Econ-Hub Money, Banking & Monetary Policy [Theory]

Unit [7], Chapter [2] Intro to Financial System & Banking

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Economics, Unit – (7) Financial System and LCB Credit Creation Process Chapter – (2)

[SPECIFICALLY DESIGNED FOR ADVANCED LEVEL 2024 & ONWARDS]



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[4.1] Financial System: [What is the Financial System]

An institutional structure formulated or setup to implement the financial decisions and fulfill the financial requirements of the different economic agents operating within a given country. The principal function of financial system is 'Financial Intermediation'.

The financial system generally consists of the following components.

[4.2] Financial Institutions: [What is a Financial Institution]

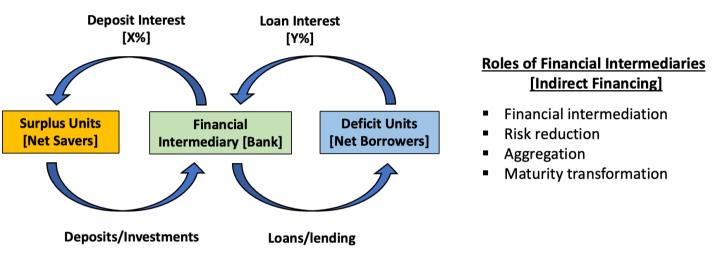
Any business organization or institution engaged in transactions in terms of different financial instruments and providing different financial services, within the financial system. The main function of financial institution can be identified as engaging in the process of financial intermediation.

The financial institutions operating within the financial system of Sri Lanka can be mainly classified into four (4) main categories

[4.3] Financial Intermediation:

The process of accepting money as deposits from surplus units or net savers' (parties with excess funds) and using such funds to provide loans (credit) to deficit units or net borrowers (parties needing funds). Institutions that function as intermediaries in this process will be identified as 'Financial Intermediary Institutions (loosely: financial institutions').

The process of financial intermediation can be further illustrated as follows.



Cost of Intermediation/Interest Margin: [X% < Y%]

Also Relevant:

• Direct Financing [Generally Informal]:

A process where the party who needs money (Deficit units) shall obtain such funds directly from the parties who are having excess funds (Surplus units) without any third-party intermediation. Prior to the creation of the modern day financial intermediary system (financial system) a system direct financing was in practice.

- In modern economies' financial institutions (LCBs, LSBs, LFCs/RFCs etc) act as intermediaries between surplus units and deficit units. This process is known as 'Indirect financing' or as 'Financial intermediation' (or at times as engaging in banking activities).
- It is also important to have a basic idea about the different types of financial institution operating within the financial system of Sri Lanka at present.

[4.4] Banks: [What is Banking]

A 'bank' can be identified as financial intermediaries or traders that deal about money and credit, or banks are fundamentally businesses that are organized to earn profits from their owners.

In the study of economics, the term 'Banks or Banking Institutions' is generally used in referring to the **Central Bank** and **Licensed Commercial Banks**,

[4.5] Commercial Banks:

[AKA: Licensed Commercial Banks – LCBs]

A commercial bank can be identified as a public limited company or institutions engaged in financial intermediation under a licensed provided by the monetary board of the central bank, with the main objective profit generation.

The unique feature of a commercial bank is the ability to accept and maintain deposits of the public in the form of current accounts or demand deposits. LCBs can engage in a process of 'multiple deposit expansion' of 'credit creation' using such demand deposit accounts

Functions of a Commercial Bank

The primary function of commercial banks as a financial intermediary is classified in to two main categories

Secondary financial services maintained or offered by commercial banks can be classified in to further two categories

(01) TAKING OR ACCEPTING DEPOSITS

One of the most important functions of a commercial bank is accepting and safeguarding the deposits of the public. A commercial bank shall accept such deposits under three main types of accounts (liability products)

- 1) Demand Deposits (Current Accounts)
- 2) Savings Deposits (Savings Accounts)
- 3) Fixed (time or term) Deposits

These deposits can be maintained in the form of DCBUs or FCBUs, with the general exception of demand deposits which are most maintained as DCBUs

(02) MAKING LOANS OR PROVIDING ADVANCES

Short-term loans

- Overdraft facility loans
- Loans on short-term project proposals
- Inter-bank daily rupee loans

Long-term loans

- Loans offered to purchase capital assets
- Loans provided to start new businesses and develop business
- Loans given to others business purposes
- Loans provided to start production industries

(03) AGENCY SERVICES

- Collecting dividends income and capital gains received by the customers (clients) and organizing activities with regards to capital market operations: organizing Initial Public Offerings (IPOs), issuing Debentures etc.
- Collecting and making payments on cheques, bonds and promissory notes of customers (clients).
- Maintaining records, contractual savings and pay role accounts of customers acting as a financial agent, when dealing with third party institutions.

(04) GENERAL UTILITY SERVICES

- Providing services relating to international trade activities such as issuing LCs, TC, Backdrafts, dealing with Bills of exchange
- Providing standing order facilities, safety locker services
- Aiding in terms of foreign currency related transactions
- Providing facilities to make utility bill payments and other services such as credit and debit card facilities

[4.6] A Commercial Bank's Balance Sheet

This is a statement that represent the relationship between a commercial banks assets and liabilities or financial position on a given day or point of time.

By observing the balance sheet of a commercial, an understanding can be gained as to how the bank has generated their deposit funds (liabilities) and the manner in which such funds are converted to income generating sources (assets).

[A] <u>STRUCTURE OF ASSETS</u>

Commercial banks operating within a market economy function with a profit maximization objective. In this process commercial banks face the complex problem of managing their asset portfolio in such a manner to achieve a balance between profitability and safeguarding the trust of their depositors have placed on the bank by securing adequate liquidity.

Assets included in a commercial bank balanced sheet will be listed from the most liquid (Perfectly liquid) to the lowest liquid asset (descending order of liquidity).

[1] LIQUID ASSETS

[2] NON LIQUID ASSETS

- 1) Loans and advances [i.e. Financial, Non-Liquid]
 - a. Loans
 - b. Overdrafts or advances

2) Fixed and other assets

The Case for: **Profitability & Liquidity** [Illustrated for Clarity of Knowledge]

A commercial bank functioning within a competitive banking system, operates with the aim Of attaining three main objectives:

- Maintaining liquidity
- Sustaining profitability
- Ensuring security
- In order to attain overall financial stability and going concern as a business, a LCB should be able to maintain a high degree of 'trust' among the general public or their depositors.
- Accordingly, commercial banks are required to maintain sufficient levels of liquid assets (cash or cash equaling assets), there by not disappointing their depositors routine cash withdrawal requests.
- On the other hand commercial banks need to attain, sustain and improve sufficient profits, in order to fulfil shareholder expectations, reinvest for business growth and remain competitive within the industry.
- Thus in order to be profitable, more deposit funds from the public or their customers need to be provided as loans and advances, instead of maintaining as liquid assets.
- Essentially when commercial banks attempt maintain liquidity, by holding cash in hand and other liquid assets, while profitability or level of profitable assets tend to be low, as less deposits funds are offered as loans, and vice versa.
- Commercial banks' balance the conflicting objectives of liquidity and profitability depending on their experience, effective forecasting of deposit and withdrawal trends, and central bank guidance.
- Security from a LCB's point of view is making sure the bank has secured (mortgage or collateralized) enough assets as security, if and when the loans provided default.

[B] STRUCTURE OF LIABILITIES

The liability structure of a commercial bank balance sheet generally consists of four main components. The deposits accepted from the public tends to be the most important liability to any commercial bank.

(1) Capital Account

(2) Total Deposits

- Paid up capital
- Reserve funds

- Demand Deposits
- Time and Savings Deposits
- Retained profits

(3) Borrowings or Loans

- Domestic debt
- Foreign debt

GENERAL SOURCES OF AN LCB'S FUNDS

- ✓ Deposits from public
- ✓ Paid-up capital and share issuances
- ✓ Issuance of Debentures
- ✓ Interbank call money market (call loans)
- ✓ Deposits received on offshore banking units
- ✓ Securing loan facilities from the central bank (Reverse REPO agreements)

Special Notes

Functions of a Financial System:

- Creating facilities for different individuals and firms to supply and withdraw money when required.
- Creating an opportunity to manage the risk involved in investing funds in different financial assets
- Providing facilities for individuals and firms to make payments and settle their different transactions

Three main categories of financial instruments in general use:

- Deposits
- Loans and advances
- Corporate shares or equity

Main types of financial intermediaries' operating within Sri Lanka

- Licensed Commercial Banks (LCB)
- Licensed Specialized Banks (LSB)
- Licensed Finance Companies (LFC)
- Cooperative Rural Banks
- Leasing companies, Higher purchase Companies
- Contractual Savings Institutions (EPF, ETF etc)
- Insurance Companies
- Investment Trusts or Companies
- Unit Trusts

Main Financial Service Providing Institutions

- Merchant Bank
- Fund Management Companies
- Financial Brokers
- Primary Dealers in Government Securities (PD's)

Main Financial Monitoring & Regulatory Institutions

- Central Bank (CBSL)
- Securities and Exchange Commission of Sri Lanka
- Insurance Board of Sri Lanka

Main types of <u>financial or debt instruments</u> issued and used by the <u>government</u>, <u>Corporates and commercial banks</u>

Government debt instruments

- Treasury bills
- Treasury bonds
- Rupee securities

Debt instruments issued by companies

- Commercial papers
- Debentures

Debt instruments used by commercial banks

- Certificates of **deposit**
- Assets backed securities
- Leasing or higher purchase facilities
- Call money
- Equities

Financial Derivatives

A <u>derivative</u> is a contract between two or more parties whose value is based on an agreed-upon underlying <u>financial asset</u> (like a security) or set of assets (like an index), in order to the cover the risk associated with the change in future value of financial assets.

- Common underlying instruments include bonds, commodities, currencies, interest rates, market indexes, and stocks.
- Common financial derivatives instruments: Futures contracts, forward contracts, options, swaps, and warrants.

Main sub-markets within the 'Financial Market of Sri Lanka'

Money Markets

- Inter-bank Call Money Market
- Treasury Bill Market
- Commercial Paper Market
- Inter-bank FOREX Market

Capital Markets

- Treasury Bonds Market
- Corporate Bonds Market
- Equity Market

Sovereign Credit Rating:

A sovereign credit rating refers to a systematic and qualitative evaluation of a governments ability or capacity to service its total existing debts owed or borrowed by them in full and during the stipulated period and the agreements or willingness to make such payments shown by a country, which is conducted by internationally recognized institutions such as Fitch, Moody's and Standard & Poor. Some of the following factors are considered in making such ratings (determinants of credit rating)

- Political risk and stability
- Income and economic structure
- Economic growth prospects
- Debt burden
- Off-shore contingent liabilities
- External or foreign reserves
- Fiscal flexibility and monetary stability

Having a universally accepted credit rating reduces uncertainty about the risk exposure of the contrary and enables improved access to international capital markets, as well as encourages foreign investments in the country.



[5.1] Fundamentals of LCB Credit Creation

- A. Fractional Reserve Based Banking
- B. Cash (Money) Reserves of LCBs
- C. Statutory Reserve Ratio
- D. Excess Reserves

(A) FRACTIONAL RESERVE BASED BANKING

The is a commercial banking system in which, each bank maintains only a fractional percentage (small percentage) of total deposits accepted by them from the general public as reserves (as liquid reserves) and extend a major part of such deposits (i.e. the excess amount of deposit balance after allocating for required reserves) as loans and advances to borrowers or demanders of loans; and earn profits.

In modern banking systems maintaining such fractional reserves is ensured by enforcing a Statutory (legal) Reserves Ratio or Requirement by the relevant financial authority or Central Bank.

(B) CASH (MONEY) RESERVES OF LCB'S

- Perfectly liquid Reserves (or Assets)
- Main Forms (Components)
 - Cash on hand (Vault Cash Balance)
 - Due from CB (Cash deposits of LCBs at CBs)
- Kept fulfilling statutory requirements LCBs maintain their cash reserves mainly, in the form of due from CB

(C) STATUTORY RESERVES RATIO

The statutory reserve ratio (SRR) is the proportion of the deposit liabilities that commercial banks are required to keep as a cash deposit with the Central Bank.

Under the CBSL Act No. 16 of 2023 [formerly: Monetary Law Act (MLA)], commercial banks are required to maintain reserves with the Central Bank at rates determined by the Bank. At present, demand, time and savings deposits of commercial banks denominated in rupee terms are subject to the SRR.

Also Relevant:

- The proportion of rupee deposit liabilities that commercial banks are required to maintain as a deposit with the Central Bank, subject to an allowance for vault cash balances of more than two per cent but not exceeding four per cent of deposit liability, which could be deducted from the requirement.
- At present this ratio is 2.0%.
- The statutory reserves ratio is also identified using alternative terms such as variable reserve ratio, legal reserve ratio; required reserves ratio, cash reserve ratio and money ratio.

(D) EXCESS RESERVES

The level of reserves maintained by a commercial bank; exceeding (above) the required or stipulated statutory reserve. That is excess reserves equals the actual reserve minus the statutory reserves required. It is important to remember that a commercial banking system can only create credit or engage in money creation if it has excess reserves.

Formula

[E2] Application Exercises: Excess Reserves

(A) Assume that a commercial bank has total deposits of Rs. 250 million and 170 millions of total reserves. The remainder of the bank assets is loans. If the required reserve ratio is 10%, then what is the amount of excess reserves currently held by this bank?

(B) Suppose that the statutory reserve ratio is 10 percent, a LCBs Demand Deposits liability is Rs 200,000 and Reserves assets are Rs. 50,000. Does the bank have any excess reserves?

[5.2] LCB 'Multiple Deposit Expansion' Process

- Aggregate process in which a competitive banking system can settle transactions for a multiple value of demand deposits, relative to the initial value of deposits accepted by the banking system in the beginning of the process.
- A single bank in the system has a specific role: accept deposits of the public, retain required reserves and extent or provide loans.
- As a result of this process the **Money Supply** of the country shall **essentially expand**, thus known as **Money Creation** or **Money Illusion**.

Analysis (Learning) Approaches

Basic Assumptions of the Credit Creation Process

- A given statutory reserve ratio (e.g. 20 per cent)
- There will not be any inflow or outflow of funds (money) to and from the banking system after the initial or original deposit.
- All borrowers will deposit the loan funds or cheques fully in a different commercial bank within the economy's commercial banking system (the reserve assets of one bank completely move in to another bank).
- All banks will not maintain excess reserves (all excess reserves are immediately converted to loans)

APPROACH [1]

Considering the credit creation process conducted by several banks operating within a banking system in terms of each banks contribution (role) within the process.

Initially Mr. A deposits Rs. 50,000 (Initial deposit) in commercial bank (X). The balance sheet of commercial bank can be given as follows.

BALANCE SHEET (X) LCB

Liability	Rs.	Assets	Rs.

BALANCE SHEET (X) LCB

Liability	Rs.	Assets	Rs.

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BALANCE SHEET (Y) LCB

Liability	Rs.	Assets	Rs.

BALANCE SHEET (Z) LCB

Liability	Rs.	Assets	Rs.

DEPOSIT MULTIPLIER

The deposit multiplier refers to the number of times the value of demand deposits of the banking system can be expanded in total or aggregate terms, based on a given initial demand deposit value. The way the consolidated balance sheet of a banking system changes due to change in the reserve ratio, shall also be derived based on the deposit multiplier relevant to the banking system.

In simple terms what is the number of times a given demanded deposit can be multiplied through the credit creation process within the banking system. This is also known as credit multiplier or deposit expansion multiplier. The deposit multiplier equals the reciprocal of the statutory reserve ratio.

Formula

Illustration

The deposit multiplier can be used to estimate *the total amount of deposits* that can be created using a certain initial or original deposit within the banking system. The following simple formula can be used for this purpose.

Formula

Alternatively, the manner in which the *ultimate (final) consolidated balance sheet of a banking system changes* due to change in the reserve ratio, at the end of a certain credit creation process, can be derived based on the deposit multiplier relevant to the banking system. Following simple formula can be used for this purpose.

Formula

APPROACH [2]

Considering the credit creation process of overall banking system, where the final or ultimate consolidated balance sheet of the baking system is represented.

Assume initially there is a deposit of Rs. 50,000 (initial deposit) in a commercial banking system, where the banks operate under a cash ratio of 20%. The final balance sheet of this commercial banking system can be given as follows.

BALANCE SHEET LCB SYSTEM

Liability	Rs.	Assets	Rs.

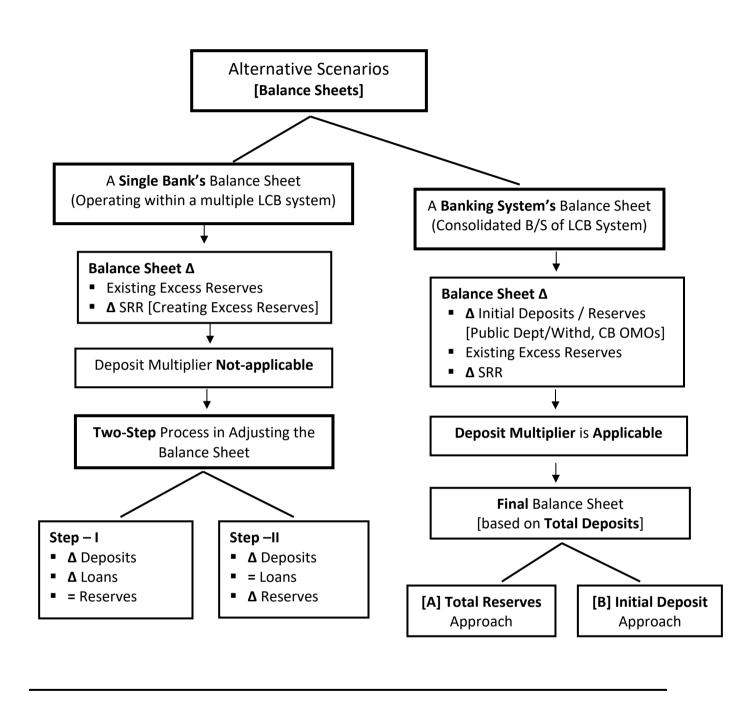
If the statutory reserves ratio relevant for this banking system was reduced to 10%, identify the total money created and the changes in the assets and liability structure of the banking system

BALANCE SHEET LCB SYSTEM

Liability	Rs.	Assets	Rs.

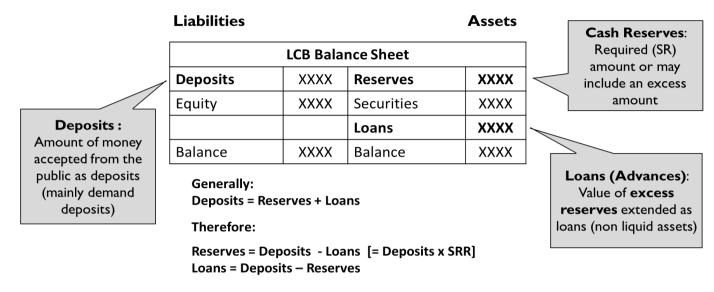
[5.3] Exam Techniques

Multiple Deposit Expansion Process [Credit /Money Creation]



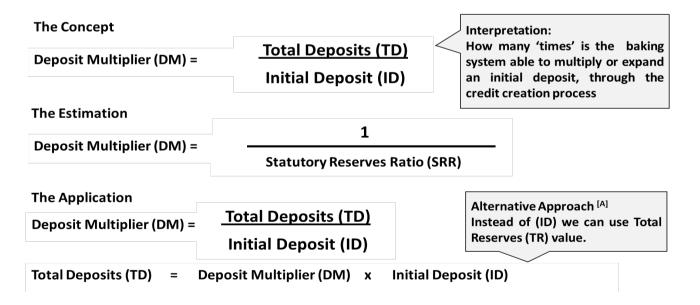
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Simplified Balance Sheet of a LCB



DEPOSIT (EXPANSION) MULTIPLIER (DM OR K)

[THE DIRECT AND EASY WAY TO FIND THE VALUE OF TOTAL DEPOSITS]



Intro: Financial System & Banking

Multiple Deposit Expansion Process (Credit Creation)

Assume a certain banking system with a multiple number of competitive commercial banks, functions at a Statutory Reserves Ratio of 10% and a given customer deposits Rs. 1000 in one of the commercial bank's within the banking system, e.g. bank (A). The credit/ deposit creation process which initiates with this deposit can be illustrated as follows.

Bank	New Deposits	New Loans (ER)	New Reserves
А	1000*	900	100
В	900	810	90
C	810	729	81
D	729	656.10	72.90
E	656.10	590.49	65.61
F	590.49	531.44	59.05
G	531.44	478.30	53.14
Н	478.30	430.47	47.83
I	430.47	387.42	43.05
J	387.42	348.68	38.74
Total (A) to (J)	6,513.22	5,861.90	651.32
Total of Remaining Banks	3,486.78	3,138.10	384.68
Total Banking System	10,000	9,000	1,000*
	<u> </u>		·

Banking System's (Final) Balance Sheet			
Liabilities			Assets
Deposits	10,000	Reserves	1,000*
		Loans	9,000
	<u>10,000</u>		<u>10,000</u>

[E3] Application Exercises:

[Q1] The information given below refers to the asset and liability situation of one of the LCBs, operating within a hypothetical banking system

Liability	Rs.	Assets	Rs.
Deposits	100,000	Reserves	22,000
		Securities	38,000
		Loans	40,000
Total Liabilities	100,000	Total Assets	100,000

Assume the banking system operates with a SRR of 20%

- (A) Can this bank offer any new loans?
- (B) If any available excess reserves are offered as loans, how would the assets and liabilities structure of this bank appear, initially and after the full loan amount has been drawn down by the borrowers
- **[Q2]** Given below is the simplified balance sheet a single bank within a competitive banking system, assume banks do not maintain any excess reserves.

Liability	Rs. Mn	Assets	Rs. Mn
Deposits	1,000	Reserves	100
		Loans	900
Total Liability	1000	Total Assets	1000

If the SRR is reduced by the CB to 5%, represent the changes in the banks' balance sheet

[Q3] The balance sheet of a given bank operating within a banking system.

Balance Sheet			
Liabilities Assets			
Deposits	100	Reserves	10
		Loans	90
	100		100

- (I) If the statutory reserves ratio is 5%, present the banks new balance sheet, if any changes are conductive
- (II) If the initial SRR was 10% and was relaxed to 5% what will be the changes in assets and liabilities of the bank.

[Q4] Assume that the initial deposit into a certain banking system is Rs. 10,000 and the cash ratio applicable is 20%, while there are zero excess reserves.

If the multiple number of commercial banks in this system only deal in demand deposits, estimate the following

- (I) Prepare a schedule to represent the first **four** stages of the credit creation process including new deposits, new reserves and new excess reserves.
- (II) Estimated the total value of deposits created and total value of new loans issued, using an alternative approach
- **[Q5]** The following are information relating to banking and finance of a hypothetical economic system.

Existing demand deposits of the banking system	Rs. 10,000.00
Statuary reserve ratio	20%
Currency held by the public	Rs. 5,000.00

- (A) Prepare the consolidated balance sheet of the banking system if the baking system does not maintain any excess reserves
- (B) If the public decides to convert Rs.1000.00 into currency in circulation out of their existing demand deposits in the commercial banking system. Present the new balance sheet of the banking system.
- (C) Estimate the money supply after these adjustments
- [Q6] Suppose that money supply in a hypothetical economy is Rs. 110 billion. Of his, Rs. 10 billion is currency held by the public and Rs. 100 billion is bank deposits.

The Central Bank has decreed that commercial banks must keep 10% of their total deposit liabilities in form of currency. So, the banking system has Rs. 10 billion worth of currency in bank vaults and Rs. 90 billion worth of loans on its books.

- (A) What is the value of the deposit multiplier?
- (B) The Central Bank increases the reserve ratio to 25%. Assuming that there is no change in the amount of currency held by the public, and the commercial banks do not maintain any excess reserves, what will be the
 - (I) New level of bank assets and liabilities
 - (II) The new level of money supply
- (C) What would the answer for part (B) if the reserve ratio were 5%.

[Q7] Given bellow is the consolidated balance sheet of a banking system, at the end of a certain credit creation process (all values in Rs. Millions).

Banking System's Balance Sheet					
Liabilities		Assets			
Deposits	10,000	Reserves	2,000		
		Loans	8,000		
	<u>10,000</u>		<u>10,000</u>		

If the banking system retains excess reserves of Rs. 1000 million at present, answer the following questions

- (I) Prepare the balance sheet of the banking system after all adjustments are completed.
- (II) If the currency in circulation with the public amounts to Rs. 8000 million, estimate the money supply after all adjustments are completed.

Self-Practice Questions

(01) The following is some information from a simplified balance sheet for one of the banks in a commercial banking system in a country (All values in rupees millions)

Deposits	100,000	Securities	30,000
Required Reserves	10,000	Loans	80,000
Excess reserves	5,000		
Shareholders' equity	25,000		

- (A) What is the required reserve ratio
- (B) Assume that a customer withdraws Rs. 2,000 million from his current account at this bank's reserve change based on this cash withdrawal
- (C) Assuming that the required reserves ratio remains unchanged, what is the maximum amount of new loans that this bank could make after the withdrawal of Rs. 2000 million deposits
- (02) The following information is presented with regards to a competitive banking system, operating with an SRR of 10%.

 $M = Cp + DDp \rightarrow 7000 = 5000 + 2000$

Requirements

- (I) Prepare the balance sheet of the banking system
- (II) If the SRR increases to 20%, while (CC) remains unchanged, how will the balance sheet of the banking system change?
- (III) If the SRR increases to 5%, while (CC) remains unchanged, how will the balance sheet of the banking system change?

[5.4] [A] Conditions for Multiple Deposit Expansion

- 1) The existence of 'Excess Reserves' (having and willing to extend excess reserves as loans
- 2) The existence of 'Demand for Loans' (market conditions conductive for the expansion of credit)
- 3) Ensuring there are no 'Leakages' of money from the banking system (lack of any public cash drain)

[B] The liquid Asset Ratio:

LCBs are required to maintain Statutory Liquid Assets (SLAR) of an amount not less than 20% of total liabilities, **less** liabilities to the **Central Bank** and to the **shareholders**, in respect of the Domestic Banking Unit in Rupees and in respect of the Offshore Banking Unit in US dollars, on a daily basis.

Total of Liquid Assets

Total liabilities, less liabilities to the Central Bank
And to the shareholders

[C] The phenomenon of 'Multiple Contraction of Bank Deposits'

This is essentially a process in which the multiple deposit expansion process operates in reverse or inverse manner, thus leading to a multiple number of times deposit and monetary (money supply) contraction. Such a multiple deposit contraction will occur within a banking system functioning with zero excess reserves, if any leakages or reserves/deposits takes place.

The most common instance for such a process of deposit or reserves contraction is when the central bank sells bonds or securities within a baking system with zero excess reserves, the CB maintains the statutory reserves ratio is held constant. In this context banks who purchase such securities will face a situation of required reserves (statutorily) deficit. In order to fulfill or refinance the said deficit of reserves, banks can adopt one or both of the following options:

- Engaging in process of 'Recalling Loans'
- If available 'Selling Securities'

[D] BANK RISKS

Threats or uncertainties faced by the banking sector

Bank risks refer to events or developments that can unfavorably affect a banks income, financial situation or routine operations in carrying out its daily activities. Effective risk management is an essential feature in stable or strong commercial banks.

A bank is subject to risk due to fluctuations or activities that take place in the macro economy as well as activities specific to each bank. There are four main types of risk or uncertainty that the banking sector needs to manage.

(01) Credit (Lending) Risk

The risk associated with borrowers defaulting on loans, i.e. Non-Performing Loans (NPL's)

(03) Liquidity Risk

The risk associated with over lending and having insufficient cash reserves

(02) Market Risk

The risk banks are exposed to which is associated with market dynamics

(04) Operational and other Risks

The risk of financial losses and property (tangible and intangible) damages associated with routine business operations (business risk)



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