Liquidity Management

What is liquidity?

- The availability of cash at the time needed at a reasonable cost
- A firm is said to be liquid if it has ready access to immediately spendable funds at reasonable cost at time those funds are needed
  - Right amount of immediately spendable funds on hand
  - Can raise liquid funds in timely fashion by borrowing or selling assets
- The size and volatility of cash requirements affect the liquidity position of the bank
  - Transaction that affect the bank's cash balance and liquidity position: Deposits and withdrawals; loan disbursements and loan payments
- Lack of adequate liquidity is the first sign of the trouble for banks

Supplies of Liquid Funds

- Incoming Customer Deposits
- Revenues from the Sale of Non-deposit Services
- Customer Loan Repayments
- Sales of Bank Assets
- Borrowings from the Money Market

Demands for Liquidity

- Customer Deposit Withdrawals
- Credit Requests from Quality Loan Customers
- Repayment of Non-deposit Borrowings
- Operating Expenses and Taxes
- Payment of Stockholder Dividends

Net Liquidity Position= Supply of liquid funds- demand for liquid funds

Essence of Liquidity Management

- **Rarely are the demands for liquidity equal to the supply of liquidity at any particular moment. The financial firm must continually deal with either a liquidity deficit or surplus**
- **There is a trade-off between liquidity and profitability. The more resources tied up in readiness to meet demands for liquidity, the lower is the financial firm's expected profitability.**

Sources of Liquidity Problems

- **Imbalances between maturity dates of their assets and liabilities**
- **High proportion of liabilities (especially demand deposits and money market borrowings) subject to immediate repayment**
- **Sensitivity to changes in interest rates**
  - **May affect customer demand for deposits**
  - **May affect customer demand for loans**
- **Central role in the payment process, reputation and public confidence in the system**

Liquidity Management Steps

- Estimation of funds needed
  - Deposits inflows and outflows
  - Varying levels of loan commitments
- Meeting liquidity needs
  - Asset management
  - Liability management

Methods for Estimating Liquidity Needs

- Sources and Uses of Funds Approach
- Liquidity Indicator Approach
- Structure of Funds Approach
- Signals from the Marketplace

Sources and Uses of Funds Approach

- Liquidity rises as deposits increase and loans decrease
- Liquidity declines when deposits decrease and loans increase
- Mismatch between sources and uses of liquidity: Liquidity gap
- Liquidity gap can be positive or negative

Sources and Uses of Funds Approach …

- Develop a sources and uses of funds statement
- Loan portfolio has to be divided into different components
- Loans and deposits must be forecasted for a given liquidity planning period
- The estimated change in loans and deposits must be calculated for the same planning period
- The liquidity manager must estimate the bank's net liquid funds by comparing the estimated change in loans to the estimated change in deposits
- Influence of government and economic factors on loan and deposits

Sources and Uses of Funds Approach …

- **Forecasting the sources and uses of funds**
  - **Trend component: Trend line using as reference points year end, quarterly and monthly deposits and loans established over the last 10 years**
  - **Seasonal component: How deposits and loans are expected to behave in any given week or month due to seasonal factors as compared to the most recent year end deposit or loan level**
  - **Cyclical component: Positive or negative deviations from bank's expected deposits and loans depending upon the strength and weakness of the economy in the current year**

Example

Deposit forecast	Trend estimate	Seasonal element	Cyclical element	Total estimated deposit
March week 1	1220	-12	-8	1200
March week 2	1202	-50	-52	1100
March week 3	1204	-108	-96	1000
March week 4	1206	-138	-118	950
April week 1	1208	72	-30	1250
April week 2	1210	22	-32	1200
Loan Forecast	Trend estimate	Seasonal element	Cyclical element	Total estimated deposit
March week 1	798	7	-5	800
March week 2	810	49	-9	850
March week 3	801	174	-25	950
March week 4	805	163	32	1000
April week 1	806	27	-83	750
April week 2	810	95	-5	900

Example …

End of month	Estimated total deposit (Rs)	Estimated total loan (Rs)	Estimated Change in deposits (Rs)	Estimated Change in Loans (Rs)	Estimated Liquidity Deficit or surplus
March week 1	1200	800	-	-	-
March week 2	1100	850	-100	50	-150
March week 3	1000	950	-100	100	-200
March week 4	950	1000	-50	50	-100
April week 1	1250	750	300	-250	550
April week 2	1200	900	-50	150	-200

Basle Committee Framework (for Large banks)

- **Measuring and managing net funding requirements**
  - Construction of detailed sources and uses of fund statement referred to as maturity ladder.
  - Maturity ladder gives a daily calculation of the cumulative net excess or deficit of funds selected dates in future
  - Variety of maturity ladder constructed considering alternative scenarios: normal business conditions, institution specific problems and general market problem
- **Managing market access**
- **Contingency planning**

Liquidity Indicator Approach

- **Cash position indicator:** Cash and deposits due / Total assets
- **Liquid securities indicator:** Government securities / Total assets
- **Net federal funds and repurchase agreements position:** (Govt. funds sold and reverse repo agreements – Govt. fund purchased and repurchase agreement) / Total assets
- **Capacity ratio:** Net loans and leases / Total assets (negative indicator)
- **Pledged securities ratio:** Pledged securities / Total security holdings (negative)
- **Hot money ratio:** Money market assets / volatile liabilities
- **Deposit brokerage index:** Brokered deposits / total deposits
- **Core deposit ratio:** Core deposits / Total assets
- **Deposit composition ratio:** Demand deposits / Time deposits
- **Loan commitments ratio:** Unused loan commitments / Total assets

Structure of Funds Approach

- **Banks deposits and other funds sources are divided into different categories based on their estimated probability of being withdrawn**
- **Three categories of deposits and non-deposit liabilities**
  - **Hot money liabilities**
  - **Vulnerable funds**
  - **Stable funds**

Structure of Funds Approach…

- **Hot money liabilities**
  - Deposits and other liabilities that are very interest sensitive
  - Sure about withdrawn during the current period
- **Vulnerable funds**
  - Some percentage (25% to 30%) of total deposits may be withdrawn during the current period
- **Stable funds (core deposits / core liabilities)**
  - Unlikely to be removed during the current period

Structure of Funds Approach…

- Manager must aside liquid funds according to some desired operating rule for each of these funds sources
- Liability liquidity reserve= 0.95 (Hot money deposits and non deposit funds- Legal reserves hold) + 0.30 (Vulnerable deposit and non deposit funds – Legal reserves held) + 0.15 (Stable deposits and non deposit funds – Legal reserves held)
- Management should strive to meet all good loans that walk in the door in order to build lasting customer relationships

Structure of Funds Approach…

- **Total liquidity requirement = Deposits and non deposit liability liquidity requirement and loan liquidity requirement= = 0.95 (Hot money deposits and non deposit funds- Legal reserves hold) + 0.30 (Vulnerable deposit and non deposit funds – Legal reserves held) + 0.15 (Stable deposits and non deposit funds – Legal reserves held) + 1.00 (Potential loans outstanding – Actual loans outstanding)**
- **These are subjective estimates and depends upon the management's decisions**

Example

Hot Money: Rs. 25 million, Vulnerable fund: Rs. 24 Million, Stable fund: Rs. 100 million, Legal resrve requirements: 3%, Total Loan: Rs. 135 million, Recent loan: Rs. 140 million, Growth rate of loan: 10%

Liquidity requirement: 0.95 (25-0.03*25) + 0.3 (24-0.03*24) + 0.15 (100-0.03*100) + 140*0.1+ (140-135)=Rs. 63.57 million

Structure of Funds Approach…

- Use of probabilities in deciding how much liquidity to hold
- Defining worst and best possible liquidity positions
- Worst possible liquidity position: High loan demand (beyond management's expectation) and deposits are not adequate to fulfill the demand (liquid deficit)
- Best possible liquidity position: Deposit growth above the expectation and loan demand below the expectation (liquid surplus)

Structure of Funds Approach…

- **Expected liquidity requirement = Probability of outcome X (Estimated liquidity surplus or deficit in outcome X) + Probability of outcome Y (Estimated liquidity surplus or deficit in outcome Y) + --- +---**
- **The sum assigned probabilities assigned by the management should be equal to 1.**

Example

Possible Liquidity Outcomes for next period	Estimated Average Volume of Deposits Next Period	Estimated Average Volume of Loans Next Period	Estimated Liquidity Surplus or Deficit Position next period	Probability Assigned by Management to Each possible outcome
Best possible liquidity position	170	110	+60	15%
Liquidity position bearing the highest probability	150	140	+10	60%
Worst possible liquidity position	130	150	-20	25%

Expected liquidity requirement= 0.15(60 million) + 0.6 (10 million)+0.25 (-20 million)= Rs. 10miilion

Signals from Marketplace

- Public confidence
- Stock Price behavior
- Risk Premiums on CDs and other borrowings
- Loss sales of assets
- Meeting commitments to credit customers
- Borrowings from central bank

Liquidity Management Strategies

- **Asset Liquidity Management or Asset Conversion Strategy**
- **Borrowed Liquidity or Liability Management Strategy**
- **Balanced Liquidity Strategy**

Asset Liquidity Management Strategies

- **This strategy calls for storing liquidity in the form of liquid assets (t-bills, fed funds loans, cds, etc.) And selling them when liquidity is needed**
- **Liquid Asset**
  - **Must have a ready market so it can be converted to cash quickly**
  - **Must have a reasonably stable price**
  - **Must be reversible so an investor can recover original investment with little risk**

Options for Storing Liquidity

- Treasury Bills
- Fed Funds Sold to Other Banks
- Purchasing Securities for Resale (Repos)
- Deposits with Correspondent Banks
- Money market instruments
- Municipal Bonds and Notes
- Federal Agency Securities
- Negotiable Certificates of Deposits
- Eurocurrency Loans

Cost of Asset Liquidity Management

- Loss of future earnings on assets that must be sold
- Transaction costs (commissions) on assets that must be sold
- Potential capital losses if interest rates are rising
- May weaken appearance of balance sheet
- Liquid assets generally have low returns

Liability Liquidity Management Strategy

- This strategy calls for the bank to purchase or borrow from the money market to cover all of its liquidity needs
- Sources of Borrowed Funds
  - Call money market
  - Government Funds Purchased
  - Selling Securities for Repurchase (Repos)
  - Issuing Large CDs
  - Issuing Eurocurrency Deposits
  - Securing Advance from other FIs
  - Borrowing Reserves from the Discount Window of the central bank

Liability Liquidity Management Strategy

Advantages

- Borrow Only When There is a Need for Funds
- Volume and Composition of the Investment Portfolio Can Remain Unchanged
- The Institution Can Control Interest Rates in Order to Borrow Funds (raise offer rates when needs requisite amounts of funds)

Disadvantages

- Highest Expected Return But Carries the Highest Risk Due to Volatility of Interest Rates and Possible Rapid Changes in Credit Availability
- Borrowing Cost is Always Uncertain-> Uncertain Earnings
- Borrowing Needs Can Be Interpreted as a Signal of Financial Difficulties

Balanced Liquidity Management Strategy

- Combination of asset and liability management strategies
- Some of the expected demands for liquidity are stored in assets and other anticipated liquidity needs are managed by arrangements for lines of credit from potential suppliers of funds
- Unexpected cash needs are met from near term borrowings
- Longer term liquidity needs can be planned for can be arranged from asset management

Funds Management of Liquidity

- **Liquidity Ratios**
  - **Loans / deposits**
  - **Loans / non-deposit liabilities**
  - **Near cash assets / large denomination liabilities**
- **Liquid assets and liabilities in period T / Estimated Liquid needs in period T**
  - **Negative ratio means that bank has sufficient liquidity**