Bank Risk

Risk Management

- Fundamental objective of bank management is to maximize shareholders' wealth maximizing market value of a firm's common stock
- Profit maximization appears to suggest that the bank manager simply invest in assets that generate the highest gross yields and keep costs down
- To obtain higher yields, a bank must either take on increased risk or lower operating costs. Greater risk manifests itself in greater volatility of net income and market value of stockholder's equity
- A banks profitability will generally vary directly with the riskiness of its portfolio and operations

Risk Management Cont…

- ***Risk management*** **is a process by which managers identify, assess, monitor, and control risk associated with a financial institution's activities**
- **The complexity and range of financial products have made risk management more difficult to accomplish and evaluate**

Types of Risk Management Processes

- **Vertical Processes**
  - **Top-down and Bottom-up Processes**
- **Horizontal Process (Transversal Process)**
- **Risk management combines top down and bottom-up processes with transversal process**

Top-down and Bottom-up Processes

- **These processes allow the top level to set up global guidelines and risk limits, which are conveyed to the business lines**
- **Allocation of income and risk to business units and transactions**
- **Periodic reporting from business levels to the top**
- **Detection of deviations and corrective actions**
- **Pyramid of risk management: Transactions- Business units-Sub portfolios- Global risk return targets**
- **Revenue and risk allocations**

Top-down and Bottom-up Processes Cont…

- Right technique for capturing risk diversification
- Quantification of risk
- Capital allocation system for diversification

Transversal Processes

- **Address risk and return management at horizontal levels such as level of individual transactions, intermediate business line levels and top level for comparing risk and return measures to profitability target and risk limits**
- **Three basic horizontal processes: (i) Setting up risk-return guidelines and benchmarks (ii) risk return decision making (ex ante perspective) and (iii) risk return monitoring (ex post perspective)**

Setting up Risk and Return Guidelines

- Set credit risk limit for obligators, markets and industries
- Set the upper bound for market risk sensitivity to the various market parameters
- Delegation serves to decentralize the decision making process
- Basic rules for setting the limits: (i) Avoid single loss (ii) diversification of commitments (iii) avoid lending to any borrower beyond borrowing capacity

Setting up Risk and Return Guidelines Cont…

- Consider the market expectations and sensitivity of income due to interest rate change
- Target ROE, Cooke ratio, ROA differential pricing of loans
- Proper fund transfer pricing system

Decision Making (Ex ante Perspective)

- Risk decisions include new transactions, portfolio rebalancing, portfolio restructuring and hedging decisions
- On balance sheet actions relate to new business and existing portfolio of transactions
- Are expected revenues in line with risk?
- What is the impact on risk of the bank?

Decision Making (Ex ante Perspective) Cont…

- Dilemma between volume of business and revenues
- Choosing appropriate instruments for hedging
- Effective loan portfolio management: Portfolio risk, risk modelling, suitability of instruments, proper diversification

Risk-Return Monitoring (Ex Post Perspective)

- **Periodic review of risk assessment**
- **Early warning system**
- **Proper provisioning**
- **Measures of risk and return at all levels**
- **Implementation of risk based performance tools**
- **Risk based pricing : RAROC, SVA (shareholders value added)**

Types of Risk

- **There are mainly six types of risk:**
  1. Credit risk
  2. Liquidity risk
  3. Market risk
  4. Operational risk
  5. Reputation risk
  6. Legal risk
- **Each risk is fundamental to the likelihood that current events or potential events will negatively affect an institution’s profitability and the market value if its assets, liabilities and stock holders’ equity**

Credit Risk

- *Credit risk* is the potential variation in net income and market value of equity resulting from this nonpayment or delayed payment
- Credit risk is associated with the quality of individual assets and the likelihood of default
- Whenever a bank acquires an earning asset, it assumes the risk that the borrower will default, that is, not repay the principal and interest on a timely basis
- Banks evaluate their general credit risk by asking three basic questions:
  - What is the historical loss rate on loans and investments?
  - What is the expected loss in future?
  - How is bank prepared to weather the losses?

Credit Risk: Historical Loss Rate

- **Focus of attention on bank's historical loan loss experience because loans exhibit the highest default rates**

1. ***Gross loan losses (charge offs)*** **: dollar value of loans actually written off as uncollectible during a period**
2. ***Recoveries:*** **dollar amount of loans that were previously charged off but now collected**
3. ***Net losses (net charge-offs):*** **Difference between gross loans losses & recoveries**

Credit Risk: Expected Future Losses

- Ratios that examine expected future loss rates are based on past-due loans, nonaccrual loans, total non accrual loans, and classified loans as a fraction of total loans

1. *Past-due loans*: represents loans for which contracted interest and principal payments have not been made but are still accruing interest; they are separated into 30-89 past due and 90 days and over past due date

   Non performing loans are loans that are more than 90 days past due

2. *Nonaccrual loans*: those not accruing interest—these loans are currently/ habitually past due, or have other problems
3. *Total noncurrent loans* = Past-due loans+ Nonaccrual loans

Credit Risk: Expected Future Losses Cont..

4. *Restructured loans*: loans for which the lender has modified the required payments on principal or interest; lender may have negotiated the maturity and/or renegotiated interest rate
5. *Classified loans*: general category of loans for which regulators have forced to set aside reserves for clearly recognized losses
6. Some loans, such as speculative construction loans, are riskier than others, an analyst should examine the composition of a bank's loan portfolio and the magnitude of past due, nonaccrual, noncurrent, restructured, and classified loans relative to total loans

Credit Risk: Expected Future Losses Cont..

- When management expects to charge off large amounts of loans, it will build up the allowance for loan losses
- Large allowance may indicate good and bad performance:
  i. If asset quality is poor, bank needs a large allowance because it will need to charge off many loans. Allowance should be large because charge off will deplete it
  ii. A bank with high allowance for loan losses and few past due, non accrual or nonperforming loans will not need all of the reserve to cover charge-offs, which will be low. Such a bank has reported provisions for loan loss that are higher than needed such that prior period net income in too low. Future profit measures should benefit once provisions are lowered

Credit Risk: Preparation for Losses

- Ideally management should relate the size of the loan loss reserve to non-current loans, which represents potential charge-offs
- Call Reporting guidelines require that a bank's loan reserve be adequate to cover the known and inherent risk in the loan portfolio
- *Earnings coverage of net losses*: ratio used to measure a bank's ability to cover current period losses

✔It is a measure of net operating income before taxes, security gains(losses), extraordinary items, and the provision for loan losses divided by net loan and lease losses

✔It indicates how many times current earnings can cover current net charge-offs

✔A higher ratio signals greater coverage; greater protection

Credit Risk: Sources

- Different types of asset and off-balance sheet activities have different default probabilities
- Loans typically exhibit the greatest credit risk
- Changes in general economic conditions and a firm’s operating environment alter the cash flow available for debt services —these conditions are difficult to predict
- An individuals ability to repay debt varies with change in employment and personal net worth

Credit Risk: Sources

- Many banks enter into off-balance sheet activities such as loan commitments, guaranty offers, and derivative contracts.

  The prospective borrowers and counterparties must perform or the bank may take a loss —these risks can be substantial, but are difficult to measure from published data
- Banks that lend in a narrow geographic area or concentrate their loans to a certain industry

  Lack of diversification could dramatically affect a majority of the bank's portfolio if economic factors negatively affected the geographic or industry concentration these banks are subject to risks that the rest of the banking industry is not subjected to in its operations

Credit Risk: Sources

- Banks with *high loan growth* often assume greater risk, as credit analysis and review procedures are less rigorous

  In many instances, loans perform for a while but losses eventually rise

  Loans generated externally through acquisition or entering into new trade often lead to future charge-offs
- Banks that lend funds to foreign governments and corporate borrowers take *country risk* – they may default on their loans due to government controls over the actions of business and individuals, internal politics that may disrupt payments, general market disruptions and problems that arise when governments reduce or eliminate subsidies used as a source of payments

Market Risk

- Market risk is the current and potential risk to earnings and stockholders' equity resulting from adverse movements in market rates or prices
- Areas of market risk:
  - Interest Rate Risk
  - Equity And Security Price Risk
  - Foreign Exchange Risk

Market Risk

i. <u>Interest Rate Risk</u>: potential variability in a bank's net interest income and market value of equity due to changes in the level of market interest rates

   It compares the sensitivity of interest income to changes in asset yields with the sensitivity of interest expense to changes in the interest costs of liabilities

   A more comprehensive approach compares the duration of assets with the duration of liabilities to assess the impact of rate of change on net interest income and the market value (or price) of stockholders' equity

Market Risk

ii. **Equity and Security Price Risk:**

Changes in macroeconomic factors affect the market value of any equities, securities, foreign currency holdings, and associated derivative and other off-balance sheet contracts

Large banks must conduct value-at-risk analysis to assess the risk of loss with their portfolio of these trading assets and hold specific amount of capital in support of this market risk

Small banks identify their exposure by conducting sensitivity analysis

Market Risk

iii. **Foreign Exchange Risk:**

- Changes in foreign exchange rate affects the value of assets , liabilities, and off-balance sheet activities denominated in foreign currencies
- When amount of asset differs from amount of liabilities, any change in exchange rates produces a gain or loss that affects the market value of the banks stockholders’ equity

Market Risk Cont…

- Foreign exchnage risk is also found in off-balance sheet loan commitments and guaranties denominated in foreign currencies and also known as *foreign currency translation risk*
- A bank has a net exposure of each currency for which it books assets and liabilities

Operational Risk

- **Refers to the possibility that operating expenses might vary significantly from what is expected, producing a deadline in net income and firm value**
- **The Basel Committee defines operational risk as:**

  The risk of loss resulting from inadequate or failed internal processes, people, and system, or from external event

Operational Risk: Sources

- Some banks are relatively inefficient in controlling direct costs and employee processing errors
- Banks must also absorb shocks due to employee theft and fraud
- Banks operating risk is closely related to its operating policies and processes and whether it has adequate controls
- Losses from external events, such as an electrical outage, are easy to identify but difficult to forecast because they are not tied to specific tasks or products within the bank

Operational Risk: Measures

- It is difficult to measure directly but is likely to be greater the higher number of divisions or subsidiaries, employees and loans to insiders
- Measures of operating risk:

i. Historically: measures of operational efficiency and expense control or productivity

ii. Total asset per employee

iii. Total personnel expense per employee

iv. Unexpected losses or risk that occur as the result of :

(a) business interruptions, (b) transaction processing, (c)inadequate information system (d) breaches in internal controls and (e) client liability

Operational Risk: Measures

a) ***Business interruptions***: loss or damage to assets, facilities, systems, or people

b) ***Transaction processing***: failed, late, or incorrect settlements

c) ***Inadequate information system***: security data or systems is compromised

d) ***Breaches in internal controls:*** fraud, theft, or unauthorized activities

e) ***Client liability***: restitution payments or reputation loss

Liquidity Risk

- Liquidity risk is the current and potential risk to earnings and the market value of stockholder's equity that results from a bank's inability to meet payment or clearing obligations in a timely and cost effective manner
- It is greatest when a bank cannot anticipate new loan demand or deposit withdrawals, and does not have access to new cash
- Liquidity risk can be the result or either (i) funding problems or (ii) market liquidity risk
  i. Funding Liquidity Risk: inability to liquidate assets or obtain adequate funding from new borrowing
  ii. Market Liquidity Risk: inability of bank to easily unwind or offset specific exposures without significant losses from inadequate market depth or market disturbances

Liquidity Risk Cont…

A firm can provide for its liquidity needs in two ways

1. Holding Liquid Assets:

✔ Most banks hold assets that can be readily sold near par to meet liquidity needs; but are costly for banks to hold & pay very low rates of interest which could be below the average cost of funds

✔ Consist of unpledged, marketable short-term securities that are classified as available-for-sale, plus federal funds sold and securities purchased under agreement to resell

Liquidity Risk Cont…

2. **Securing its Ability to Borrow**

- ✔ **If two banks hold similar assets, the one with greater total equity or lower leverage can take on more debt with less chances of becoming insolvent**
- ✔ **(a) Equity-to-asset ratio and (b) Volatile (net noncore) liability-to-asset ratio represents the bank's equity base and borrowing capacity in the money markets**

Legal and Reputation Risk

- **<u>Legal Risk</u>:**

  Risk that unenforceable contracts, lawsuits, or adverse judgments could disrupt or negatively affect the operations, profitability, condition or solvency of the institution

  It not only address general liability issues, but also the banks compliance risk

- **<u>Reputation Risk:</u>**

  Risk that negative publicity, either true or untrue, can adversely affect a bank's customer base or bring forth costly litigation, hence negatively affecting profitability

Capital or Solvency Risk

- It is not considered as separate risk because all of the risks mentioned will in one form or the other affect a bank's capital and hence solvency
- It represents the risk that the bank will become insolvent and fail
- It refers to the potential decrease in the market value of assets below the market value of liabilities, indicating economic net worth is zero or less if bank liquidates, it would not be able to pay all creditors and be bankrupt

Off-Balance Sheet Risk

- Banks enter into agreements that do no have a balance sheet reporting impact until transactions is affected e.g. long-term loan commitment to a potential borrower
- Off-balance sheet risk refers to the volatility in income and market value of bank equity that may arise from unanticipated losses due to these off balance sheet liabilities