BANKING MODUL

Asset Liability Management
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<th>Materi Tengah Semester</th>
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ASSET - LIABILITY MANAGEMENT

1.1 LIQUIDITY MANAGEMENT
1.2 BASIC KNOWLEDGE ON FUNDING AND GAPPING
1.3 CASE DISCUSSION
Lesson 1.1
LIQUIDITY AND RESERVE MANAGEMENT

**GOALS**

Explore the reason's why financial institutions often face heavy demands for immediately spendable funds (liquidity) and learn about the methods they can use to prepare for meeting their cash needs.
Liquidity = The Availability of Cash in the Amount and at the Time Needed at a Reasonable Cost

Supplies of Liquid Fund:
- Incoming Customer Deposits
- Revenues from the Sale of Nondeposit Services
- Customer Loan Repayments
- Sales of Bank Assets
- Borrowings from the Money Market
LIQUIDITY

- Demands for Liquidity
  - Customer Deposit Withdrawals
  - Credit Requests from Quality Loan Customers
  - Repayment of Nondeposit Borrowings
  - Operating Expenses and Taxes
  - Payment of Stockholder Dividends

- A Financial Firm’s Net Liquidity Position
  \[ L = \text{Supplies of Liquid Funds} - \text{Demands for Liquidity} \]
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 Bank Liquidity and Profitability. The More Resources are Tied Up in Readiness to Meet Demands for Liquidity, the Lower is the Financial Firm’s Expected Profitability
LIQUIDITY PROBLEMS – WHY?

- Why Banks and Their Competitors Face Significant Liquidity Problems?
  - Imbalances Between Maturity Dates of Their Assets and Liabilities
  - High Proportion of Liabilities Subject to Immediate Repayment
  - Sensitivity to Changes in Interest Rates
  - Central Role in the Payment Process
LIQUIDITY PROBLEMS – HOW?

What guidelines should management keep in mind when it manages a financial firm’s liquidity position?

- It is important for a liquidity manager to:
  - keep track of the activities of other departments within the bank;
  - know in advance the planned activities of the bank's largest credit and deposit customers;
  - set clear priorities and objectives in liquidity management; and
  - react quickly to liquidity deficits and liquidity surpluses.
1. **Asset Liquidity Management or Asset Conversion Strategy**
   Strategy for meeting liquidity needs, used mainly by smaller banks, in which liquid funds are stored in readily marketable assets that can be quickly converted into cash as needed.

2. **Borrowed Liquidity or Liability Management Strategy**
   Involves borrowing enough immediately spendable funds to cover demands for liquidity made against a bank.

3. **Balanced Liquidity Strategy**
   Balanced liquidity management calls for using both asset management and liability management to cover a bank's liquidity needs.
1. ASSET LIQUIDITY MANAGEMENT

- Asset Liquidity Management
  - This strategy calls for storing liquidity in the form of liquid assets and selling them when liquidity is needed.

- Liquid Assets:
  - 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.
COST OF ASSET LIQUIDITY MANAGEMENT

- Costs of Asset Liquidity Management
  - Loss of Future Earnings on Assets That Must Be Sold
  - Transaction Costs 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
2. BORROWED LIQUIDITY MANAGEMENT

- **Borrowed Liquidity Management**
  - 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**
  - Selling securities for repurchase (repos)
  - Issuing large CDs
  - Issuing eurocurrency deposits
3. BALANCED LIQUIDITY MANAGEMENT

- **Balanced Liquidity Management Strategy**
  - The Combined Use of Liquid Asset Holdings (Asset Management) and Borrowed Liquidity (Liability Management) to Meet Liquidity Needs

- **Guidelines for Liquidity Managers**
  - They Should Keep Track of All Fund-Using and Fund-Raising Departments
  - They Should Know in Advance Withdrawals by the Biggest Credit or Deposit Customers
  - Their Priorities and Objectives for Liquidity Mgt Should be Clear
  - Liquidity Needs Must be Evaluated on a Continuing Basis
METHOD FOR ESTIMATE LIQUIDITY NEEDS

- Methods for Estimating Liquidity Needs
  1. Sources and Uses of Funds Approach
  2. Structure of Funds Approach
  3. Liquidity Indicator Approach
  4. Signals from the Marketplace
SOURCES & USES OF FUNDS

- Loans and Deposits Must Be Forecast 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

STRUCTURE OF FUNDS

- A Bank’s Deposits and Other Sources of Funds Divided Into Categories. For Example:
  - ‘Hot Money’ Liabilities
  - Vulnerable Funds
  - Stable Funds
- Liquidity Manager Set Aside Liquid Funds According to Some Operating Rule
SOURCES/USES & STRUCTURE OF FUNDS

LIQUIDITY INDICATOR APPROACH
- Cash Position Indicator
- Liquid Security Indicator
- Capacity Ratio
- Pledging Securities Ratio
- Hot Money Ratio
- Short-Term Investments to Sensitive Liabilities Ratio
- Deposit Brokerage Index
- Core Deposit Ratio
- Deposit Composition Ratio

MARKET SIGNALS OF LIQUIDITY MANAGEMENT
- Public Confidence
- Stock Price Behavior
- Risk Premiums on CDs
- Loss Sales of Assets
- Meeting Commitments to Creditors
- Borrowings from the Central Bank
Lesson 1.2
BASIC KNOWLEDGE ON FUNDING AND GAPPING

GOALS

Acquaint students with basic knowledge on how to manage funding and gapping. It is intended to explore the options bankers have today for dealing with risk – especially the risk of loss due to changing interest rates – and to see how a bank’s management can coordinate the management of its assets with the management of its liabilities in order to achieve the institution’s goals.
Asset-Liability Management - The purpose of Asset-Liability Management is to control a bank’s sensitivity to changes in market interest rates and limit its losses in its net income or equity.

Historical View of Asset-Liability Management
1. Asset Management Strategy
2. Liability Management Strategy
3. Funds Management Strategy
Asset management refers to a banking strategy where management has control over the allocation of bank assets but believes the bank's sources of funds (principally deposits) are outside its control.

Liability management is a strategy of control over bank liabilities by varying interest rates offered on borrowed funds.

Funds management combines both asset and liability management approaches into a balanced liquidity management strategy.
INTEREST RATE RISK

- **Price Risk**
  - When Interest Rates Rise, the Market Value of the Bond or Asset Falls

- **Reinvestment Risk**
  - When Interest Rates Fall, the Coupon Payments on the Bond are Reinvested at Lower Rates
YTM and BANK DISCOUNT RATE

\[
\text{Market Price} = \sum_{t=1}^{n} \frac{\text{CF}_t}{(1 + \text{YTM})^t}
\]

\[
\text{DR} = \frac{\text{FV} - \text{Purchase Price} \ast 360}{\text{FV} \ast \# \text{Days to Maturity}}
\]

Where: FV equals Face Value
One Important Goal of Interest Rate Hedging is to Insulate the Bank from the Damaging Effects of Fluctuating Interest Rates

The goal of hedging in banking is to freeze the spread between asset returns and liability costs and to offset declining values on certain assets by profitable transactions so that a target rate of return is assured.
**INTEREST-SENSITIVE GAP MEASUREMENT**

\[
\text{Dollar Interest-Sensitive Gap} = \text{Interest-Sensitive Assets} - \text{Interest Sensitive Liabilities}
\]

\[
\text{Relative Interest-Sensitive Gap} = \frac{\text{Dollar IS Gap}}{\text{Bank Size}}
\]

\[
\text{Interest Sensitivity Ratio} = \frac{\text{Interest Sensitive Assets}}{\text{Interest Sensitive Liabilities}}
\]
### IS ASSET & IS LIABILITIES

<table>
<thead>
<tr>
<th>Interest-Sensitive Assets</th>
<th>Interest-Sensitive Liabilities</th>
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<tbody>
<tr>
<td>- Short-Term Securities Issued by the Government and Private Borrowers</td>
<td>- Borrowings from Money Markets</td>
</tr>
<tr>
<td>- Short-Term Loans Made by the Bank to Borrowing Customers</td>
<td>- Short-Term Savings Accounts</td>
</tr>
<tr>
<td>- Variable-Rate Loans Made by the Bank to Borrowing Customers</td>
<td>- Money-Market Deposits</td>
</tr>
<tr>
<td></td>
<td>- Variable-Rate Deposits</td>
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IS ASSET & IS LIABILITIES

Asset-Sensitive Bank Has:

- Positive Dollar Interest-Sensitive Gap
- Positive Relative Interest-Sensitive Gap
- Interest Sensitivity Ratio Greater Than One

Liability Sensitive Bank Has:

- Negative Dollar Interest-Sensitive Gap
- Negative Relative Interest-Sensitive Gap
- Interest Sensitivity Ratio Less Than One
GAP POSITIONS AND ITS EFFECTS

Gap Positions and the Effect of Interest Rate Changes on the Bank

- Asset-Sensitive Bank
  - Interest Rates Rise - NIM Rises
  - Interest Rates Fall - NIM Falls

- Liability-Sensitive Bank
  - Interest Rates Rise - NIM Falls
  - Interest Rates Fall - NIM Rise

Zero Interest-Sensitive Gap

- Dollar Interest-Sensitive Gap is Zero
- Relative Interest-Sensitive Gap is Zero
- Interest Sensitivity Ratio is One
  - When Interest Rates Change in Either Direction - NIM is Protected and Will Not Change
IMPORTANT DECISION ON IS GAP

- Management Must Choose the Time Period Over Which NIM is to be Managed
- Management Must Choose a Target NIM
- To Increase NIM Management Must Either:
  - Develop Correct Interest Rate Forecast
  - Reallocate Assets and Liabilities to Increase Spread
- Management Must Choose Dollar Volume of Interest-Sensitive Assets and Liabilities
<table>
<thead>
<tr>
<th>Expected Change in Interest Rates</th>
<th>Best Interest-Sensitive Gap Position</th>
<th>Aggressive Management’s Likely Action</th>
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</thead>
<tbody>
<tr>
<td>Rising Market Interest Rates</td>
<td>Positive IS Gap</td>
<td>Increase in IS Assets, Decrease in IS Liabilities</td>
</tr>
<tr>
<td>Falling Market Interest Rates</td>
<td>Negative IS Gap</td>
<td>Decrease in IS Assets, Increase in IS Liabilities</td>
</tr>
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</table>
PROBLEM WITH IS GAP MANAGEMENT

- Interest Paid on Liabilities Tend to Move Faster than Interest Rates Earned on Assets
- Interest Rate Attached to Bank Assets and Liabilities Do Not Move at the Same Speed as Market Interest Rates
- Point at Which Some Assets and Liabilities are Repriced is Not Easy to Identify
- Interest-Sensitive Gap Does Not Consider the Impact of Changing Interest Rates on Equity Position
## Impact of Changing IR on Bank’s Networth

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<thead>
<tr>
<th></th>
<th>Rise</th>
<th>Decrease</th>
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<tbody>
<tr>
<td><strong>Positive</strong></td>
<td>Rise</td>
<td>Decrease</td>
</tr>
<tr>
<td><strong>Gap</strong></td>
<td>Fall</td>
<td>Increase</td>
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<td><strong>Zero</strong></td>
<td>Rise</td>
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<td><strong>Gap</strong></td>
<td>Fall</td>
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Lesson 1.3
CASE DISCUSSION

GOALS

Explore several cases in interest sensitivity gap and liquidity reserve.
CASE DISCUSSION #1

Suppose Carroll Bank and Trust reports interest-sensitive assets of $570 million and interest-sensitive liabilities of $685 million. What is the bank’s dollar interest-sensitive gap? Its relative interest-sensitive gap and interest-sensitivity ratio?
ANSWER CASE DISCUSSION #1

- Dollar Interest-Sensitive Gap = Interest-Sensitive Assets – Interest Sensitive Liabilities = $570 - $685 = -$115

- Relative Gap = IS Gap / Bank Size
  = -$115 / $570
  = -0.2018 or -20.18%

- Int.-Sensitivity Ratio = Int.-Sensitive Assets / Int.-Sensitive Liabilities
  = $570 / $685
  = .8321 or 83.21%
Frost Street National Bank currently holds $750 million in transaction deposits subject to reserve requirements but has managed to enter into sweep account arrangements with its transaction deposit customers affecting $150 million of their deposits.

- **Net transaction accounts:**
  - $0 to $48.3 million: 3%
  - More than $48.3 million: 10%

- **Nonpersonal time deposits:**
  - Less than 18 months: 3%
  - 18 months or more: 0%
  - Eurocurrency liabilities-all types: 3%

Given the current legal reserve requirements applying to transaction deposits, by how much would Frost Street’s total legal reserves decrease as a result of these new sweep arrangements which stipulate that transaction deposit balances covered by the sweep agreements will be moved overnight into savings deposits?
ANSWER CASE DISCUSSION #2

Legal Reserve Would Decrease

\[
= \ 0.03 \times 48.3 + 0.10 \times (150 - 48.3) \\
= \ 1.449 + 10.17 \\
= \ 11.612 \text{ million}
\]