

Risk Management In Banks

R.S. Raghavan

< EXECUTIVE SUMMARY >

◆ Risk is inherent in any walk of life in general and in financial sectors in particular. Till recently, due to regulated environment, banks could not afford to take risks. But of late, banks are exposed to same competition and hence are compelled to encounter various types of financial and non-financial risks. Risks and uncertainties form an integral part of banking which by nature entails taking risks.

There are three main categories of risks; Credit Risk, Market Risk & Operational Risk. Author has discussed

in detail. Main features of these risks as well as some other categories of risks such as Regulatory Risk and Environmental Risk. Various tools and techniques to manage Credit Risk, Market Risk and Operational Risk and its various component, are also discussed in detail. Another has also mentioned relevant points of Basel's New Capital Accord' and role of capital adequacy, Risk Aggregation & Capital Allocation and Risk Based Supervision (RBS), in managing risks in banking sector.

BACKGROUND



The etymology of the word "Risk" can be traced to the Latin word "Rescum" meaning Risk at Sea or that which cuts. Risk is associated with uncertainty and reflected by way of charge on the fundamental/basic i.e. in the case of business it is the Capital, which is the cushion that protects the liability holders of an institution. These risks are inter-dependent and events affecting one area of risk can have ramifications and penetrations for a range of other categories of risks. Foremost thing is to understand the risks run by the bank and to ensure that the risks are properly confronted,

effectively controlled and rightly managed. Each transaction that the bank undertakes changes the risk profile of the bank. The extent of calculations that need to be performed to understand the impact of each such risk on the transactions of the bank makes it nearly impossible to continuously update the risk calculations. Hence, providing real time risk information is one of the key challenges of risk management exercise.

Till recently all the activities of banks were regulated and hence operational environment was not conducive to risk taking. Better insight, sharp intuition and longer experience were adequate to manage the limited risks. Business is the art of extracting money from other's pocket, sans resorting to violence. But profiting in business without exposing to risk is like trying to live without being born. Every one knows that risk taking is failure-prone as otherwise it would be treated as sure taking. Hence risk is inherent in any walk of life in general and in financial sectors in particular. Of late, banks have grown

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from being a financial intermediary into a risk intermediary at present. In the process of financial intermediation, the gap of which becomes thinner and thinner, banks are exposed to severe competition and hence are compelled to encounter various types of financial and non-financial risks. Risks and uncertainties form an integral part of banking which by nature entails taking risks.

Business grows mainly by taking risk. Greater the risk, higher the profit and hence the business unit must strike a trade off between the two. The essential functions of risk management are to identify, measure and more importantly monitor the profile of the bank. While Non-Performing Assets are the legacy of the past in the present, Risk Management system is the pro-active action in the present for the future. Managing risk is nothing but managing the change before the risk manages. While new avenues for the bank has opened up they have brought with them new risks as well, which the banks will have to handle and overcome.

II. TYPES OF RISKS

When we use the term "Risk", we all mean financial risk or uncertainty of financial loss. If we consider risk in terms of probability of occurrence frequently, we measure risk on a scale, with certainty of occurrence at one end and certainty of non-occurrence at the other end. Risk is the greatest where the probability of occurrence or non-occurrence is equal. As per the Reserve Bank of India guidelines issued in Oct. 1999, there are three major types of risks encountered by the banks and these are Credit Risk, Market Risk & Operational Risk. As we go along the article, we will see what are the components of these three major risks. In August 2001, a discussion paper on move towards Risk Based Supervision was published. Further after eliciting views of banks on the draft guidance note on Credit Risk Management and market risk management, the RBI has issued the final guidelines and advised some of the large PSU banks to implement so as to gauge the impact. A discussion paper on Country Risk was also released in May 02.

Risk is the potentiality that both the expected and unexpected events may have an adverse impact on the bank's capital or earnings. The expected loss is to be borne by the borrower and hence is taken care of by adequately pricing the products through risk premium and reserves created out of the earnings. It is the amount expected to be lost due to changes in credit quality resulting in default. Where as, the unexpected loss on account of the individual exposure and the whole portfolio in

entirely is to be borne by the bank itself and hence is to be taken care of by the capital. Thus, the expected losses are covered by reserves/provisions and the unexpected losses require capital allocation. Hence the need for sufficient Capital Adequacy Ratio is felt. Each type of risks is measured to determine both the expected and unexpected losses using VaR (Value at Risk) or worst-case type analytical model.

III CREDIT RISK

Credit Risk is the potential that a bank borrower/counter party fails to meet the obligations on agreed terms. There is always scope for the borrower to default from his commitments for one or the other reason resulting in crystallisation of credit risk to the bank. These losses could take the form outright default or alternatively, losses from changes in portfolio value arising from actual or perceived deterioration in credit quality that is short of default. Credit risk is inherent to the business of lending funds to the operations linked closely to market risk variables. The objective of credit risk management is to minimize the risk and maximize bank's risk adjusted rate of return by assuming and maintaining credit exposure within the acceptable parameters.

Credit risk consists of primarily two components, viz Quantity of risk, which is nothing but the outstanding loan balance as on the date of default and the quality of risk, viz, the severity of loss defined by both Probability of Default as reduced by the recoveries that could be made in the event of default. Thus credit risk is a combined outcome of Default Risk and Exposure Risk. The elements of Credit Risk is Portfolio risk comprising Concentration Risk as well as Intrinsic Risk and Transaction Risk comprising migration/down gradation risk as well as Default Risk. At the transaction level, credit ratings are useful measures of evaluating credit risk that is prevalent across the entire organization where treasury and credit functions are handled. Portfolio analysis help in identifying concentration of credit risk, default/migration statistics, recovery data, etc.

In general, Default is not an abrupt process to happen suddenly and past experience dictates that, more often than not, borrower's credit worthiness and asset quality declines gradually, which is otherwise known as migration. Default is an extreme event of credit migration.

Off balance sheet exposures such as foreign exchange forward contracts, swaps options etc are classified in to three broad categories such as full Risk, Medium Risk and Low risk and then translated into risk Weighted assets

through a conversion factor and summed up.

The management of credit risk includes a) measurement through credit rating/ scoring, b) quantification through estimate of expected loan losses, c) Pricing on a scientific basis and d) Controlling through effective Loan Review Mechanism and Portfolio Management.

A) Tools of Credit Risk Management.

The instruments and tools, through which credit risk management is carried out, are detailed below:

- a) **Exposure Ceilings:** Prudential Limit is linked to Capital Funds – say 15% for individual borrower entity, 40% for a group with additional 10% for infrastructure projects undertaken by the group, Threshold limit is fixed at a level lower than Prudential Exposure; Substantial Exposure, which is the sum total of the exposures beyond threshold limit should not exceed 600% to 800% of the Capital Funds of the bank (i.e. six to eight times).
- b) **Review/Renewal:** Multi-tier Credit Approving Authority, constitution wise delegation of powers, Higher delegated powers for better-rated customers; discriminatory time schedule for review/renewal, Hurdle rates and Bench marks for fresh exposures and periodicity for renewal based on risk rating, etc are formulated.
- c) **Risk Rating Model:** Set up comprehensive risk scoring system on a six to nine point scale. Clearly define rating thresholds and review the ratings periodically preferably at half yearly intervals. Rating migration is to be mapped to estimate the expected loss.
- d) **Risk based scientific pricing:** Link loan pricing to expected loss. High-risk category borrowers are to be priced high. Build historical data on default losses. Allocate capital to absorb the unexpected loss. Adopt the RAROC framework.
- e) **Portfolio Management** The need for credit portfolio management emanates from the necessity to optimize the benefits associated with diversification and to reduce the potential adverse impact of concentration of exposures to a particular borrower, sector or industry. Stipulate quantitative ceiling on aggregate exposure on specific rating categories, distribution of borrowers in various industry, business group and conduct rapid portfolio reviews. The existing framework of tracking the non-performing loans around the balance sheet date does not signal the quality of the entire loan book. There should be a proper & regular on-going system for identification of credit weaknesses well in advance. Initiate steps to preserve the desired portfolio quality and integrate portfolio

reviews with credit decision-making process.

- f) **Loan Review Mechanism** This should be done independent of credit operations. It is also referred as Credit Audit covering review of sanction process, compliance status, review of risk rating, pick up of warning signals and recommendation of corrective action with the objective of improving credit quality. It should target all loans above certain cut-off limit ensuring that at least 30% to 40% of the portfolio is subjected to LRM in a year so as to ensure that all major credit risks embedded in the balance sheet have been tracked. This is done to bring about qualitative improvement in credit administration. Identify loans with credit weakness. Determine adequacy of loan loss provisions. Ensure adherence to lending policies and procedures. The focus of the credit audit needs to be broadened from account level to overall portfolio level. Regular, proper & prompt reporting to Top Management should be ensured. Credit Audit is conducted on site, i.e. at the branch that has appraised the advance and where the main operative limits are made available. However, it is not required to visit borrowers factory/office premises.

B. Risk Rating Model

Credit Audit is conducted on site, i.e. at the branch that has appraised the advance and where the main operative limits are made available. However, it is not required to risk borrowers' factory/office premises. As observed by RBI, Credit Risk is the major component of risk management system and this should receive special attention of the Top Management of the bank. The process of credit risk management needs analysis of uncertainty and analysis of the risks inherent in a credit proposal. The predictable risk should be contained through proper strategy and the unpredictable ones have to be faced and overcome. Therefore any lending decision should always be preceded by detailed analysis of risks and the outcome of analysis should be taken as a guide for the credit decision. As there is a significant co-relation between credit ratings and default frequencies, any derivation of probability from such historical data can be relied upon. The model may consist of minimum of six grades for performing and two grades for non-performing assets. The distribution of rating of assets should be such that not more than 30% of the advances are grouped under one rating. The need for the adoption of the credit risk-rating model is on account of the following aspects.

- Disciplined way of looking at Credit Risk.
- Reasonable estimation of the overall health status of an account captured under Portfolio approach as

contrasted to stand-alone or asset based credit management.

- Impact of a new loan asset on the portfolio can be assessed. Taking a fresh exposure to the sector in which there already exists sizable exposure may simply increase the portfolio risk although specific unit level risk is negligible/minimal.
- The co-relation or co-variance between different sectors of portfolio measures the inter relationship between assets. The benefits of diversification will be available so long as there is no perfect positive co-relation between the assets, otherwise impact on one would affect the other.
- Concentration risks are measured in terms of additional portfolio risk arising on account of increased exposure to a borrower/group or co-related borrowers.
- Need for Relationship Manager to capture, monitor and control the over all exposure to high value customers on real time basis to focus attention on vital few so that trivial many do not take much of valuable time and efforts.
- Instead of passive approach of originating the loan and holding it till maturity, active approach of credit portfolio management is adopted through securitisation/credit derivatives.
- Pricing of credit risk on a scientific basis linking the loan price to the risk involved therein.
- Rating can be used for the anticipatory provisioning. Certain level of reasonable over-provisioning as best practice.

Given the past experience and assumptions about the future, the credit risk model seeks to determine the present value of a given loan or fixed income security. It also seeks to determine the quantifiable risk that the promised cash flows will not be forthcoming. Thus, credit risk models are intended to aid banks in quantifying, aggregating and managing risk across geographical and product lines. Credit models are used to flag potential problems in the portfolio to facilitate early corrective action.

The risk-rating model should capture various types of risks such as Industry/Business Risk, Financial Risk and Management Risk, associated with credit. Industry/Business risk consists of both systematic and unsystematic risks which are market driven. The systematic risk emanates from General political environment, changes in economic policies, fiscal policies of the government, infrastructural changes etc. The unsystematic risk arises out of internal factors such as machinery breakdown, labour strike, new competitors who are quite spe-

cific to the activities in which the borrower is engaged. Assessment of financial risks involves appraisal of the financial strength of a unit based on its performance and financial indicators like liquidity, profitability, gearing, leverage, coverage, turnover etc. It is necessary to study the movement of these indicators over a period of time as also its comparison with industry averages wherever possible. A study carried out in the western corporate world reveals that 45% of the projects failed to take off simply because the personnel entrusted with the test were found to be highly wanting in qualitatively managing the project.

The key ingredient of credit risk is the risk of default that is measured by the probability that default occurs during a given period. Probabilities are estimates of future happenings that are uncertain. We can narrow the margin of uncertainty of a forecast if we have a fair understanding of the nature and level of uncertainty regarding the variable in question and availability of quality information at the time of assessment.

The expected loss/unexpected loss methodology forces banks to adopt new Internal Ratings Based approach to credit risk management as proposed in the Capital Accord II. Some of the risk rating methodologies used widely is briefed below:

- a. Altman's Z score Model involves forecasting the probability of a company entering bankruptcy. It separates defaulting borrower from non-defaulting borrower on the basis of certain financial ratios converted into simple index.
- b. Credit Metrics focuses on estimating the volatility of asset values caused by variation in the quality of assets. The model tracks rating migration which is the probability that a borrower migrates from one risk rating to another risk rating.
- c. Credit Risk +, a statistical method based on the insurance industry, is for measuring credit risk. The model is based on actuarial rates and unexpected losses from defaults. It is based on insurance industry model of event risk.
- d. KMV, through its Expected Default Frequency (EDF) methodology derives the actual probability of default for each obligor based on functions of capital structure, the volatility of asset returns and the current asset value. It calculates the asset value of a firm from the market value of its equity using an option pricing based approach that recognizes equity as a call option on the underlying asset of the firm. It tries to estimate the asset value path of the firm over a time horizon. The default risk is the probability of the estimated asset value falling below a pre-specified default point.
- e. Mckinsey's credit portfolio view is a multi factor model

which is used to stimulate the distribution of default probabilities, as well as migration probabilities conditioned on the value of macro economic factors like the unemployment rate, GDP growth, forex rates, etc.

In to-days parlance, default arises when a scheduled payment obligation is not met within 180 days from the due date and this cut-off period may undergo downward change. Exposure risk is the loss of amount outstanding at the time of default as reduced by the recoverable amount. The loss in case of default is $D * X * (I - R)$ where D is Default percentage, X is the Exposure Value and R is the recovery rate.

Credit Risk is measured through Probability of Default (POD) and Loss Given Default (LGD). Bank should estimate the probability of default associated with borrowers in each of the rating grades. How much the bank would lose once such event occurs is what is known as Loss Given Default. This loss is also dependent upon bank's exposure to the borrower at the time of default commonly known as Exposure at Default (EaD).

The extent of provisioning required could be estimated from the expected Loss Given Default (which is the product of Probability of Default, Loss Given Default & Exposure at Default). That is ELGD is equal to $POD * LGD * EaD$.

Credit Metrics mechanism advocates that the amount of portfolio value should be viewed not just in terms of likelihood of default, but also in terms of credit quality over time of which default is just a specific case. Credit Metrics can be worked out at corporate level, at least on an annual basis to measure risk- migration and resultant deterioration in credit portfolio.

The ideal credit risk management system should throw a single number as to how much a bank stands to lose on credit portfolio and therefore how much capital they ought to hold.

IV MARKET RISK

Market Risk may be defined as the possibility of loss to bank caused by the changes in the market variables. It is the risk that the value of on-/off-balance sheet positions will be adversely affected by movements in equity and interest rate markets, currency exchange rates and commodity prices. Market risk is the risk to the bank's earnings and capital due to changes in the market level of interest rates or prices of securities, foreign exchange and equities, as well as the volatilities, of those prices. Market Risk Management provides a comprehensive and dynamic frame work for measuring, monitoring and

managing liquidity, interest rate, foreign exchange and equity as well as commodity price risk of a bank that needs to be closely integrated with the bank's business strategy.

Scenario analysis and stress testing is yet another tool used to assess areas of potential problems in a given portfolio. Identification of future changes in economic conditions like – economic/industry overturns, market risk events, liquidity conditions etc that could have unfavourable effect on bank's portfolio is a condition precedent for carrying out stress testing. As the underlying assumption keep changing from time to time, output of the test should be reviewed periodically as market risk management system should be responsive and sensitive to the happenings in the market.

a) Liquidity Risk:

Bank Deposits generally have a much shorter contractual maturity than loans and liquidity management needs to provide a cushion to cover anticipated deposit withdrawals. Liquidity is the ability to efficiently accommodate deposit as also reduction in liabilities and to fund the loan growth and possible funding of the off-balance sheet claims. The cash flows are placed in different time buckets based on future likely behaviour of assets, liabilities and off-balance sheet items. Liquidity risk consists of Funding Risk, Time Risk & Call Risk.

Funding Risk : It is the need to replace net out flows due to unanticipated withdrawal/non-renewal of deposit

Time risk : It is the need to compensate for non-receipt of expected inflows of funds, i.e. performing assets turning into non-performing assets.

Call risk : It happens on account of crystallisation of contingent liabilities and inability to undertake profitable business opportunities when desired.

The Asset Liability Management (ALM) is a part of the overall risk management system in the banks. It implies examination of all the assets and liabilities simultaneously on a continuous basis with a view to ensuring a proper balance between funds mobilization and their deployment with respect to their a) maturity profiles, b) cost, c) yield, d) risk exposure, etc. It includes product pricing for deposits as well as advances, and the desired maturity profile of assets and liabilities.

Tolerance levels on mismatches should be fixed for various maturities depending upon the asset liability pro-

file, deposit mix, nature of cash flow etc. Bank should track the impact of pre-payment of loans & premature closure of deposits so as to realistically estimate the cash flow profile.

b) Interest Rate Risk

Interest Rate Risk is the potential negative impact on the Net Interest Income and it refers to the vulnerability of an institution’s financial condition to the movement in interest rates. Changes in interest rate affect earnings, value of assets, liability off-balance sheet items and cash flow. Hence, the objective of interest rate risk management is to maintain earnings, improve the capability, ability to absorb potential loss and to ensure the adequacy of the compensation received for the risk taken and effect risk return trade-off. Management of interest rate risk aims at capturing the risks arising from the maturity and re-pricing mismatches and is measured both from the earnings and economic value perspective.

Earnings perspective involves analyzing the impact of changes in interest rates on accrual or reported earnings in the near term. This is measured by measuring the changes in the Net Interest Income (NII) equivalent to the difference between total interest income and total interest expense.

In order to manage interest rate risk, banks should begin evaluating the vulnerability of their portfolios to the risk of fluctuations in market interest rates. One such measure is Duration of market value of a bank asset or liabilities to a percentage change in the market interest rate. The difference between the average duration for bank assets and the average duration for bank liabilities is known as the duration gap which assess the bank’s exposure to interest rate risk. The Asset Liability Committee (ALCO) of a bank uses the information contained in the duration gap analysis to guide and frame strategies. By reducing the size of the duration gap, banks can minimize the interest rate risk.

Economic Value perspective involves analyzing the expected cash in flows on assets minus expected cash out flows on liabilities plus the net cash flows on off-balance sheet items. The economic value perspective identifies risk arising from long-term interest rate gaps. The various types of interest rate risks are detailed below:

Gap/Mismatch risk:

It arises from holding assets and liabilities and off balance sheet items with different principal amounts, maturity dates & re-pricing dates thereby creating exposure to unexpected changes in the level of market interest rates.

Basis Risk:

It is the risk that the Interest rate of different Assets/liabilities and off balance items may change in different magnitude. The degree of basis risk is fairly high in respect of banks that create composite assets out of composite liabilities.

Embedded option Risk:

Option of pre-payment of loan and Fore-closure of deposits before their stated maturities constitute embedded option risk

Yield curve risk:

Movement in yield curve and the impact of that on portfolio values and income.

Reprice risk:

When assets are sold before maturities.

Reinvestment risk:

Uncertainty with regard to interest rate at which the future cash flows could be reinvested.

Net interest position risk:

When banks have more earning assets than paying liabilities, net interest position risk arises in case market interest rates adjust downwards.

There are different techniques such as a) the traditional Maturity Gap Analysis to measure the interest rate sensitivity, b) Duration Gap Analysis to measure interest rate sensitivity of capital, c) simulation and d) Value at Risk for measurement of interest rate risk. The approach towards measurement and hedging interest rate risk varies with segmentation of bank’s balance sheet. Banks broadly bifurcate the asset into Trading Book and Banking Book. While trading book comprises of assets held primarily for generating profits on short term differences in prices/yields, the banking book consists of assets and liabilities contracted basically on account of relationship or for steady income and statutory obligations and are generally held till maturity/payment by counter party.

Thus, while price risk is the prime concern of banks in trading book, the earnings or changes in the economic value are the main focus in banking book.

Value at Risk (VaR) is a method of assessing the market risk using standard statistical techniques. It is a statistical measure of risk exposure and measures the worst expected loss over a given time interval under normal market conditions at a given confidence level of say 95% or 99%. Thus VaR is simply a distribution of probable outcome of future losses that may occur on a portfolio. The actual result will not be known until the event takes place. Till then it is a random variable whose outcome has been estimated.

As far as Trading Book is concerned, bank should be able to adopt standardized method or internal models for providing explicit capital charge for market risk.

c) Forex Risk

Foreign exchange risk is the risk that a bank may suffer loss as a result of adverse exchange rate movement during a period in which it has an open position, either spot or forward or both in same foreign currency. Even in case where spot or forward positions in individual currencies are balanced the maturity pattern of forward transactions may produce mismatches. There is also a settlement risk arising out of default of the counter party and out of time lag in settlement of one currency in one center and the settlement of another currency in another time zone. Banks are also exposed to interest rate risk, which arises from the maturity mismatch of foreign currency position. The Value at Risk (VaR) indicates the risk that the bank is exposed due to uncovered position of mismatch and these gap positions are to be valued on daily basis at the prevalent forward market rates announced by FEDAI for the remaining maturities.

Currency Risk is the possibility that exchange rate changes will alter the expected amount of principal and return of the lending or investment. At times, banks may try to cope with this specific risk on the lending side by shifting the risk associated with exchange rate fluctuations to the borrowers. However the risk does not get extinguished, but only gets converted in to credit risk.

By setting appropriate limits-open position and gaps, stop-loss limits, Day Light as well as overnight limits for each currency, Individual Gap Limits and Aggregate Gap Limits, clear cut and well defined division of responsibilities between front, middle and back office the risk element in foreign exchange risk can be managed/monitored.

d) Country Risk

This is the risk that arises due to cross border transactions that are growing dramatically in the recent years owing to economic liberalization and globalization. It is the possibility that a country will be unable to service or repay debts to foreign lenders in time. It comprises of Transfer Risk arising on account of possibility of losses due to restrictions on external remittances; Sovereign Risk associated with lending to government of a sovereign nation or taking government guarantees; Political Risk when political environment or legislative process of country leads to government taking over the assets of the financial entity (like nationalization, etc) and preventing discharge of liabilities in a manner that had been agreed to earlier; Cross border risk arising on account of the borrower being a resident of a country other than the country where the cross border asset is booked; Currency Risk, a possibility that

exchange rate change, will alter the expected amount of principal and return on the lending or investment.

In the process there can be a situation in which seller (exporter) may deliver the goods, but may not be paid or the buyer (importer) might have paid the money in advance but was not delivered the goods for one or the other reasons.

As per the RBI guidance note on Country Risk Management published recently, banks should reckon both fund and non-fund exposures from their domestic as well as foreign branches, if any, while identifying, measuring, monitoring and controlling country risk. It advocates that bank should also take into account indirect country risk exposure. For example, exposures to a domestic commercial borrower with large economic dependence on a certain country may be considered as subject to indirect country risk. The exposures should be computed on a net basis, i.e. gross exposure minus collaterals, guarantees etc. Netting may be considered for collaterals in/guarantees issued by countries in a lower risk category and may be permitted for bank's dues payable to the respective countries.

RBI further suggests that banks should eventually put in place appropriate systems to move over to internal assessment of country risk within a prescribed period say by 31.3.2004, by which time the new capital accord would be implemented. The system should be able to identify the full dimensions of country risk as well as incorporate features that acknowledge the links between credit and market risks. Banks should not rely solely on rating agencies or other external sources as their only country risk-monitoring tool.

With regard to inter-bank exposures, the guidelines suggests that banks should use the country ratings of international rating agencies and broadly classify the country risk rating into six categories such as insignificant, low, moderate, high, very high & off-credit. However, banks may be allowed to adopt a more conservative categorization of the countries.

Banks may set country exposure limits in relation to the bank's regulatory capital (Tier I & II) with suitable sub limits, if necessary, for products, branches, maturity etc. Banks were also advised to set country exposure limits and monitor such exposure on weekly basis before eventually switching over to real time monitoring. Banks should use variety of internal and external sources as a means to measure country risk and should not rely solely on rating agencies or other external sources as their only tool for monitoring country risk. Banks are expected to disclose the "Country Risk Management" policies in their Annual Report by way of notes.

V OPERATIONAL RISK

Always banks live with the risks arising out of human error, financial fraud and natural disasters. The recent happenings such as WTC tragedy, Barings debacle etc. has highlighted the potential losses on account of operational risk. Exponential growth in the use of technology and increase in global financial inter-linkages are the two primary changes that contributed to such risks. Operational risk, though defined as any risk that is not categorized as market or credit risk, is the risk of loss arising from inadequate or failed internal processes, people and systems or from external events. In order to mitigate this, internal control and internal audit systems are used as the primary means.

Risk education for familiarizing the complex operations at all levels of staff can also reduce operational risk. Insurance cover is one of the important mitigators of operational risk. Operational risk events are associated with weak links in internal control procedures. The key to management of operational risk lies in the bank's ability to assess its process for vulnerability and establish controls as well as safeguards while providing for unanticipated worst-case scenarios.

Operational risk involves breakdown in internal controls and corporate governance leading to error, fraud, performance failure, compromise on the interest of the bank resulting in financial loss. Putting in place proper corporate governance practices by itself would serve as an effective risk management tool. Bank should strive to promote a shared understanding of operational risk within the organization, especially since operational risk is often intertwined with market or credit risk and it is difficult to isolate.

Over a period of time, management of credit and market risks has evolved a more sophisticated fashion than operational risk, as the former can be more easily measured, monitored and analysed. And yet the root causes of all the financial scams and losses are the result of operational risk caused by breakdowns in internal control mechanism and staff lapses. So far, scientific measurement of operational risk has not been evolved. Hence 20% charge on the Capital Funds is earmarked for operational risk and based on subsequent data/feedback, it was reduced to 12%. While measurement of operational risk and computing capital charges as envisaged in the Basel proposals are to be the ultimate goals, what is to be done at present is start implementing the Basel proposal in a phased manner and carefully plan in that direction. The incentive for banks to move the measurement chain is not just to reduce regulatory capital but more importantly to provide assurance to the top management that the bank holds the required capital.

VI REGULATORY RISK

When owned funds alone are managed by an entity, it is natural that very few regulators operate and supervise them. However, as banks accept deposit from public obviously better governance is expected of them. This entails multiplicity of regulatory controls. Many Banks, having already gone for public issue, have a greater responsibility and accountability. As banks deal with public funds and money, they are subject to various regulations. The very many regulators include Reserve Bank of India (RBI), Securities Exchange Board of India (SEBI), Department of Company Affairs (DCA), etc. More over, banks should ensure compliance of the applicable provisions of The Banking Regulation Act, The Companies Act, etc. Thus all the banks run the risk of multiple regulatory-risk which inhibits free growth of business as focus on compliance of too many regulations leave little energy and time for developing new business. Banks should learn the art of playing their business activities within the regulatory controls.

VII ENVIRONMENTAL RISK

As the years roll by and technological advancement take place, expectation of the customers change and enlarge. With the economic liberalization and globalization, more national and international players are operating the financial markets, particularly in the banking field. This provides the platform for environmental change and exposes the bank to the environmental risk. Thus, unless the banks improve their delivery channels, reach customers, innovate their products that are service oriented, they are exposed to the environmental risk resulting in loss in business share with consequential profit.

VIII BASEL'S NEW CAPITAL ACCORD

Bankers' for International Settlement (BIS) meet at Basel situated at Switzerland to address the common issues concerning bankers all over the world. The Basel Committee on Banking Supervision (BCBS) is a committee of banking supervisory authorities of G-10 countries and has been developing standards and establishment of a framework for bank supervision towards strengthening financial stability through out the world. In consultation with the supervisory authorities authorities of a few non-G-10 countries including India, core principles for effective banking supervision in the form of minimum requirements to strengthen current super-

visory regime, were mooted.

The 1988 Capital Accord essentially provided only one option for measuring the appropriate capital in relation to the risk-weighted assets of the financial institution. It focused on the total amount of bank capital so as to reduce the risk of bank solvency at the potential cost of bank's failure for the depositors. As an improvement on the above, the New Capital Accord was published in 2001, to be implemented by the financial year 2003-04. It provides spectrum of approaches for the measurement of credit, market and operational risks to determine the capital required.

The spread and nature of the ownership structure is important as it impinges on the propensity to induct additional capital. While getting support from a large body of shareholders is a difficult proposition when the bank's performance is adverse, a smaller shareholder base constrains the ability of the bank to garner funds. Tier I capital is not owed to anyone and is available to cover possible unexpected losses. It has no maturity or repayment requirement, and is expected to remain a permanent component of the core capital of the counter party. While Basel standards currently require banks to have a capital adequacy ratio of 8% with Tier I not less than 4%, RBI has mandated the banks to maintain CAR of 9%. The maintenance of capital adequacy is like aiming at a moving target as the composition of risk-weighted assets gets changed every minute on account of fluctuation in the risk profile of a bank. Tier I capital is known as the core capital providing permanent and readily available support to the bank to meet the unexpected losses.

In the recent past, owner of PSU banks, the government provided capital in good measure mainly to weaker banks. In doing so, the government was not acting as a prudent investor as return on such capital was never a consideration. Further, capital infusion did not result in any cash flow to the receiver, as all the capital was required to be reinvested in government securities yielding low interest. Receipt of capital was just a book entry with the only advantage of interest income from the securities.

CAPITAL ADEQUACY

Subsequent to nationalization of banks, capitalization in banks was not given due importance as it was felt necessary for the reason that the ownership of the banks rested with the government, creating the required confidence in the mind of the public. Combined forces of globalization and liberalization compelled the public sector banks, hitherto shielded from the vagaries of market forces, to come to terms with the market realities

where certain minimum capital adequacy has to be maintained in the face of stiff norms in respect of income recognition, asset classification and provisioning. It is clear that multi pronged approach would be required to meet the challenges of maintaining capital at adequate levels in the face of mounting risks in the banking sector.

In banks asset creation is an event happening subsequent to the capital formation and deposit mobilization. Therefore, the preposition should be for a given capital how much asset can be created? Hence, in ideal situation and taking a radical view, stipulation of Asset Creation Multiple (ACM), in lieu of capital adequacy ratio, would be more appropriate and rational. That is to say, instead of Minimum Capital Adequacy Ratio of 8 percent (implying holding of Rs 8 by way of capital for every Rs 100 risk weighted assets), stipulation of Maximum Asset Creation Multiple of 12.5 times (implying for maximum Asset Creation Multiple of 12.5 time for the given capital of Rs 8) would be more meaningful. However as the assets have been already created when the norms were introduced, capital adequacy ratio is adopted instead of asset creation multiple. At least in respect of the new banks (starting from zero), Asset Creation Multiple (ACM) may be examined/thought of for strict implementation.

The main differences between the existing accord and the new one are summarized below:-

<u>Existing Accord</u>	<u>New Accord</u>
1. Focus on single risk measure	1. More emphasis on banks' own internal methodology supervisory Review and market discipline.
2. One size fits all	2. Flexibility, menu of approaches, incentive for better risk management.
3. Broad brush structure	3. More risk sensitivity.

The structure of the New Accord – II consists of three pillars approach as given below.

<u>Pillar</u>	<u>Focus area</u>
I Pillar	- Minimum Capital Requirement
II Pillar	- Supervisory review process
III Pillar	- Market Discipline

i) Minimum Capital Requirement

The capital Adequacy Ratio is the percentage of bank's Capital Funds in relation to the Risk Weighted Assets of the bank. In the New Capital Accord, while the definition of Capital Fund remains the same, the method of calculation

of Risk Weighted Assets has been modified to factor market risk and operational risk, in addition to the Credit Risk that alone was reckoned in the 1988 Capital Accord. Banks may adopt any of the approach suitable to them for arriving at the total risk weighted assets. Various approaches, to be chosen from under each of the risk are detailed below:

Credit Risk Menu:

- 1) Standardized Approach: The bank allocates a risk weight to each assets as well as off balance sheet items and produces a sum of R W A values (RW of 100% may entail capital charge of 8% and RW of 20% may entail capital charge of 1.6%.)
The risk weights are to be refined by reference to a rating provided by an external credit assessment institution that meets certain strict standards.
- 2) Foundation Internal Rating Based Approach : Under this, bank rates the borrower and results are translated into estimates of a potential future loss amount which forms the basis of minimum capital requirement.
- 3) Advanced Internal Rating Based Approach: In Advanced IRB approach, the range of risk weights will be well diverse.

Market Risk Menu:

- 1) Standardized Approach
- 2) Internal Models Approach

Operational Risk Menu:

- 1) Basic Indicator Approach (Alpha)
Hence, one indicator for operational risk is identified such as interest income, Risk Weighted Asset etc.
- 2) Standardized Approach (Beta)
This approach specifies different indicators for different lines/units of business and the summation of different business lines such as Corporate Finance, Retail Banking Asset Management, etc. to be done.
- 3) Internal Measurement Approach (Gamma)
Based on the past internal loss data estimation, for each combination of business line, bank is required to calculate an expected loss value to ascertain the required capital to be allocated/assigned.

IX RISK AGGREGATION & CAPITAL ALLOCATION

Capital Adequacy in relation to economic risk is a necessary condition for the long-term soundness of banks. Aggregate risk exposure is estimated through Risk Adjusted Return on Capital (RAROC) and Earnings at Risk (EaR) method. Former is used by bank with international presence and the RAROC process estimates the

cost of Economic Capital & expected losses that may prevail in the worst-case scenario and then equates the capital cushion to be provided for the potential loss. RAROC is the first step towards examining the institution's entire balance sheet on a mark to market basis, if only to understand the risk return trade off that have been made. As banks carry on the business on a wide area network basis, it is critical that they are able to continuously monitor the exposures across the entire organization and aggregate the risks so than an integrated view is taken.

The Economic Capital is the amount of the capital (besides the Regulatory Capital) that the firm has to put at risk so as to cover the potential loss under the extreme market conditions. In other words, it is the difference in mark-to-market value of assets over liabilities that the bank should aim at or target. As against this, the regulatory capital is the actual Capital Funds held by the bank against the Risk Weighted Assets.

After measuring the economic capital for the bank as a whole, bank's actual capital has to be allocated to individual business units on the basis of various types of risks. This process can be continued till capital is allocated at transaction/customer level.

X. RISK BASED SUPERVISION (RBS)

The Reserve Bank of India presently has its supervisory mechanism by way of on-site inspection and off-site monitoring on the basis of the audited balance sheet of a bank. In order to enhance the supervisory mechanism, the RBI has decided to put in place, beginning from the last quarter of the financial year 02-03, a system of Risk Based Supervision. Under risk based supervision, supervisors are expected to concentrate their efforts on ensuring that financial institutions use the process necessarily to identify, measure and control risk exposure. The RBS is expected to focus supervisory attention in accordance with the risk profile of the bank. The RBI has already structured the risk profile templates to enable the bank to make a self-assessment of their risk profile. It is designed to ensure continuous monitoring and evaluation of risk profile of the institution through risk matrix. This may optimize the utilization of the supervisory resources of the RBI so as to minimize the impact of a crises situation in the financial system. The transaction based audit and supervision is getting shifted to risk focused audit.

Risk based supervision approach is an attempt to overcome the deficiencies in the traditional point-in-time, transaction-validation and value based supervisory system. It is forward looking enabling the supervisors to differentiate between

banks to focus attention on those having high-risk profile.

The implementation of risk based auditing would imply that greater emphasis is placed on the internal auditor's role for mitigating risks. By focusing on effective risk management, the internal auditor would not only offer remedial measures for current trouble-prone areas, but also anticipate problems to play an active role in protecting the bank from risk hazards.

XI CONCLUSION

Risk management underscores the fact that the survival of an organization depends heavily on its capabilities to anticipate and prepare for the change rather than just waiting for the change and react to it. The objective of risk management is not to prohibit or prevent risk taking activity, but to ensure that the risks are consciously taken with full knowledge, clear purpose and understanding so that it can be measured and mitigated. It also prevents an institution from suffering unacceptable loss causing an institution to fail or materially damage its competitive position. Functions of risk management should actually be bank specific dictated by the size and quality of balance sheet, complexity of functions, technical/ professional manpower and the status of MIS in place in that bank. There may not be one-size-fits-all risk management module for all the banks to be made applicable uniformly. Balancing risk and return is not an easy task as risk is subjective and not quantifiable whereas return is objective and measurable. If there exist a way of converting the subjectivity of the risk into a number then the balancing exercise would be meaningful and much easier.

Banking is nothing but financial inter-mediation between the financial savers on the one hand and the funds seeking business entrepreneurs on the other hand. As such, in the process of providing financial services, commercial banks assume various kinds of risks both financial and non-financial. Therefore, banking practices, which continue to be deep rooted in the philosophy of securities based lending and investment policies, need to change the approach and mindset, rather radically, to manage and mitigate the perceived risks, so as to ultimately improve the quality of the asset portfolio.

As in the international practice, a committee approach may be adopted to manage various risks. Risk Management Committee, Credit Policy Committee, Asset Liability Committee, etc are such committees that handle the risk management aspects. While a centralized department may be made responsible for monitoring risk, risk control should actually take place at the functional departments as it is generally fragmented across Credit, Funds,

Investment and Operational areas. Integration of systems that includes both transactions processing as well as risk systems is critical for implementation.

In a scenario where majority of profits are derived from trade in the market, one can no longer afford to avoid measuring risk and managing its implications thereof. Crossing the chasm will involve systematic changes coupled with the characteristic uncertainty and also the pain it brings and it may be worth the effort. The engine of the change is obviously the evolution of the market economy abetted by unimaginable advances in technology, communication, transmission of related uncontrollable flow of information, capital and commerce through out the world. Like a powerful river, the market economy is widening and breaking down barriers. Government's role is not to block that flow, but to accommodate it and yet keep it sufficiently under control so that it does not overflow its banks and drown us with the associated risks and undesirable side effects.

To the extent the bank can take risk more consciously, anticipates adverse changes and hedges accordingly, it becomes a source of competitive advantage, as it can offer its products at a better price than its competitors. What can be measured can mitigation is more important than capital allocation against inadequate risk management system. Basel proposal provides proper starting point for forward-looking banks to start building process and systems attuned to risk management practice. Given the data-intensive nature of risk management process, Indian Banks have a long way to go before they comprehend and implement Basel II norms, in to-to.

The effectiveness of risk measurement in banks depends on efficient Management Information System, computerization and net working of the branch activities. The data warehousing solution should effectively interface with the transaction systems like core banking solution and risk systems to collate data. An objective and reliable data base has to be built up for which bank has to analyze its own past performance data relating to loan defaults, trading losses, operational losses etc., and come out with bench marks so as to prepare themselves for the future risk management activities. Any risk management model is as good as the data input. With the onslaught of globalization and liberalization from the last decade of the 20th Century in the Indian financial sectors in general and banking in particular, managing Transformation would be the biggest challenge, as transformation and change are the only certainties of the future. ■