CHAPTER – 2

CAMEL MODEL

CONCEPTUAL FRAMEWORK -
2.1 Introduction
CAMEL model of rating was first developed in the 1970s by the three federal banking supervisors of the U.S (the Federal Reserve, the FDIC and the OCC) as part of the regulators’ “Uniform Financial Institutions Rating System”, to provide a convenient summary of bank condition at the time of its on-site examination. The banks were judged on five different components under the acronym C-A-M-E-L:
C – Capital Adequacy
A – Asset Quality
M – Management Soundness
E – Earnings Capacity and
L – Liquidity
The banks received a score of ‘1’ through ‘5’ for each component of CAMEL and a final CAMEL rating representing the composite total of the component CAMEL scores as a measure of the bank’s overall condition. The system of CAMEL was revised in 1996, when agencies added an additional parameter ‘S’ for assessing “sensitivity to market risk”, thus making it ‘CAMELS’ that is in vogue today.
Based on the recommendations of the Padmanbhan Committee, the commercial banks incorporated in India are presently rated on the ‘CAMELS’ model (Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Systems & control), while foreign banks’ branches operating in India are rated under the ‘CALCS’ model (Capital adequacy, Asset quality, Liquidity, Compliance, and Systems & control). As mentioned above, the Committee had originally recommended a CACS model, which was subsequently modified to also include Liquidity (L) as an additional parameter.
Further modifications, in the form comprising additional granularities in the rating scale of parameters under CAMELS have since been introduced by RBI. Presently, each of the components of CAMELS is rated on a scale of 1-100 in ascending order of performance. The score of each CAMELS element is arrived by aggregating (by assigning proportionate weights) the scores of various sub-parameters that constitute the individual CAMELS parameter. Each parameter is awarded a rating A-D (A-Good, B – Satisfactory, C -unsatisfactory, and D-poor). Further, to bring granularity in rating, there are modifiers by way of (+) and (-) under each of A, B and C making a total of ten scales A+ through to D. The composite “CAMELS rating” is arrived by aggregating each of the component weights as indicated in the table below. Further
the overall composite score is adjusted downwards for poor performance in one or more components.

**CAMEL**

The **CAMEL rating** is a supervisory rating system originally developed in the U.S. to classify a bank's overall condition. It's applied to every bank and credit union in the U.S. (approximately 8,000 institutions) and is also implemented outside the U.S. by various banking supervisory regulators.

The ratings are assigned based on a ratio analysis of the financial statements, combined with on-site examinations made by a designated supervisory regulator. In the U.S. these supervisory regulators include the Federal Reserve, the Office of the Comptroller of the Currency, the National Credit Union Administration, and the Federal Deposit Insurance Corporation.

Ratings are not released to the public but only to the top management to prevent a possible bank run on an institution which receives a CAMELS rating downgrade. Institutions with deteriorating situations and declining CAMELS ratings are subject to ever increasing supervisory scrutiny. Failed institutions are eventually resolved via a formal resolution process designed to protect retail depositors.

### 2.2 CAMEL FRAMEWORK and MAJOR RATIOS

During an on-site bank exam, supervisors gather private information, such as details on problem loans, with which to evaluate a bank's financial condition and to monitor its compliance with laws and regulatory policies. A key product of such an exam is a supervisory rating of the bank's overall condition, commonly referred to as a CAMELS rating. The acronym "CAMEL" refers to the five components of a bank's condition that are assessed: Capital adequacy, Asset quality, Management, Earnings, and Liquidity. A sixth component, a bank's Sensitivity to market risk was added in 1997; hence the acronym was changed to CAMELS.

CAMELS is basically a ratio-based model for evaluating the performance of banks. Various ratios forming this model are explained below:
2.2.1 CAPITAL ADEQUACY - C

Capital base of financial institutions facilitates depositors in forming their risk perception about the institutions. Also, it is the key parameter for financial managers to maintain adequate levels of capitalization. Moreover, besides absorbing unanticipated shocks, it signals that the institution will continue to honour its obligations. The most widely used indicator of capital adequacy is capital to risk-weighted assets ratio (CRWA). According to Bank Supervision Regulation Committee (The Basle Committee) of Bank for International Settlements, a minimum 9 per cent CRWA is required.

Capital adequacy ultimately determines how well financial institutions can cope with shocks to their balance sheets. Thus, it is useful to track capital-adequacy ratios that take into account the most important financial risks—foreign exchange, credit, and interest rate risks—by assigning risk weightings to the institution’s assets. A sound capital base strengthens confidence of depositors. This ratio is used to protect depositors and promote the stability and efficiency of financial systems around the world.

The following ratios measure capital adequacy:

1 Capital Risk Adequacy Ratio:

CRAR is a ratio of Capital Fund to Risk Weighted Assets. Reserve Bank of India prescribes banks to maintain a minimum Capital to risk-weighted Assets Ratio (CRAR) of 9 % with regard to credit risk, market risk and operational risk on an ongoing basis, as against 8 % prescribed in Basel documents.

Total capital includes Tier-I capital and Tier-II capital. Tier-I capital includes paid up equity capital, free reserves, intangible assets etc. Tier-II capital includes long term unsecured loans, loss reserves, hybrid debt capital instruments etc. The higher the CRAR, the stronger is considered a bank, as it ensures high safety against bankruptcy.

\[
\text{CRAR} = \frac{\text{Capital}}{\text{Total Risk Weighted Credit Exposure}}
\]
2 **Debt Equity Ratio:**
This ratio indicates the degree of leverage of a bank. It indicates how much of the bank business is financed through debt and how much through equity. This is calculated as the proportion of total asset liability to net worth. ‘Outside liability’ includes total borrowing, deposits and other liabilities. ‘Net worth’ includes equity capital and reserve and surplus. Higher the ratio indicates less protection for the creditors and depositors in the banking system.

**Borrowings/ (Share Capital + reserves)**

3 **Total Advance to Total Asset Ratio:**
This is the ratio of the total advances to total asset. This ratio indicates banks aggressiveness in lending which ultimately results in better profitability. Higher ratio of advances of bank deposits (assets) is preferred to a lower one. Total advances also include receivables. The value of total assets is excluding the revolution of all the assets.

**Total Advances/ Total Asset**

4 **Government Securities to Total Investments:**
The percentage of investment in government securities to total investment is a very important indicator, which shows the risk taking ability of the bank. It indicates a bank’s strategy as being high profit high risk or low profit low risk. It also gives a view as to the availability of alternative investment opportunities. Government securities are generally considered as the most safe debt instrument, which, as a result, carries the lowest return. Since government securities are risk free, the higher the government security to investment ratio, the lower the risk involved in a bank’s investments.

**Government Securities/ Total Investment**
2.2.2 ASSET QUALITY – A

Asset quality determines the healthiness of financial institutions against loss of value in the assets. The weakening value of assets, being prime source of banking problems, directly pour into other areas, as losses are eventually written-off against capital, which ultimately expose the earning capacity of the institution. With this backdrop, the asset quality is gauged in relation to the level and severity of non-performing assets, adequacy of provisions, recoveries, distribution of assets etc. Popular indicators include nonperforming loans to advances, loan default to total advances, and recoveries to loan default ratios. The solvency of financial institutions typically is at risk when their assets become impaired, so it is important to monitor indicators of the quality of their assets in terms of overexposure to specific risks, trends in nonperforming loans, and the health and profitability of bank borrowers—especially the corporate sector. Share of bank assets in the aggregate financial sector assets: In most emerging markets, banking sector assets comprise well over 80 per cent of total financial sector assets, whereas these figures are much lower in the developed economies. Furthermore, deposits as a share of total bank liabilities have declined since 1990 in many developed countries, while in developing countries public deposits continue to be dominant in banks. In India, the share of banking assets in total financial sector assets is around 75 per cent, as of end-March 2008. There is, no doubt, merit in recognizing the importance of diversification in the institutional and instrument-specific aspects of financial intermediation in the interests of wider choice, competition and stability. However, the dominant role of banks in financial intermediation in emerging economies and particularly in India will continue in the medium-term; and the banks will continue to be “special” for a long time. In this regard, it is useful to emphasize the dominance of banks in the developing countries in promoting non-bank financial intermediaries and services including in development of debt-markets. Even where role of banks is apparently diminishing in emerging markets, substantively, they continue to play a leading role in non-banking financing activities, including the development of financial markets.

One of the indicators for asset quality is the ratio of non-performing loans to total loans.

Higher ratio is indicative of poor credit decision-making.
NPA: Non-Performing Assets:
Advances are classified into performing and non-performing advances (NPAs) as per RBI guidelines. NPAs are further classified into sub-standard, doubtful and loss assets based on the criteria stipulated by RBI. An asset, including a leased asset, becomes non-performing when it ceases to generate income for the Bank.

An NPA is a loan or an advance where:
1. Interest and/or instalment of principal remains overdue for a period of more than 90 days in respect of a term loan;
2. The account remains "out-of-order" in respect of an Overdraft or Cash Credit (OD/CC);
3. The bill remains overdue for a period of more than 90 days in case of bills purchased and discounted;
4. A loan granted for short duration crops will be treated as an NPA if the instalments of principal or interest thereon remain overdue for two crop seasons; and
5. A loan granted for long duration crops will be treated as an NPA if the instalments of principal or interest thereon remain overdue for one crop season.

The Bank classifies an account as an NPA only if the interest imposed during any quarter is not fully repaid within 90 days from the end of the relevant quarter. This is a key to the stability of the banking sector. There should be no hesitation in stating that Indian banks have done a remarkable job in containment of non-performing loans (NPL) considering the overhang issues and overall difficult environment.

The following ratios are necessary to assess the asset quality.

1 Gross NPA ratio:
This ratio is used to check whether the bank’s gross NPAs are increasing quarter on quarter or year on year. If it is, indicating that the bank is adding a fresh stock of bad loans. It would mean the bank is either not exercising enough caution when offering loans or is too lax in terms of following up with borrowers on timely repayments.

Gross NPA/ Total Loan
2 Net NPA ratio:
Net NPAs reflect the performance of banks. A high level of NPAs suggests high probability of a large number of credit defaults that affect the profitability and net-worth of banks and also wear down the value of the asset.

Loans and advances usually represent the largest asset of most of the banks. It monitors the quality of the banks loan portfolio. The higher the ratio, the higher the credits risk.

Net NPA/ Total Loan
2.2.3 MANAGEMENT – M
Management of financial institution is generally evaluated in terms of capital adequacy, asset quality, earnings and profitability, liquidity and risk sensitivity ratings. In addition, performance evaluation includes compliance with set norms, ability to plan and react to changing circumstances, technical competence, leadership and administrative ability.

Sound management is one of the most important factors behind financial institutions’ performance. Indicators of quality of management, however, are primarily applicable to individual institutions, and cannot be easily aggregated across the sector. Furthermore, given the qualitative nature of management, it is difficult to judge its soundness just by looking at financial accounts of the banks. Nevertheless, total advance to total deposit, business per employee and profit per employee helps in gauging the management quality of the banking institutions. Several indicators, however, can jointly serve—as, for instance, efficiency measures do—as an indicator of management soundness. The ratios used to evaluate management efficiency are described as under:

1 Total Advance to Total Deposit Ratio:
This ratio measures the efficiency and ability of the banks management in converting the deposits available with the banks (excluding other funds like equity capital, etc.) into high earning advances. Total deposits include demand deposits, saving deposits, term deposit and deposit of other bank. Total advances also include the receivables.

   Total Advance/ Total Deposit

2 Business per Employee:
Revenue per employee is a measure of how efficiently a particular bank is utilizing its employees. Ideally, a bank wants the highest business per employee possible, as it denotes higher productivity. In general, rising revenue per employee is a positive sign that suggests the bank is finding ways to squeeze more sales/revenues out of each of its employee.

   Total Income/ No. of Employees
3 Profit per Employee:
This ratio shows the surplus earned per employee. It is arrived at by dividing profit after tax earned by the bank by the total number of employee. The higher the ratio shows good efficiency of the management.

Profit after Tax/ No. of Employees
2.2.4 EARNINGS & PROFITABILITY – E

Earnings and profitability, the prime source of increase in capital base, is examined with regards to interest rate policies and adequacy of provisioning. In addition, it also helps to support present and future operations of the institutions. The single best indicator used to gauge earning is the Return on Assets (ROA), which is net income after taxes to total asset ratio.

Strong earnings and profitability profile of banks reflects the ability to support present and future operations. More specifically, this determines the capacity to absorb losses, finance its expansion, pay dividends to its shareholders, and build up an adequate level of capital.

Being front line of defence against erosion of capital base from losses, the need for high earnings and profitability can hardly be overemphasized. Although different indicators are used to serve the purpose, the best and most widely used indicator is Return on Assets (ROA).

However, for in-depth analysis, another indicator Interest Income to Total Income and Other income to Total Income is also in used. Compared with most other indicators, trends in profitability can be more difficult to interpret—for instance, unusually high profitability can reflect excessive risk taking. The following ratios try to assess the quality of income in terms of income generated by core activity – income from landing operations.

1. **Dividend Pay-out Ratio:**
Dividend pay-out ratio shows the percentage of profit shared with the shareholders. The more the ratio will increase the goodwill of the bank in the share market will strengthen more.

\[
\text{Dividend/ Net profit}
\]
2. **Return on Asset:**
Net profit to total asset indicates the efficiency of the banks in utilizing their assets in generating profits. A higher ratio indicates the better income generating capacity of the assets and better efficiency of management in future.

**Net Profit/ Total Asset**

**Operating Profit by Average Working Fund:**
This ratio indicates how much a bank can earn from its operations net of the operating expenses for every rupee spent on working funds. Average working funds are the total resources (total assets or total liabilities) employed by a bank. It is daily average of total assets/ liabilities during a year. The higher the ratio, the better it is. This ratio determines the operating profits generated out of working fund employed. The better utilization of the funds will result in higher operating profits. Thus, this ratio will indicate how a bank has employed its working funds in generating profits.

**Operating Profit/ Average Working Fund**

**Net Profit to Average Asset:**
Net profit to average asset indicates the efficiency of the banks in utilizing their assets in generating profits. A higher ratio indicates the better income generating capacity of the assets and better efficiency of management. It is arrived at by dividing the net profit by average assets, which is the average of total assets in the current year and previous year. Thus, this ratio measures the return on assets employed. Higher ratio indicates better earning potential in the future.

**Net Profit/ Average Asset**

3. **Interest Income to Total Income:**
Interest income is a basic source of revenue for banks. The interest income total income indicates the ability of the bank in generating income from its lending. In other words, this ratio measures the income from lending operations as a percentage
of the total income generated by the bank in a year. Interest income includes income on advances, interest on deposits with the RBI, and dividend income.

**Interest Income/ Total Income**

4. **Other Income to Total Income:**
Fee based income account for a major portion of the bank’s other income. The bank generates higher fee income through innovative products and adapting the technology for sustained service levels. The higher ratio indicates increasing proportion of fee-based income. The ratio is also influenced by gains on government securities, which fluctuates depending on interest rate movement in the economy.

**Other Income/ Total Income**
2.2.5 LIQUIDITY – L

An adequate liquidity position refers to a situation, where institution can obtain sufficient funds, either by increasing liabilities or by converting its assets quickly at a reasonable cost. It is, therefore, generally assessed in terms of overall assets and liability management, as mismatching gives rise to liquidity risk. Efficient fund management refers to a situation where a spread between rate sensitive assets (RSA) and rate sensitive liabilities (RSL) is maintained. The most commonly used tool to evaluate interest rate exposure is the Gap between RSA and RSL, while liquidity is gauged by liquid to total asset ratio.

Initially solvent financial institutions may be driven toward closure by poor management of short-term liquidity. Indicators should cover funding sources and capture large maturity mismatches. The term liquidity is used in various ways, all relating to availability of, access to, or convertibility into cash. An institution is said to have liquidity if it can easily meet its needs for cash either because it has cash on hand or can otherwise raise or borrow cash. A market is said to be liquid if the instruments it trades can easily be bought or sold in quantity with little impact on market prices. An asset is said to be liquid if the market for that asset is liquid.

The common theme in all three contexts is cash. A corporation is liquid if it has ready access to cash. A market is liquid if participants can easily convert positions into cash—or conversely. An asset is liquid if it can easily be converted to cash.

The liquidity of an institution depends on:

- The institution's short-term need for cash;
- Cash on hand;
- Available lines of credit;
- The liquidity of the institution's assets;
- The institution's reputation in the marketplace—how willing will counterparty is to transact trades with or lend to the institution?

The ratios suggested to measure liquidity under CAMELS Model are as follows:
1. **Liquidity Asset to Total Asset:**
Liquidity for a bank means the ability to meet its financial obligations as they come due. Bank lending finances investments in relatively illiquid assets, but it fund its loans with mostly short term liabilities. Thus one of the main challenges to a bank is ensuring its own liquidity under all reasonable conditions. Liquid assets include cash in hand, balance with the RBI, balance with other banks (both in India and abroad), and money at call and short notice. Total asset include the revaluations of all the assets. The proportion of liquid asset to total asset indicates the overall liquidity position of the bank.

\[
\text{Liquidity Asset/ Total Asset}
\]

2. **Government Securities to Total Asset:**
Government Securities are the most liquid and safe investments. This ratio measures the government securities as a proportion of total assets. Banks invest in government securities primarily to meet their SLR requirements, which are around 25% of net demand and time liabilities. This ratio measures the risk involved in the assets hand by a bank.

\[
\text{Government Securities/ Total Asset}
\]

3. **Approved Securities to Total Asset:**
Approved securities include securities other than government securities. This ratio measures the Approved Securities as a proportion of Total Assets. Banks invest in approved securities primarily after meeting their SLR requirements, which are around 25% of net demand and time liabilities. This ratio measures the risk involved in the assets hand by a bank.

\[
\text{Approved Securities/ Total Asset}
\]
4. **Liquidity Asset to Demand Deposit:**
This ratio measures the ability of a bank to meet the demand from deposits in a particular year. Demand deposits offer high liquidity to the depositor and hence banks have to invest these assets in a highly liquid form.

\[
\text{Liquidity Asset/ demand Deposit}
\]

5. **Liquidity Asset to Total Deposit:**
This ratio measures the liquidity available to the deposits of a bank. Total deposits include demand deposits, savings deposits, term deposits and deposits of other financial institutions. Liquid assets include cash in hand, balance with the RBI, and balance with other banks (both in India and abroad), and money at call and short notice.

\[
\text{Liquidity Asset/ Total Deposit}
\]
2.2.6 SENSITIVITY TO MARKET RISK – S

It refers to the risk that changes in market conditions could adversely impact earnings and/or capital. Market Risk encompasses exposures associated with changes in interest rates, foreign exchange rates, commodity prices, equity prices, etc. While all of these items are important, the primary risk in most banks is interest rate risk (IRR), which will be the focus of this module. The diversified nature of bank operations makes them vulnerable to various kinds of financial risks. Sensitivity analysis reflects institution’s exposure to interest rate risk, foreign exchange volatility and equity price risks (these risks are summed in market risk).

Risk sensitivity is mostly evaluated in terms of management’s ability to monitor and control market risk. Banks are increasingly involved in diversified operations, all of which are subject to market risk, particularly in the setting of interest rates and the carrying out of foreign exchange transactions. In countries that allow banks to make trades in stock markets or commodity exchanges, there is also a need to monitor indicators of equity and commodity price risk.

**Interest Rate Risk Basics:**
In the most simplistic terms, interest rate risk is a balancing act. Banks are trying to balance the quantity of reprising assets with the quantity of repricing liabilities. For example, when a bank has more liabilities re-pricing in a rising rate environment than assets reprising, the net interest margin (NIM) shrinks. Conversely, if your bank is asset sensitive in a rising interest rate environment, your NIM will improve because you have more assets reprising at higher rates.

Liquidity risk is financial risk due to uncertain liquidity. An institution might lose liquidity if its credit rating falls, it experiences sudden unexpected cash outflows, or some other event causes counterparties to avoid trading with or lending to the institution. A firm is also exposed to liquidity risk if markets on which it depends are subject to loss of liquidity.
Liquidity risk tends to compound other risks. If a trading organization has a position in an illiquid asset, its limited ability to liquidate that position at short notice will compound its market risk. Suppose a firm has offsetting cash flows with two different counterparties on a given day. If the counterparty that owes it a payment defaults, the firm will have to raise cash from other sources to make its payment. Should it be unable to do so, it too we default.

Here, liquidity risk is compounding credit risk. Accordingly, liquidity risk has to be managed in addition to market, credit and other risks. Because of its tendency to compound other risks, it is difficult or impossible to isolate liquidity risk. In all but the most simple of circumstances, comprehensive metrics of liquidity risk don't exist. Certain techniques of asset-liability management can be applied to assessing liquidity risk. If an organization's cash flows are largely contingent, liquidity risk may be assessed using some form of scenario analysis. Construct multiple scenarios for market movements and defaults over a given period of time. Assess day-today cash flows under each scenario. Because balance sheets differed so significantly from one organization to the next, there is little standardization in how such analyses are implemented.

Regulators are primarily concerned about systemic implications of liquidity risk. Business activities entail a variety of risks. For convenience, we distinguish between different categories of risk: market risk, credit risk, liquidity risk, etc. Although such categorization is convenient, it is only informal. Usage and definitions vary. Boundaries between categories are blurred. A loss due to widening credit spreads may reasonably be called a market loss or a credit loss, so market risk and credit risk overlap. Liquidity risk compounds other risks, such as market risk and credit risk. It cannot be divorced from the risks it compounds.

An important but somewhat ambiguous distinguish is that between market risk and business risk. Market risk is exposure to the uncertain market value of a portfolio. Business risk is exposure to uncertainty in economic value that cannot be mark-to-market. The distinction between market risk and business risk parallels the distinction between market-value accounting and book-value accounting. The distinction
between market risk and business risk is ambiguous because there is a vast "gray zone" between the two. There are many instruments for which markets exist, but the markets are illiquid. Mark-to-market values are not usually available, but mark-to-model values provide a more-or-less accurate reflection of fair value. Do these instruments pose business risk or market risk? The decision is important because firms employ fundamentally different techniques for managing the two risks.

Business risk is managed with a long-term focus. Techniques include the careful development of business plans and appropriate management oversight. Book-value accounting is generally used, so the issue of day-to-day performance is not material. The focus is on achieving a good return on investment over an extended horizon. Market risk is managed with a short-term focus. Long-term losses are avoided by avoiding losses from one day to the next. On a tactical level, traders and portfolio managers employ a variety of risk metrics —duration and convexity, the Greeks, beta, etc.—to assess their exposures. These allow them to identify and reduce any exposures they might consider excessive. On a more strategic level, organizations manage market risk by applying risk limits to traders' or portfolio managers' activities. Increasingly, value-at-risk is being used to define and monitor these limits. Some organizations also apply stress testing to their portfolios.
References
