Bank Performance Analysis

Profitability Analysis

Measuring Performance of Commercial Banks

- **Performance refers to how adequately the bank meets the needs of its stockholders (owners), employees, depositors and other creditors and borrowing customers**
- **Bank performance measures are evaluated with help of the Income Statement and Balance Sheet**

Profitability Ratios

$$Return\ on\ Asset\ (ROA) = \frac{Net\ Income}{Total\ Assets}$$

- **ROA is an indicator of *managerial efficiency***
- **It indicates how capable management has been in converting assets into net earnings**

Profitability Ratios Cont..

$$Return\ on\ Equity\ (ROE) = \frac{Net\ Income}{Total\ Equity\ Capital}$$

- ROE is a measure of the rate of return flowing to shareholders
- It approximates the net benefit that the shareholders have received from investing their capital in the financial firm

Profitability Ratios Cont..

$$Net\ Interest\ Margin = \frac{(Interest\ Income - Interest\ Expense)}{Total\ Assets}$$

$$Net\ Non\ Interest\ Margin = \frac{(Non\ interest\ Revenue - Non\ interest\ Expense)}{Total\ Assets}$$

$$Net\ Operating\ Margin = \frac{(Total\ operating\ Revenue - Total\ Operating\ Expenses}{Total\ Assets}$$

$$= \frac{Operating\ Income}{Total\ Assets}$$

- These are efficiency as well as profitability measures
- They indicate how well the management and staff have been able to keep the growth revenue ahead of rising costs

Profitability Ratios Cont..

- The *net interest margin* measures how large a spread between interest revenue and interest cost management has been able to achieve close control over earning assets and pursuit of the cheapest source of funding
- The *net non-interest margin* measures the amount of non-interest revenue stemming from service fees the bank has been able to collect relative to the amount of non-interest cost incurred

Profitability Ratios Cont..

$$Earnings\ Spread = \frac{Total\ Interest\ Income}{Total\ Earning\ Assets} - \frac{Total\ Interest\ Expense}{Total\ interest\ Bearing\ Liabilities}$$

- **Traditional measure of earnings efficiency**
- **It measures the effectiveness of a firm's intermediation function in borrowing and lending money**
- **It also shows the intensity of competition in the market**
- **Greater competition tends to squeeze the difference between average asset yields and average liability costs**

DuPont Analysis

$$Return\ on\ Equity\ (ROE) = \frac{Net\ Income}{Total\ Assets} \times \frac{Total\ Assets}{Total\ Equity\ Capital}$$

$$= ROA \times \frac{Total\ Assets}{Total\ Equity\ Capital}$$

or

$$Return\ on\ Equity\ (ROE) = \frac{Net\ Income}{Total\ Operating\ Revenue} \times \frac{Total\ Operating\ Revenue}{Total\ Assets} \times \frac{Total\ Assets}{Total\ Equity\ Capital}$$

$$= Net\ prfit\ margin \times Asset\ Utilization\ Ratio \times Equity\ Multiplier$$

or

$$Return\ on\ Equity\ (ROE) = \frac{Net\ Income}{Pretax\ Net\ Operating\ Income} \times \frac{Pretax\ Net\ Operating\ Income}{Total\ Operating\ Revenue} \times$$

$$\frac{Total\ Operating\ Revenue}{Total\ Assets} \times \frac{Total\ Assets}{Total\ Equity\ Capital}$$

$$= Tax\ Management\ Efficinecy \times Expense\ Control\ Efficinecy \times Asset\ Management\ Efficinecy \times$$

$$Funds\ Management\ Efficinecy$$

Factors affecting the components of ROE

- Equity multiplier (Capital structure decisions)
  - What sources of funding should be used?
  - Decisions about dividend payments
- Net profit margin and Asset utilization ratio
  - The mix of funds raised and invested
  - Size of the bank
  - Control of operating expenses
  - Pricing of services
  - Minimization of tax liability

Factors affecting profitability

- Bank size
- Capital ratio
- Risk
- Funding cost
- Revenue diversification
- Bank age
- Corporate governance
- Industry structure
- Business cycle

Stability, Asset Quality and Liquidity Measures

Capital Adequacy Ratio

- Ratio of the bank's capital to its risk weighted assets
  - Capital= Tier-I Capital + Tier-II Capital
  - Tier-I Capital :
    i. Paid-up Capital
    ii. Statutory Reserves
    iii. Reserves which are not kept aside for meeting any specific liability
    iv. Surplus generated from sale of capital assets
  - Tier-II Capital :
    i. Subordinate debt
    ii. General provisions and Loss reserves
    iii. Undisclosed Reserves
    iv. Perpetual preference shares

Asset Quality Ratio

- **Credit worthiness of a particular bank's loan portfolio**
  - **i. Gross Non-Performing Assets (NPA) to Total Loans Ratio**
  - **ii. Net NPA to Nat Advances**

    Net NPA = Gross NPA – Net Provisions on NPA and Interest on Suspense Account
  - **iii. Provisions for Loan Loss Ratio** $= \frac{Provisions\ for\ loan\ losses}{Total\ loans}$

Non-Performing Assets

- **NPA is a loan or advance where the interest and/or installment of principal remains over due for a period more than 90 days in respect of the loan**
- **For agricultural loans a loan granted for short duration crops will be treated as NPA if the installment of principal or interest remains overdone for two crop seasons and loan granted for long duration crops will be treated as NPA if the installment of principal and interest overdue for one crop season**

Loan Classifications

- **Standard Assets: It does not disclose any problems (not NPA)**
- **Sub-standard Assets: If the asset remained as NPA for a period less than or equal to 12 months**
- **Doubtful Assets: If the asset remained as NPA for a period more than 12 months**
- **Loss Assets: Loss has been identified by the bank, or internal or external auditors, or central bank but the amount has not been written off wholly or partly**

Liquidity

- **Liquidity is defined as the extent to which the bank has funds available to meet cash demands for loans and deposit withdrawals**
- **Banks require different amounts of liquidity depending on their growth rate and variability in lending and deposit activities**

Liquidity Ratio

i. $$Cash\ to\ Demand\ Deposit\ Ratio = \frac{Cash\ at\ Bank + Balance\ with\ Central\ Bank + Call\ Money}{Total\ Demand\ Deposit}$$

ii. $$SLR\ Investment\ to\ Total\ Investment\ Ratio = \frac{Investments\ under\ Statutory\ Obligations}{Total\ Investments}$$

iii. $$Demand\ to\ Time\ Deposits\ Ratio = \frac{Total\ Demand\ Deposits}{Total\ Term\ Deposits}$$

iv. $$Credit\ \ to\ Deposit\ Ratio = \frac{Total\ Loans}{Total\ Deposits}$$

Higher CD Ratio implies that bank may not have enough liquidity to cover any unforeseen fund requirements

Liquidity Ratio Cont..

v. $$Temporary\ Invesntment\ Ratio = \frac{Central\ Bank\ funds\ sold + Investment\ Securities\ with\ maturity\ of\ one\ year\ or\ less + Due\ from\ banks}{Total\ Asstes}$$

vi. $$Volatile\ Liability\ Dependency\ Ratio = \frac{Total\ volatile\ Liabilities - Temporary\ Investments}{Net\ loans\ and\ leases}$$

Volatile liabilities are: brokered deposit, CDs, deposits in foreign offices, Central Bank funds purchased

It considers the degree to which riskiest assets are being funded by unstable or 'hot' money funds that can disappear from the bank overnight

The volatility dependency ratio varies inversely with liquidity

Non-Interest Income, Expenditure and Productivity Measures

Non-Interest Income

- Fiduciary activities
- Deposit service charges
- Trading revenue, venture capital revenue and securitization income
- Investment banking, advisory, brokerage and underwriting fees and commissions
- Insurance commission fees and income
- Servicing fees for credit card, real estate, mortgage etc

Non-Interest Income Cont…

- Net gain or loss of real estate owned or held by others
- Disposal of fixed assets
- Others: income from safe deposit loans, sale of bank deposits, cheques, execution of acceptances and letters of credit, credit card
- Fees, foreign currency fees, penalties for early withdrawals, etc

Non-Interest Expenses

- **Personal Expenses: wages, salaries and benefits**
- **Rent and depreciation on building and equipment**
- **Goodwill impairment**
- **Amortization expense and impairment losses for other intangible assets**
- **Other operating expenses**

(The sum of these five component expenses is called *overhead expenses*)

Ratios

- $$Burden\ or\ Net\ Overhead\ \ Expense\ Ratio = \frac{Net\ Interest\ Expense\ (NIE) - Net\ Interest\ Income\ (NII)}{Total\ Assets}$$

  where: NIE-NII = Burden

- $$Efficiency\ Ratio = \frac{Noninterest\ Expense}{Net\ Interest\ Income + Noninterest\ Income}$$

  The Efficiency Ratio measures the amount of non-interest expense a bank pays to earn one dollar of net operating revenue
  The Efficiency Ratio shows the tradeoff among NIE,NIM and NII
  Lower Efficiency Ratios are derived from a combination of cost control, improvement in NII and growing NIM

- $$Operating\ Risk\ Ratio = \frac{Noninterest\ Expense - Fee\ Income}{Netinterest\ Margin\ (NIM)}$$

  It has an inverse relationship with the operating performance of the bank

Productivity Ratios

- $$Assets\ per\ Employee = \frac{Average\ Assets}{Number\ \ of\ full\ time\ employees}$$

  Higher Assets per Employee indicates that fewer employees handle business associated with larger volume of assets

- $$Average\ Personal\ Expense = \frac{Personal\ Expenses}{Number\ of\ fulltime\ employees}$$

  The Average Personal Expenses measures the average cost of an employee when salaries and benefits are recognized

- $$Loan\ per\ Employee = \frac{Average\ Loans}{Number\ of\ fulltime\ employees}$$

  It measures the loan productivity

- $$Net\ Income\ per\ Employee = \frac{Net\ Income}{Number\ of\ fulltime\ employees}$$

  It measures the profitability of a bank's workforce

Major Issues Related to Bank Performance

- Bank Capital and Profitability
- Bank Risk and Profitability
- Regulations and Profitability
- Monetary Policy and Profitability
- Economic Uncertainty and Profitability

Internal Performance Evaluation and Customer Profitability Analysis

Internal Performance Evaluation

- Evaluation is made for the different business units of banks. For example: Consumer banking, wholesale Banking and securities components
- Banks evaluate line-of-business profitability and risk via Risk Adjusted Returns on Capital (RAROC) and Return on Risk Adjusted Capital (RORAC)
- $$RAROC = \frac{Risk{-}Adjusted\ Income}{Capital}$$

  The objective is to identify the measure of return generated by a line of business and compare that return to the allocated capital. The income or return may be adjusted for risk, which means that expected losses are subtracted from revenues along with other expenses

Internal Performance Evaluation Cont…

- RAROC is used to evaluate loans and product lines and customers
- Applied to pricing loans RAROC allocates equity capital depending on risk of loss, calculated a required rate of return on equity and then uses this information in pricing loans to ensure that they are profitable for the bank
- $$RORAC = \frac{Income}{Adjusted\ RIsk\ Capital}$$

  The capital is adjusted for risk which means that it represents a maximum potential loss based on the profitability of future returns or an amount necessary to cover loss associated with the volatility of earnings

Internal Performance Evaluation :Example (Loan Pricing)

Let:	Cost of funds = 6%
	Provision for loan loss = 2%
	Direct Expenses= 0.5%
	Indirect Expenses = 0.25%
	Overhead expenses = 0.25%
	Total cost before Capital charge = 9%

The capital charge is determined by multiplying the equity capital allocated to the loan times the opportunity cost of equity and then converting to a pre-tax level

Internal Performance Evaluation :Example Cont..

Assume:	Equity to Loan Ratio = 12%
	Opportunity Cost of Equity = 18%
	Then after tax Capital Charge = 1.5%

- If the tax rate is 0.3, the pre-tax capital change is $\frac{1.5}{(1.0-0.3)} = \frac{1.5}{0.7} = 2.14$
- Loan Rate = 9% + 2.14% = 11.14%
- This implies that if the loan rate is 11.24%, the bank will earn the target ROE of 18%

Drawbacks of Application of RAROC

- It may not be possible to separate the economic costs and revenues of the different products
- The production of outputs may share inputs such as land, labor and capital, which makes it impossible to individually analyze the product lines

Economic Value Added

- It is another performance metric similar to RAROC
- EVA = Adjusted earnings – Opportunity Cost of Capital

  Adjusted earnings: Net income after taxes
  Opportunity Cost of Capital: Cost of Equity times Equity Capital
- Managers can apply EVA to loans, projects, product lines in order to evaluate whether the investment will be justifiable in terms of rewarding shareholders

Economic Value Added Cont..

- New investments should be undertaken until the marginal contribution of the last investment is zero (i.e. EVA=0)
- A higher EVA can be achieved by boosting adjusted earnings (via lowering costs, increasing sales etc.) and lowering cost of equity
- RAROC compares business unit profits with the unit's capital-at risk whereas the EVA compares business unit profit with the cost of capital

Customer Profitability Analysis

- It is used to evaluate whether net revenue from an account meets a bank's profit objective
- General customer profitability rule is that 20% if a firm's customers contribute about 80% of overall profits
- Banks use customer profitability analysis to differentiate between the firm's high value customers and those customers who are marginally profitable in order to move these latter customers to a more profitable position for the bank

Customer Profitability Analysis Cont..

- **Customer Profitability analysis is more often performed using monthly or quarterly historical data so that pricing can be modified where appropriate**
- **This process involves comparing revenues from all services provided with associated costs and bank's target profit**

Customer Profitability Analysis Cont..

- If Revenue > Expenses + Target Profit, the account generates a return in excess of the minimum return required by the bank
- If Revenue = Expenses + Target Profit, the account just meets the required return objective
- If Revenue < Expenses, the account is clearly unprofitable
- If Revenue < Expenses + Target Profit, the account is profitable, but does not generate the minimum acceptable return to the bank

Steps for Evaluating Customer Profitability

- Identify the full list of services used by a customer such as transactions account activity, extension of credit, security safekeeping, letter of credit, safe deposit boxes etc.
- Assess the cost of providing each service
- No systematic method for allocation of fixed cost so estimation of unit cost is the best way

Cost Management Strategies and Transfer Pricing

Cost Management Strategies

- Expense reduction
- Operating efficiencies
- Revenue enhancement
- Contribution growth

Expense Reduction

- Reduction of non-profit generating branch and medical benefits of employees
- Outsourcing the data processing services
- Use of temporary or contractual workers
- Elimination of redundant tasks
- Digitalization of the system

Operating Efficiencies

- Reduction of costs but maintaining the existing level of products and services
- Increasing the level of output but maintaining the level of current expenses
- Improvement of workflow

Mechanism of Attaining Operating Efficiency

- **Reducing workforce**
- **Increasing work requirements**
- **Economies of Scale: It is said to exist when a bank's average cost decreases as output increases**
- **Economies of Scope: How the joint cost of providing several products change as new products are added and existing output is enhanced. The argument is that joint costs will grow by much less than the costs allocated with producing products or providing services independently**

Revenue Enhancement

- Changing the price of specific products and services with high volume of business
- Identification of products and services that exhibit price inelastic demand
- Increase in price reduces the demand of the product
- Proportionate decrease in demand is less than the proportionate increase in price
- Expansion of volume keeping price constant
- Enlarging the base of the consumers by increasing product quality

Contributing Growth

- **Allocation of resources to improve the overall long-term profitability**
- **Increase in expenditure should be associated with increase in associated revenues**

  Example: Investment in new technology, digitalization of the system etc.

Transfer Price

- It is an internal rate of interest used to calculate transfer income or cost due to an internal flow of funds in a bank
- There is a transfer cost for each loan and transfer income for each deposit
- The difference between interest rate and transfer price is called interest margin which allows to calculate the internal interest profit on a transaction

Methodologies of Transfer Price

- ***Single Pool Method***: Same one and only transfer price rate is assigned to all loans and deposits. There is no difference in pricing products with various repricing and maturity characteristics.

  In this method the transfer price is the weighted average rate of interest of all assets and liabilities of the bank

- ***Double Pool Method (Split Pools)***: Average loan rate is used as transfer price for loans and mean deposit rate is used as transfer price for deposits

Methodologies of Transfer Price Cont..

- ***Multiple Pool Method***: Products are divided into different pools on the basis of maturity. The bank establishes a set of transfer price for each product pool, i.e. one price for each pool. It is calculated as the average interest rate on assets and deposits in each pool

  At any point of time, the rates prevailing in the market is accepted as the cost of funds suitable for the bank

  The transfer price assigned to each pool is based on its maturity and market rates prevailing for its term.

Methodologies of Transfer Price Cont..

- For assets, which carry the interest income the TP is negative in order to calculate the cost of the fund For liabilities bearing interest costs, the TP is positive, which shows the internal income attributed to funds raised
- Depending on market interest rates, transfer prices change from one period to another and the length of the period needs to be determined.
- <u>Matched Rate Method:</u> In this method prices are assigned to each transactions separately instead of pooled transactions