBI's success at achieving those targets is useful information for RBI.

The properties of intermediate targets are as under:

- Intermediate target policy must be consistent with RBI's final goals for policy.
- The intermediate target must be accurately measureable on timely basis.
- The intermediate target must be controllable so that the RBI can actually hope to achieve it, or at least more in the direction of achieving it.

See Q.7 [Page No.91]

Ans.*(b)* See Q.4 [Page No.86]

Q.8. Write a short note on any *two* of the following : **(7.5+7.5)**

***(i)* Lags in operation of monetary policy**

***(ii)* Option contract and future contact**

***(iii)* Financial markets**

Ans.*(i)* See Q.9 [Page No.92]

Ans.*(ii)* Options Contract. As the name suggests, an option contract is a right and not an obligation. It enables the buyer of an option to purchase or sell an asset without a boundations or obligations, as per will. There are two parties to an option, a buyer of the option and writer/ seller of the option. When the writer or seller of an option contract writes an option on behalf of the buyer, he empowers the buyers to take decision about the asset at his free will. The buyer is not obliged or forced upon to exercise his right. In exchange of this right, the buyer pays the writer of an option, a price which is referred to as 'option price'. The option deals with the right to buy or sell an underlying at a price called the 'exercise price' or 'strike price'.

The option which grants the right to buy an asset is called a **'call option'** and the option which grants the right to sell the asset is called **'put option'**.

On the basis of expiry and exercise, option can be classified into two types. The options which are exercised on or before the maturity or expiry date are called **American option**. The options which can only be exercised on the very date of expiry are called **European option.** The option contracts are available both in Over The Counter (OTC) format and in electronically exchanged traded one. The exchange traded options have benefits over OTC since the former provides for a standardized contract with standard quality of asset/ underlying, price and expiry of the contract. It also enhances the transparency of the trade since the parties do not directly engage and reduces the transaction cost. The involvement of clearing house makes the counter- party risk lower.

Future Contracts. A future contract is a firm legal agreement between a buyer and a seller in which;

1. The buyer agrees to take delivery of something at a specified price at the end of a designated period of a time.
2. The seller agrees to make delivery of something at a specified price at the end of designated period of time.

Some common types of financial Future are;

- Stock Futures
- Index Futures
- Currency Futures
- Commodity Futures
- Interest rate Futures

Functioning of financial futures

- When an investor is a buyer of a particular futures contract the investor is said to have taken 'long position'. Similarly, if the investor initially sells the future contracts, he is said to have attained a 'short position'. When the contract price changes in the future, the difference between the agreed price and contracts actual price results in profit loss.
- Profits of the investors depends upon the position thus attained;
  (i) An investor with long position gains when the price of contract increases in the future time period and vice versa.
  (ii) An investor with short position gains if the price of the contract falls in the future time period and vice versa.

Ans.*(iii)* See Q.4 [Page No.31]

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December 2017

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Name of Paper : Money and Banking
Name of Course : G.E. for Hons. Economics – CBCS
Semester : III
Duration : 3 hours
Maximum Marks : 75
Attempt any five questions

Q.1.*(a)* What are the changes in deposits, currency holdings and the money stock for an open market sale of ₹ 1,00,000? The required reserve ratio is 10 percent, the desired excess reserve ratio is 5 percent, and the desired currency to deposit ratio is 25 percent.

(b) Graphically illustrate the impact of open market purchase by the central bank on the money supply when;

(i) the money supply is exogenous, and
(ii) the money supply is endogenous **(9+6)**

Ans.*(a)*

$rr = 0.10$

$e^d = 0.05$

$c^d = 0.25$

$\Delta MB = -1,00,000$ (open market sale)

$\Delta D = ?$

$\Delta C = ?$

$\Delta M = ?$

$$\Delta D = \frac{1}{rr + e^d + c^d}\Delta MB$$

$$= \frac{1}{0.10 + 0.05 + 0.25}\Delta MB$$

$$= 2.5\,\Delta MB$$

$$= 2.5 \times (-1,00,000)$$

$$= -\$\,2,50,000$$

Currency Holdings

$$\Delta C = \frac{c^d}{rr + e^d + c^d}\Delta MB$$

$$= \frac{0.25}{0.40} \times \Delta MB$$

$$= 0.625 \times (-1,00,000)$$

$$= -\$\,62,500$$

Money Stock

$$\Delta M = \Delta C + \Delta D$$
$$= -2,50,000 - 62,500$$
$$= -3,12,500$$

Open market sale causes decline of deposits by $ 2,50,000 currency holdings to decline by $ 62,500 and money stock declines by $ 3,12,500

Ans.*(b)* See Q.11 [Page No.14]

Q.2.*(a)* How does the 'problem of Lemons' influence the financial structure? What are the various tools to solve this problem?

***(b)* Discuss the major causes of financial crisis in the context of adverse selection and moral hazard problem. (7.5+7.5)**

Ans.*(a)* See Q.3, Q.4 and Q.5 [Page No.22-24]

Ans.*(b)* See Q.7 [Page No.26]

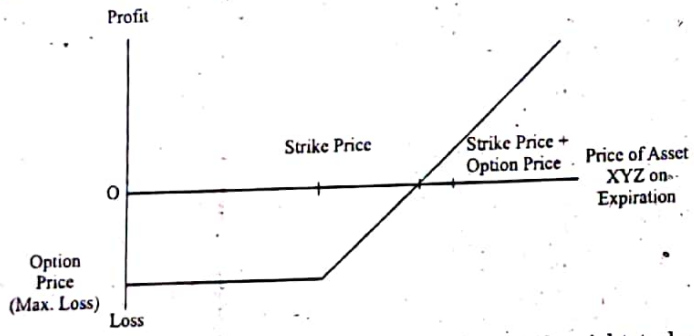
Q.3.*(a)* Explain the risk and return characteristics of options when the option price is ₹ 3 and the strike price is ₹ 100 in the following cases;

***(i)* In the case where investor has long a call option.**

***(ii)* In the case where investor has short a put option.**

***(b)* Differentiate between an option and future contract. (8+7)**

Ans.*(a)(i)* Buying a call position or (Long Call)



Buying a call option means the investor has purchased the right to buy the asset on a specified date at a specified strike or exercise price. Assume that a call option is purchased by an investor named Aman from other investor named Bindra for an asset with strike price ₹ 100. Here Bindra is the seller or the writer of the option and has to oblige Aman's decision to buy or not to buy the asset from her. Hence, Bindra is the seller of call option. The price paid to acquire, such option or the option price is set at ₹ 3 which is paid today. The current market price of the asset is also ₹ 100 for simplicity.

(i) If the market price of asset is less than the strike price of ₹ 100 on the date of expiry, it is non-profitable for Aman to exercise the option to buy.

the asset from Bindra, since he can buy this asset at a cheaper rate from the market. Assuming the market price to be ₹ 95, he will not exercise the option but bears the cost of option. i.e. ₹ 3 of option price. Ant price below ₹ 100 will attract a constant maximum loss of ₹ 3 of option price.

(ii) If the market price of asset is equal to the strike price Rs.100 on the date of expiry. Aman will be indifferent between choosing to buy the asset from the market or buying the asset from Bindra by exercising his option as the two prices on same asset are equal. Also here he has to bear the constant cost of ₹ 3 of option price.

(iii) If the market price of asset is anywhere between ₹ 100 to ₹ 103. Aman tends to minimize his loss of option price. Suppose the price is ₹ 102 Aman can buy the asset from Bindra by exercising the option. On doing so he pays ₹ 100 for an asset along with ₹ 3 of option price (already paid in advance) and can sell the same asset in the market for ₹ 102. Thus Aman makes a loss of ₹ 2. Had aman choosen not to exercise the option his loss would have been ₹ 3.

(iv) If the market price of asset is Rs.103 Aman will exercise the option to buy the asset from Bindra. Here since the price paid to Bindra for buying the asset in the market, we say aman break-even. Profit of ₹ 3 is cancelled or offset against the loss of option price of ₹ 3.

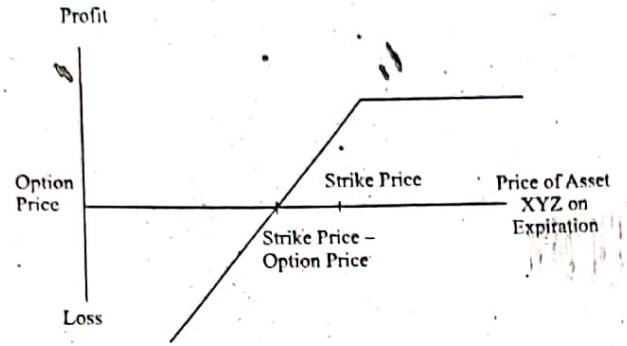
(v) If the market price of asset is anywhere above ₹ 103 Aman will exercise the option to buy the asset from Bindra and will result in positive profits after adjusting for the option price of ₹ 3. Suppose the price is ₹ 113, Aman can gain ₹(113 – 3) = ₹ 10 from exercising the option and buying the asset from Bindra.

Strike Price ₹ 100	Buying a Call Option	Option Price
Market price of asset on expiry	Net Profit/ Loss	Action released to option
₹ 95	– ₹ 3(Maximum Loss)	Not exercise
₹ 100	– ₹ 3 (maximum loss)	Indifferent
₹ 102	– ₹ 2(loss minimization)	Exercise
₹ 103	– 0(breakeven point)	Exercise
₹ 113	– ₹ 10(positive profits)	Exercise

We can compare the profits and loss on a long call option with a long position in a asset. The scenario and strategies can be explained through the market price existing on the day of expiry. Ignoring all other costs and taking the price of asset and option from example.

Options contract also provide a similar leverage effect as compared to that of a future contract. Since, here also the buyer of the option pays an option price, which is a fraction of the total price of the asset. This results in buying the total quantity of asset which is worth way more than actual purchase of asset in physical market.

(ii) **Writing / selling a put option**



The profile of a writer or seller is completely opposite to that of the buyer of a put option as we saw earlier also. The profit to a buyer of put option are infinite with a maximum loss of option price, whereas the profits of the writer or seller of put option are limited (maximum to the level of option price, while the losses are infinite. When the buyer does not exercise the put option, the seller of the put option receives the fixed option price. When the buyer sells the asset from the seller if the put option, the seller of the put option losses, because he could have bought the asset in the market for a lesser price compared to the fixed strike price agreed between the option buyer and the option seller. Hence, his losses are infinite (less the option price he receives).

Ans.*(b)* Differences between an option and future contract are as follows:

Basis For Comparison	Futures	Options
Meaning	Futures contract is a binding agreement, for buying and selling of a financial instrument at a predetermined price at a future specified date.	Options are the contract in which the investors get the right to buy or sell the financial instruments at set price, on or before a certain date, however the investor is not obligated to do so.
Obligation to comply with the terms of contract	Obligation lies between both the buyer and the seller to settle the terms of the contracts before the expiry date.	Buyer of the contract is give the right but not the obligation. However the seller is responsible to comply with the contract if the buyer exercises the term.
Execution of contract	On the agreed date.	Anytime before the expiry of agreed date.
Risk	High risk	Limited risk
Advance payment	No advance payment	Paid in the form of premiums

Degree of profit/loss	Profit and loss potential is unlimited.	Profit potential is Unlimited and scope of loss is limited.
Purpose	Speculate or hedge risk and also to obtain physical delivery of underlying asset in future period of time.	Primarily used as hedge instrument.

Q.4.*(a)* **What do you mean by financial instruments? What are the various categories of financial instruments?**

***(b)* Discuss in brief the recent money market reforms in India.** (8+7)

Ans.*(a)* See Q.5 [Page No.32]

Ans.*(b)* See Q.2 & Q.3 [Page No.44-45]

Q.5.*(a)* **Explain briefly the expectations hypothesis. How could future interest rate be forecasted using expectations hypothesis?**

***(b)* Suppose the investor prefer one-year bond to two-year bonds and will purchase a two-year bond if they expect an additional 4 percent over the return from holding one-year bond. Currently one-year bond yield is 5 percent but the investors expect the yield to fall to 4 percent next year.**

***(i)* What is the yield on two-year bond?**

***(ii)* Is the yield curve upward sloping, flat, or downward sloping?** (10+5)

Ans.*(a)* See Q.2 [Page No.58]

Ans.*(b)* Yield of one year bond in current year = 0.05
Yield of one year bond expected in the next year = 0.04
Additional percent over return = 0.04

(i) We know that,

$$r_n = \alpha_n + \frac{r + er_1}{2}$$

$$= 0.04 + (0.05+0.04)/2$$

$$= 0.04 + 0.045 = 0.085 = 8.5\ \%$$

(ii) Since the interest rate increases as the term of maturity increases, the yield curve will be upward sloping in this case.

Q.6.*(a)* **Differentiate between monetary and liquid aggregates of the third working group by RBI.**

***(b)* Discuss the Structure of Financial System in India.** (7+8)

Ans. *(a)* See Back

(b) The Financial System in India constitutes the following:

(i) **Financial Intermediaries** (See Q.3 [Page No.28])

(ii) **Financial Markets** (See Q.4 [Page No.31])

(iii) **Financial Instruments** (See Q.5 [Page No.32]

Q.7.(a) 'There is a conflict between interest rate and money supply as an intermediate target of achieving objectives of monetary policy'. Which of the two, do you think is the better and why?

(b) What are the policy targets and instruments of monetary policy? What are the problems associated with the operation of monetary policy? (7+8)

Ans.(a) See Q.7 [Page No.91]

Ans.(b) Policy Instruments & Targets (See Q.1 [Page No.84])

Problems in Monetary Policy Making (See Q.9 [Page No.92])

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December 2018

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Name of Paper : Money and Banking
Name of Course : G.E. for Hons. Economics – CBCS
Semester : III
Duration : 3 hours
Maximum Marks : 75
Attempt any five questions
All Questions Carry equal marks

Q.1.(a) What is meant by Endogenous and exogenous money supply curves? How do various components of money supply multiplier affect these curves? Explain. (8)

(b) Suppose the central bank decides to make ₹ 10,000 open market purchase. If high powered money (H) = 2,50,000, required reserve ratio (rr) = 0.2, excess reserve ratio (e_r) = 0.5 and currency deposit ratio (c_d) = 0.25, what will be the total currency holdings of the public? (7)

Ans.(a) See Q.11 [Page No.14]

(b) Initial Currency Holdings Of The Public

$$C = \left[\frac{\because \quad c^d}{rr + e^d + c^d}\right] \times MB.$$

Here,

MB = 2,50,000,

rr = 0.2

e_r = 0.5 and

c_d = 0.25

Substituting values in the equation we get,

C = (0.25/0.95) × 2,50,000

= 65,790 approx

Change in Currency Holdings

ΔMB = 10,000

ΔC = (0.25/0.95) × 10,000

= 2,630 approx

Total Currency Holdings Are: 65,790 + 2,630 = ₹ 68,420

Q.2.(a) Are Debt free from moral hazards problems? If not, how can these problems be resolved? (10)

(b) How does banking sector suffer from problems of asymmetric information and adverse selection? (5)

Ans.(a) See Q.6 [Page No.25]

Ans.*(b)* See Q.1 [Page No.34]

Q.3. What are the factors that trigger financial crises? What is the transmutation effect in financial market? **(12 + 3)**

Ans. See Q.7 [Page No.26]

Transmutation Effect in Financial Markets

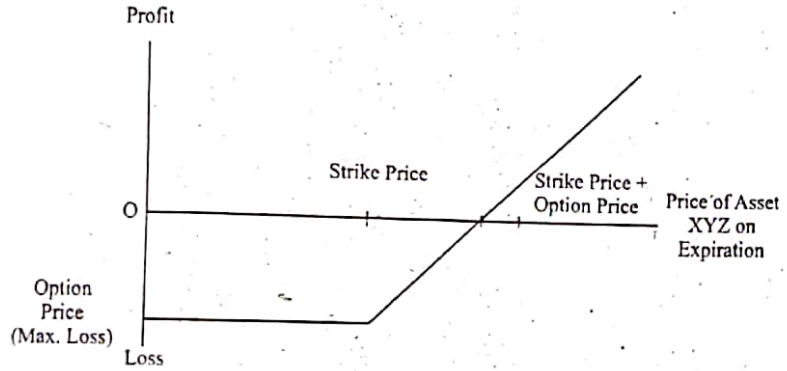
Financial intermediaries play a vital role in economic development via capital formation. Their relevance to the flow of savings is derived from what is called the **transmutation effect**. This term refers to the ability of the financial intermediaries to convert contracts with a given set of characteristics into contracts with different features. In other words, financial intermediaries make one type of contract with the lenders and another with the borrowers. This arrangement permits them to tailor contracts as per the preference of both the borrowers and the lenders.

Q.4.*(a)* Explain the leveraging aspect of future contracts. Define maintenance margin and variation margin. **(3 + 4)**

***(b)* Examine the risk return characteristic of both long call and short put option when strike price is ₹ 150 and option premium is ₹ 20. Explain with diagram** **(8)**

Ans.*(a)* See Q.3 & Q.4 [Page No.48-49]

Ans.*(b)* Long Call Option



Buying a call option or long call means the investor has purchased the right to buy the asset on a specified date at a specified strike or exercise price. Assume that a call option is purchased by an investor named Aman from other investor named Bindra for an asset with strike price ₹ 150. Here, Bindra is the seller or the writer of the option and has to oblige Aman's decision to buy or not to buy the asset from her. Hence, Bindra is the seller of call option. The price paid to acquire, such option or the option price is set at ₹ 20 which is paid today. The current market price of the asset is also ₹ 150 for simplicity.

(i) If the market price of asset is less than the strike price of ₹ 150 on the date of expiry, it is non-profitable for Aman to exercise the option to buy the asset from Bindra, since he can buy this asset at a cheaper rate from the market. Assuming the market price to be ₹ 120, he will not exercise the option but bears the cost of option. i.e. ₹ 20 of option price. Any price below ₹ 150 will attract a constant maximum loss of ₹ 20 of option price.

(ii) If the market price of asset is equal to the strike price ₹ 150 on the date of expiry. Aman will be indifferent between choosing to buy the asset from the market or buying the asset from Bindra by exercising his option as the two prices on same asset are equal. Also here he has to bear the constant cost of ₹ 20 of option price.

(iii) If the market price of asset is anywhere between ₹ 150 to ₹ 170. Aman tends to minimize his loss of option price. Suppose the price is ₹ 160 Aman can buy the asset from Bindra by exercising the option. In doing so, he pays ₹ 150 for an asset along with ₹ 20 of option price (already paid in advance) and can sell the same asset in the market for ₹ 160. Thus aman makes a loss of ₹ 10. Had aman chosen not to exercise the option his loss would have been ₹ 20.

(iv) If the market price of asset is ₹ 170 Aman will exercise the option to buy the asset from Bindra. Here since the price paid to Bindra for buying the asset is equal to the price received by selling the asset in the in the market, we say Aman breaks even. Profit of ₹ 20 is cancelled or offset against the loss of option price of ₹ 20.

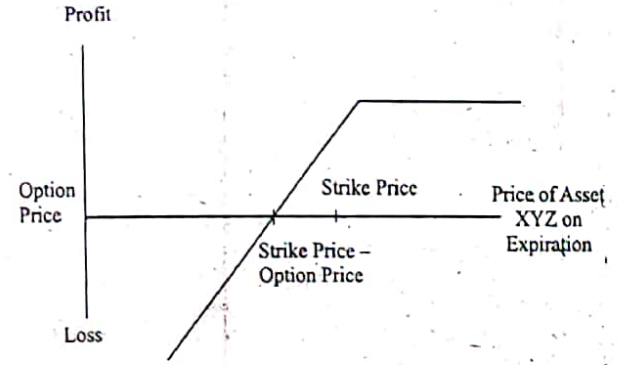
(v) If the market price of asset is anywhere above ₹ 170 Aman will exercise the option to buy the asset from Bindra and will result in positive profits after adjusting for the option price of ₹ 30. Suppose the price is ₹ 180, Aman can gain ₹ 180 – ₹ 170 = ₹ 10 from exercising the option and buying the asset from Bindra.

Strike Price ₹ 150	Buying a Call Option	Option Price
Market price of asset on expiry	net profit/ loss	action released to option
₹ 100	– ₹ 20(Maximum Loss)	Not exercise
₹ 150	– ₹ 20 (maximum loss)	Indifferent
₹ 160	– ₹ 10(loss minimization)	Exercise
₹ 170	– 0 (break-even point)	Exercise
₹ 180	– ₹ 10(positive profits)	Exercise

Short Put Option

The profile of a writer or seller is completely opposite to that of the buyer of a put option. The profits to a buyer of put option are infinite with a maximum loss of option price, whereas the profits of the writer or seller of put option are limited (maximum up to the level of option price), while the losses are infinite. When the buyer does not exercise the put option, the seller of the put option

receives the fixed option price. When the buyer sells the asset from the seller of the put option, the seller of the put option loses, because he could have bought the asset in the market for a lesser price compared to the fixed strike price agreed between the option buyer and the option seller. Hence, his losses are infinite (less the option price he receives).



Q.5.(a) How do 'expectation hypothesis' and 'preferred habitat hypothesis', explain the term structure if interest rates? (8)

(b) Consider a situation in which one year bond currently offers 4% yield, the expected yields of next year and next to next year are 5% and 6% respectively, now suppose an investor prefers one bonds over three year bonds and will purchase a three bonds only if they except to receive an additional 3% over the return from holding one year bonds.

(i) Which of the three theories of the term structure of interest is relevant to explain the above situation?

(ii) What is the yield on three year bond and what will be the shape of the yield curve? (7)

Ans.(a) See Q.2 [Page No.58] and Q.4 [Page No.64]

Ans. (b) (i) The **preferred habitat hypothesis** is the most relevant in explaining this situation.

(ii) Yield of one year bond in Year 1 = 0.04

Yield of one year bond in Year 2 = 0.05

Yield of one year bond in Year 3 = 0.06

Premium = 0.03

We know that, $r_n = \alpha_n + \frac{r+er_1}{2}$

$= 0.03 + (0.04 + 0.05 + 0.06)/3$

$= 0.03 + 0.05 = 8\%$

The yield curve in this case will be upward sloping.

Q.6. Write a short notes on deregulation of savings bank deposit interest rate. Define the macro prudential norms in Basel – III and explain their implications on Indian bank's profitability. (6+9)

Ans. See Q.2 [Page No.63] and Q.3 [Page No.79]

Q.7.(a) Suppose monetary authority aims to target output and price level as final targets in its monetary policy. Do you think that the monetary authority can successfully achieve both the targets simultaneously in short run as well as in the long run? (9)

(b) Critically examine interest rate target as an intermediate target of monetary policy. (6)

Ans.(a) See Q.5 [Page No.87]

(b) See Q.7 Case-1 [Page No.91]

Q.8.(a) Explain the lags in monetary policy. (8)

(b) What is liquidity adjustment facility (LAF) and how does it facilitate RBI to manage short term market liquidity? (7)

Ans.(a) See Q.9 (Lags Point) [Page No.92]

(b) See Q.3 Extract on LAF [Page No.99]

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