

## ARTICLE NO.1

# BASEL I TO BASEL II TO BASEL III: A RISK MANAGEMENT JOURNEY OF INDIAN BANKS

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**Abstract:** Risk and returns are core pillars of Financial System and Banking Industry. Due to basic business of lending & borrowing, banks have credit risk. Similarly due to treasury & investment operations, market risk is inevitable. In 1988, BCBS has introduced first International Standards Basel 1 to manage Banking Risk with the help of standardized Capital Adequacy Ratio. CRAR ensures minimum capital to cover depositors' money from risky assets. But soon after various frauds & system failures, it was found that operational risk is also a major risk. In Basel 2, apart from inclusion of credit, market and operational risk; flexibility was introduced. Basel 2 had an array of approaches from basic standardized approaches to advanced approaches to match the risk management level of banks. In India, RBI has taken conservative approach and maintained even tougher standards than Basel Norms. To absorb changes, RBI had introduced various approaches gradually in phases. But internationally even Basel 2 could not prevent Subprime Mortgage Crises and failures like Lehman Brothers. A few of the major problems were high leverage, asset liability mismatch and liquidity crunch. To solve these issues in 2010, Basel 3 norms were introduced with liquidity Coverage Ratio, Counter Cycle Buffer, Capital Conservation Buffer and Leverage Ratio. This paper shows the journey of Indian Banks from Basel 1 to Basel 3.

**Key Words:** Basel 1, Basel 2, Basel 3, Risk Management, Capital Adequacy Ratio, Credit Risk, Market Risk, Operational Risk, Liquidity Risk, Counter Cycle Buffer, Leverage Ratio, Capital Conservation Buffer

## INTRODUCTION:

Banks by their very nature of their business attracts several types of risks, viz., credit risk, market risk (which includes interest rate risk, foreign exchange risk and liquidity risk), operational risk, reputational risk, business risk, strategic risk, systemic risk to cite a few. Banks are exposed to these risks because of the business of banking which they undertake, which is defined in section 5 (b) of the Banking Regulation Act, 1949 as, "banking" means the accepting, for the purpose of lending or investment, of deposits of money from the public, repayable on demand or otherwise, and withdrawal by cheque, draft, order or otherwise. Section 5 (c) further defines, "banking company" means any company which transacts the business of banking in India. This is also called the process of intermediation, which causes for the above risks to happen. Section 6 (subsections A to O) of the Banking Regulation Act, 1949,

further defines the functions of banks, which further exposes the banks to the above risks.

We give below the following definitions of the above risks, for our common understanding in the discussions which follows:

**1. Credit Risk:** Risk that the counterparty will fail to perform or meet the obligation on the agreed terms. The common types of credit risks are:

- (i) **Transaction Risk:** Risk relating to specific trade transactions, sectors or groups.
- (ii) **Portfolio Risk:** Risk arising from concentrated credits to a particular sector / lending to a few big borrowers/lending to a large group.

**2. Market Risk:** Market risk is the risk to a bank's financial condition that could result from adverse movements in market price. The types of market risks are:

(i) **Interest Rate Risk:** Risk felt, when changes in the interest rate structure put pressure on the net interest margin of the Bank. The various types of interest rate risks are detailed below:

(a) **Gap/Mismatch risk:** It arises from holding assets and liabilities and off balance sheet items with different principal amounts, maturity dates and re-pricing dates thereby creating exposure to unexpected changes in the level of market interest rates.

(b) **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.

(c) **Embedded option risk:** Option of pre-payment of loan and fore-closure of deposits before their stated maturities constitute embedded option risk

(d) **Yield curve risk:** Movement in yield curve and the impact of that on portfolio values and income.

(e) **Reprice risk:** When assets are sold before maturities.

(f) **Reinvestment risk:** Uncertainty with regard to interest rate at which the future cash flows could be reinvested.

(g) **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.

(ii) **Foreign Exchange or Forex Risk:** This risk can be classified into three types.

(a) **Transaction Risk** is observed when movements in price of a currency upwards or downwards, result in a loss on a particular transaction.

(b) **Translation Risk** arises due to adverse exchange rate movements and change in the level of investments and borrowings in foreign currency.

(c) **Country Risk.** The buyers are unable to meet the commitment due to restrictions imposed on transfer of funds by the foreign govt. or regulators. When the transactions are with the foreign govt. the risk is called as **Sovereign Risk**.

(3) **Liquidity Risk:** Risk arising due to the potential for liabilities to drain from the Bank at a faster rate than assets. Liquidity risk for banks mainly manifests on account of the following:

(a) **Funding Liquidity Risk** – the risk that a bank will not be able to meet efficiently the expected and unexpected current and future cash flows and collateral needs without affecting either its daily operations or its financial condition.

(b) **Market Liquidity Risk** – the risk that a bank cannot easily offset or eliminate a position at the prevailing market price because of inadequate market depth or market disruption.

(4) **Operational Risk** arises as a result of failure of operating system in the bank due to certain reasons like fraudulent activities, natural disaster, human error, omission or sabotage etc.

(5) **Systemic Risk** is seen when the failure of one financial institution spreads as chain reaction to threaten the financial stability of the financial system as a whole.

(6) **Business Risk:** These are the risks that the bank willingly assumes to create a competitive advantage and add value to its shareholders. It pertains to the product market in which the bank operates, and includes technological innovations, marketing and product design. A bank with a pulse on the market and driven by technology as well as a high degree of customer focus, could be relatively protected against this risk.

(7) **Strategic Risk:** This risk results from a fundamental shift in the economy or political environment. Strategic risks usually affect the entire industry and are much more difficult to protect themselves. A few examples are: the fall of Berlin Wall, Disintegration of Soviet Empire; South East Asian Banking Crisis in 1997, 2008 Sub-prime lending crisis, the recent European Economic Crisis; to name a few.

(8) **Reputation Risk:** Reputation risk is the potential loss that negative publicity regarding an institution's business practices, whether true or not, will cause a decline in the customer base, costly litigation, or revenue reductions (financial loss).

### **PRIOR TO BASEL I SCENARIO:**

The Reserve Bank of India, the central bank and the chief regulator of the banking system in India, were conscious of the ever increasing dimensions of various risks faced by the banking system in India and have been initiating steps in this direction. As we will see below, Basel I norms were introduced only in 1992, and that too in a phased manner over a period of four years, however, RBI had introduced measures for managing liquidity risk, forex risk and credit risk (through the Health Code Systems 1985-86) in the Indian banking system. The Health Code system, inter alia, provided information regarding the health of individual advances, the quality of the credit portfolio and the extent of advances causing concern in relation to total advances. It was considered that such information would be of immense use to banks for control purposes. The RBI advised all commercial banks (excluding foreign

banks, most of which had similar coding system) on November 7, 1985, to introduce the Health Code System indicating the quality (or health) of individual advances under the following eight categories, with a health code assigned to each borrower's account (source: RBI):

1. **Satisfactory** - conduct is satisfactory; all terms and conditions are complied with; all accounts are in order and safety of the advance is not in doubt.
2. **Irregular**- the safety of the advance is not suspected, though there may be occasional irregularities, which may be considered as a short term phenomenon.
3. **Sick, viable** - advances to units that are sick but viable - under nursing and units for which nursing/ revival programmes are taken up.
4. **Sick: nonviable/sticky** - the irregularities continue to persist and there are no immediate prospects of regularisation and the accounts could throw up some of the usual signs of incipient sickness
5. **Advances recalled** - accounts where the repayment is highly doubtful and nursing is not considered worthwhile and where decision has been taken to recall the advance
6. **Suit filed accounts** - accounts where legal action or recovery proceedings have been initiated
7. **Decreed debts** - where decrees (verdict) have been obtained.
8. **Bad and Doubtful debts** - where the recoverability of the bank's dues has become doubtful on account of short-fall in value of security, difficulty in enforcing and realising the securities or inability/ unwillingness of the borrowers to repay the bank's dues partly or wholly.

Under the above Health Code System, the RBI classified problem loans of each bank into three categories: i) advances classified as bad and doubtful by the bank (Health Code No.8) (ii) advances where suits were filed/decrees obtained (Health Codes No.6 and 7) and (iii) those advances with major undesirable features (Health Codes No.4 and 5)<sup>1</sup>.

Measures taken by RBI for Liquidity risk management included banks to report their liability and asset position fortnightly to RBI, a regulated inter-bank borrowing market and RBI playing the role of lender of the last resort. These efforts were by and large in managing liquidity risks in a pre Basel I scenario. Similarly, for foreign exchange risk management banks had a cap on their open position, along with forward cover restricted to 180 days and RBI closely monitoring the volatility and managing it as the ultimate buyer/ seller to prevent excessive movement.

### **1. THE BASEL I NORMS:**

<sup>2</sup>The deterioration of asset quality of banks has caused major turmoil across the world, renewing interest in bank regulation. Since 1980 over 130 countries, comprising almost three fourth of the International Monetary Fund's member countries, have experienced significant banking sector distress. This is particularly problematic as banks universally face the dilemma of balancing profitability and stability. The Basel Capital Accord in 1988 proposed by Basel Committee of Bank Supervision (BCBS) of the Bank for International Settlement (BIS) focused on reducing credit risk, prescribing a minimum capital risk adjusted ratio (CRAR) of 8 percent of the risk weighted assets. Although it was originally meant for banks in G10 countries, more

than 190 countries claimed to adhere to it, and India began implementing the Basel I in April 1992.

The standards are almost entirely addressed to credit risk, the main risk incurred by banks. The document consists of two main sections, which cover

- a. the definition of capital and
- b. the structure of risk weights.

Based on the Basle norms, the RBI also issued similar capital adequacy norms for the Indian banks. According to these guidelines, the banks will have to identify their Tier-I and Tier-II capital and assign risk weights to the assets. Having done this they will have to assess the Capital to Risk Weighted Assets Ratio (CRAR).

### **Tier-I Capital**

- Paid-up capital
- Statutory Reserves
- Disclosed free reserves
- Capital reserves representing surplus arising out of sale proceeds of assets

Equity investments in subsidiaries, intangible assets and losses in the current period and those brought forward from previous periods will be deducted from Tier I capital.

### **Tier-II Capital**

- Undisclosed Reserves and Cumulative Perpetual Preference Shares
- Revaluation Reserves
- General Provisions and Loss Reserves

A portfolio approach is taken to the measure of risk, with assets classified into four buckets (0%, 20%, 50% and 100%) according to the debtor category. This means that some assets (essentially bank holdings of government assets such as Treasury Bills and bonds) have no capital requirement, while claims on banks have a 20% weight, which translates into a capital charge of the value of the claim. However, virtually all claims on the non-bank private sector receive the standard 8% capital requirement. There is also a scale of charges for off-balance sheet exposures through guarantees, commitments, forward claims, etc. This is the only complex section of the 1988 Accord and requires a two-step approach whereby banks convert their off-balance-sheet positions into a credit equivalent amount through a scale of conversion factors, which then are weighted according to the counterparty's risk weighting.

### **Refer Table-1**

The 1988 Accord has been supplemented a number of times, with most changes dealing with the treatment of off-balance-sheet activities. A significant amendment was enacted in 1996, when the Committee introduced a measure whereby trading positions in bonds, equities, foreign exchange and commodities were removed from the credit risk framework and given explicit capital charges related to the bank's open position in each instrument. The two principal purposes of the Accord were to ensure an adequate level of capital in the international banking system and to create a "more level playing field" in competitive terms so that banks could no longer build business volume without adequate capital backing. These two objectives have been achieved.

The merits of the Accord were widely recognised and during the 1990s the Accord became an accepted world standard, with well over 100 countries applying the Basel framework to their banking system.

According to Section 17 of the Banking Regulation Act (1949) every bank incorporated in India is required to create a reserve fund and transfer a sum equal to but not less than 20 per cent of its disclosed profits, to the reserve fund every year. The RBI has advised banks to transfer 25 percent and if possible, 30 per cent to the reserve fund. The First Narasimham Committee Report recommended the introduction of a capital to risk-weighted assets system for banks in India since April 1992. This system largely conformed to international standards. It was stipulated that foreign banks operating in India should achieve a CRAR of 8 per cent by March 1993 while Indian banks with branches abroad should comply with the norm by March 1995. All other banks were to achieve a capital adequacy norm of 4 per cent by March 1993 and the 8 per cent norm by March 1996.

In its mid-term review of Monetary and Credit Policy in October 1998, the RBI raised the minimum regulatory CRAR requirement to 9 per cent, and banks were advised to attain this level by March 31, 2009. The RBI responded to the market risk amendment of Basel I in 1996 by initially prescribing various surrogate capital charges such as investment fluctuation reserve of 5 per cent of the bank's portfolio and a 2.5 per cent risk weight on the entire portfolio for these risks between 2000 and 2002.

### **Basel I and Indian Banking Experience:**

#### **Refer table 2**

As can be seen from the above table by the end of March 1997, all but 2 nationalised banks and 4 private banks were short of meeting the capital adequacy norm. The SBI group and the foreign banks had achieved the minimum regulatory norm by March 1997. Although a few banks were having negative CRAR during 2000-02, all banks achieved the minimum regulatory level by 2006. The table also shows that majority of the banks in all bank categories have achieved a CRAR level of more than 10 per cent by March 2006, indicating good financial health of the banking industry, in terms of capital adequacy norms, over the recent years. However, for the public sector banks the government had to infuse considerable capital, as most of these banks had shown losses, after introduction of the international standards for income recognition, asset classification and provisioning norms. These PSU banks themselves had also approached the market to raise capital and they achieved considerable success in raising capital as almost all such IPOs were oversubscribed.

Banks in India have been making efforts to reduce their NPAs post Basel I implementation and thereafter. The following table reflects the efforts made in this regard:

#### **Refer Table 3**

#### **Advantages of Basel I**

- Substantial increases in capital adequacy ratios of internationally active banks;
- Relatively simple structure;

- Worldwide adoption;
- Increased competitive equality among internationally active banks;
- Greater discipline in managing capital;
- A benchmark for assessment by market participants.

### **Weaknesses of Basel I**

- In spite of advantages and positive effects, weaknesses of Basel I standards eventually became evident:
- Capital adequacy depends on credit risk, while other risks (e.g. market and operational) are excluded from the analysis;
- In credit risk assessment there is no difference between debtors of different credit quality and rating;
- Emphasis is on book values and not market values;
- Inadequate assessment of risks and effects of the use of new financial instruments, as well as risk mitigation techniques.

Some of the weaknesses of Basel I, especially those related to market risk, were overbridged by the amendment to recommendations from 1993 and 1996, by means of introducing capital requirements for market risk.

## **2. Basel II**

On June 26, 2004, The Basel Committee on Banking Supervision released “International Convergence of Capital Measurement and Capital Standards: A revised Framework”, which is commonly known as Basel II Accord. Basel I initially had Credit Risk and afterwards included Market Risk. In Basel 2, apart from Credit & Market Risk; *Operational Risk* was considered in Capital Adequacy Ratio calculation. The Basel 2 Accord focuses on three aspects:

2.1 Minimum Capital Requirement

2.2 Supervisory Review by Central Bank to monitor bank’s capital adequacy and internal assessment process.

2.3 Market Discipline by effective disclosure to encourage safe and sound banking practices

### **Refer Table-4**

#### **2.1 Pillar 1: Minimum Regulatory Capital**

The calculation of Minimum Regulatory Capital is extension of 1988 Basel Accord. Basel II also considers Operational Risk apart from Credit & Market Risk. Another major difference between Basel 1 and Basel II is inclusion of flexibility in approaches for Risk Weighted Assets Calculation.

For calculation of Capital to Risk weighted Asset Ratio (CRAR), the formulae are similar to BASEL 1 accord.

**Total CRAR** = [Eligible total capital funds]/ [Credit RWA + Market RWA + Operational RWA]

**Tier I CRAR** = [Eligible Tier I capital funds]/ [Credit RWA\* + Market RWA + Operational RWA]

\* RWA = Risk weighted Assets

Basel 2 has recommended at least 8% CRAR and 4% Tier 1 CRAR, whereas RBI has given guidelines for at least 9% CRAR and 6% Tier 1 CRAR.

So calculation of CRAR is dependent on two major factors

1. Eligible Total Capital Funds
2. Risk Weighted Assets

**2.1.1 Eligible Capital:** The eligible capital includes Tier 1 (core) capital and Tier 2 (additional or supporting) capital. Tier 1 capital is more stable and risk absorbing than Tier 2 capital. Main components of Tier 1 & Tier 2 capital are:

#### Refer table -5

**2.1.2 Risk Weighted Assets:** Another Important aspect in calculation of CRAR is calculation of Risk weighted assets. Basel II gives advantage to the banks with better asset quality and advanced system. The capital requirement reduces with better asset quality as lesser risk weights can be assigned to good assets. The various approaches for calculation of Risk Weighted Assets calculation are:

#### Refer table-6

**2.1.2.1 Credit Risk Assessment:** Unlike Basel 1, BCBS have devised three approaches for calculation of credit risk weighted assets:

**2.1.2.1.1 Standardized Approach to Credit Risk:** The standardized approach has fixed risk weights corresponding to various risk category based on ratings given by approved external credit rating agencies. The risk weights vary from 0% to 150% based on the risk category. Unrated loans have 100% risk weights. Standardized approach has increased risk sensitivity by considering expanded range of collateral, guarantees and credit derivatives. The risk weights for residential mortgage exposure were reduced in comparison to Basel 1 Accord.

**2.1.2.1.2 Foundation Internal Rating Based Approach:** In Internal Rating Based Approach, credit risk is measured on basis of internal ratings given by the banks rather than external credit rating agencies. The ratings are based on the risk characteristics of both the borrower and the specific transaction. Expected loss is calculated based on probability of default (PD) of borrower, loss given default (LGD), bank's exposure at default (EAD) and remaining Maturity (M) of exposure

- **Probability of default (PD)** measures the likelihood that the borrower will default over a given time horizon.
- **Loss Given Default (LGD)** measures the proportion of the exposure that will be lost if Default occurs.
- **Exposure at Default (EAD)** is estimated amount outstanding in a loan commitment if default occurs.



- **Maturity (M)** measures the remaining economic maturity of the exposure.

There are two types of losses- Expected and Unexpected. **Expected Loss**, which is normal business risk of a bank, is a multiplication of PD, LGD, EAD and M.

Expected Loss= PD X LGD X EAD X M

**Unexpected Loss** is that part of credit risk that cannot be priced in the product and hence the banks have to provide capital for it by risk weighing their assets. Unexpected Loss is the upward variation in expected loss over a definite time horizon. Unexpected Loss (UL) may be expressed as under:

UL = E x LGD x Standard Deviation of PD.

In Foundation IRB, PD is calculated by the bank and the remaining are based on supervisory values set by Basel Committee or RBI (in India)

**2.1.2.1.3 Advanced Internal Rating Based Approach:** Advanced IRB is advanced version of foundation IRB. The only difference is that Loss Given Default, Exposure at Default and Maturity are also estimated by the bank based on the historical data.

**Refer table-7**

**2.1.2.2 Operational Risk Assessment:**

“Risk of direct or indirect loss resulting from inadequate or failed internal control processes, people, systems or from external events” Such breakdowns can lead to financial losses through Error, Fraud, Failure to perform in a timely manner, may cause the interest of the bank to be compromised like exceeding authority, conducting business in an unethical or risky manner.

It is the risk of loss arising from the potential that inadequate information system; technology failures, breaches in internal controls, fraud, unforeseen catastrophes, or other operational problems may result in unexpected losses or reputation problems (BIS, 2006).

The Basel II Accord has 3 methods of calculating risk weighted assets with increase in sophistication and risk sensitivity

- (i) the Basic Indicator Approach (BIA); (ii) the Standardized Approach (TSA); and
- (iii) Advanced Measurement Approaches (AMA).

**2.1.2.2.1 Basic Indicator Approach:** Under this approach banks must hold capital for operational risk equal to the average over the previous three years of a fixed percentage (denoted as alpha) of positive annual gross income. Figures for any year in which annual gross income is negative or zero, should be excluded from both the numerator and denominator when calculating the average.

**2.1.2.2.2 The Standardized Approach:**In this approach, banks’ activities are divided into eight business lines: corporate finance, trading & sales, retail banking, commercial banking, payment & settlement, agency services, asset management, and retail brokerage. The capital charge for each business line is calculated by multiplying gross income by a factor (denoted beta-β as 12, 15 and 18) assigned to that business

line. The sum of gross income of all business line should be equal to gross income of the bank

**2.1.2.2.3 Alternative Standardized Approach:** ASA is a special variant of TSA. The approach of calculation of capital charge is same as TSA except for two business lines- retail & commercial banking. For these business lines, loans and advances – multiplied by a fixed factor ‘m’ – replaces gross income as the exposure indicator. The betas for retail and commercial banking are unchanged from the Standardised Approach.

**2.1.2.2.4 Advanced Measurement Approach:** Under the AMA, the regulatory capital requirement will equal the risk measure generated by the bank’s internal operational risk measurement system (ORMS). After these criteria have been satisfied, the operational risk capital charge is computed from the unexpected loss of VaR at the 99.9 percent confidence level over one year horizon provided the expected loss is accounted for through provisions.

**Diagram-1**



A bank should calculate its regulatory operational risk capital requirement as the sum of expected loss (EL) and unexpected loss (UL). Expected Loss is covered by provisions & pricing and Unexpected loss through additional capital.

**2.1.2.3 Market Risk Assessment:** Market risk is potential for loss resulting from adverse movement in market risk factors such as interest rates, forex rates, currency valuations, equity prices and commodity prices. (Bhattacharya, 2008). In Basel 2, risks are divided into two major risks: interest rate risk and volatility risk. Therefore there is a clear distinction between fixed income and other products such as equity, commodity and foreign exchange vehicles. The approaches to calculate market risk in capital charge are:

**2.1.2.3.1 Standardized Approach:** Under the standardized method there are two principal methods of measuring market risk, a “maturity” method and a “duration” method. As “duration” method is a more accurate method of measuring interest rate risk, RBI has adopted standardized duration method to arrive at the capital charge. For interest rate risk, depending on the time to maturity/ duration of the fixed income asset, Basel II had recommended banks to hold capital between 0% and 12.5% of an asset’s value to protect against movements in interest rates. To guard against the

volatility risk of fixed income assets, Basel II recommends risk weightings tied to the credit risk ratings given to underlying bank assets.

**2.1.2.3.2 Internal risk management Models Approach:** In this methodology banks are encouraged to develop their own internal models to calculate a stock, currency, or commodity's market risk on a case-by-case basis. In this banks have to develop their measures to calculate "Value of Risk" (VaR) based on 5 years data on position to position basis. On the basis of Bank's calculation, capital requirements are predicted. Similar to other advanced measures RBI will supervise this method.

### **2 Pillar 2: Supervisory Review:**

Basel II had given powers to the regulators to supervise and check bank's risk management system and capital assessment policy. The regulators can also ask for buffer capital apart from minimum capital requirement by BCBS. RBI has asked for 9% CRAR, which is more than 8% prescribed by BCBS. . Regulators are given the power to oversee the internal risk evaluation regimes proposed in Pillar I.

### **2.3 Pillar 3: Market Discipline**

The Pillar III had made disclosure of a bank's risk taking positions & capital, mandatory. This step was targeted to introduce market discipline through disclosure.

### **Basel II Experience of Indian Banking Industry**

In February 2005, RBI issued the first draft guidelines on Basel 2. Initially Basel II implementation target was set for March 2007 but later on postponed. RBI had implemented Basel 2 standardized approach (for credit & market risk) and basic indicator approach in Internationally active banks by March 2008 and other scheduled commercial banks by March 2009. RBI has set a standard of minimum 9% CRAR in comparison to minimum 8% CRAR. Similarly BCBS had set minimum Tier 1 CRAR requirement at 4.5% but RBI has given a target of 6%. That means RBI has always took conservative view and set Capital Adequacy standards more than International Requirements.

Initially Government had to pump capital to maintain 51% stake in public sector banks. The following banks had less than directed capital requirements:

#### **Refer table-8**

Government had given around Rs. 200 billion for recapitalization of Central Bank, UCO Bank and Vijaya Bank and diluted its share in Bank of Maharashtra. Till March 2009, all Indian scheduled Banks excluding Local Area Banks and Regional Rural Banks implemented the Basel II guidelines with basic approaches. The dates for implementation of advanced models are the following:

#### **Refer table-9**

Now the capital to risk-weighted assets ratio (CRAR) of Indian Banks is maintained well above the stipulated 9 per cent for the system as a whole as well as for all bank groups during 2011-12, indicating that Indian banks remained well-capitalized.

Basel II has rewarded banks with better asset quality and the risk weights lower due to risk sensitivity of Basel II. On an average Indian Banks's CRAR become better due to use of Basel II.

**Refer table-10**

### **3. BASEL III**

**Basel III** guidelines were released in December 2010. The financial crisis of 2008 was the main reason behind the introduction of these norms. A need was felt to further strengthen the system as banks in the developed economies were under-capitalised, over-leveraged and had a greater reliance on short term funding. Also the quantity and quality of capital under Basel II were deemed insufficient to contain any further risk. These norms aim at making most banking activities such as their trading book activities more capital intensive. The purpose is to promote a more resilient banking system by focusing on four vital banking parameters viz. Capital, Leverage, Funding and Liquidity.

#### **Features of the Proposed Basel III Accord**

1. **Enhanced Capital Requirement:** New requirements represent tighter definitions of Common Equity. Banks will be required to hold more reserves by January 1, 2015, with Common Equity requirements raised to 4.5% from 2% at present. **Tier 1 Capital requirements:** Under the new rules, the mandatory reserve (known as Tier 1 capital) will be raised from 4% to 6% by 2015.

<sup>9</sup>Banks in India are required to maintain a minimum Pillar 1 Capital to Risk weighted Assets Ratio (CRAR) of 9 % on an on-going basis (other than capital conservation buffer and countercyclical capital buffer). With a view to improving the quality and quantity of regulatory capital, it has been decided that the predominant form of Tier 1 capital must be Common Equity; since it is critical that banks' risk exposures are backed by high quality capital base. Non-equity Tier 1 and Tier 2 capital would continue to form part of regulatory capital subject to eligibility criteria as laid down in Basel III. Accordingly, under revised guidelines (Basel III), total regulatory capital will consist of the sum of the following categories:

- (i) Tier 1 Capital (going-concern capital)
  - (a) Common Equity Tier 1
  - (b) Additional Tier 1
- (ii) Tier 2 Capital (gone-concern capital)

#### **2. Introduction of a Capital Conservation Buffer**

The Capital Conservation Buffer is an additional reserve buffer of 2.5% to "withstand future periods of stress", bringing the total Tier 1 Capital reserves required to 7%. This buffer is introduced to meet one of the four key objectives identified by the Committee in the December 2009 Consultative Document "*Strengthening the resilience of the banking sector*"; conserve enough capital to build buffers at individual banks and the entire banking sector which can then be used in times of stress.

If a bank has complied with the minimum Common Equity Tier 1 and Tier 1 capital ratios, then the excess Additional Tier 1 capital can be admitted for compliance with the minimum CRAR of 9% of RWAs. In addition to the minimum Common Equity Tier 1 capital of 5.5% of RWAs, banks are also required to maintain a capital conservation buffer (CCB) of 2.5% of RWAs in the form of Common Equity Tier 1 capital. Thus, with full implementation of capital ratios and CCB the capital requirements are summarised as follows:

**Refer table-11(a) and (b)**

### **3. Introduction of Countercyclical Buffer**

According to the new rules local regulators are not only responsible for controlling banks' compliance with the Basel requirements but also for regulating credit volume in their national economies. If credit is expanding faster than GDP, bank regulators can increase their capital requirements with the help of the Countercyclical Buffer. Varying between 0% - 2.5% it can thus, preserve national economies from excess credit growth.

### **4. Leverage Ratio (Ratio of Tier 1 Capital to Total Assets)**

Capital requirements are supplemented by a non-risk-based leverage ratio that will serve as a backstop to the risk-based measures described above. According to Basel III; Tier 1 Capital has to be at least 3% of Total Assets even where there is no risk weighting. The Basel III rules agree to test a minimum Tier 1 leverage ratio of 3% during the parallel run period by 2017.

For the Indian Banks the provisions relating to leverage ratio contained in the Basel III document are intended to serve as the basis for testing the leverage ratio during the parallel run period. The Basel Committee will test a minimum Tier 1 leverage ratio of 3% during the parallel run period from 1 January 2013 to 1 January 2017. During the period of parallel run, banks should strive to maintain their existing level of leverage ratio but, in no case the leverage ratio should fall below 4.5%. A bank whose leverage ratio is below 4.5% may endeavor to bring it above 4.5% as early as possible. Final leverage ratio requirement would be prescribed by RBI after the parallel run taking into account the prescriptions given by the Basel Committee.

**5. Liquidity Risk Measurement:** Basel III introduces a new instrument for liquidity risk measurement – Liquidity Coverage Ratio (LCR). It is designed to ensure that a bank maintains an adequate level of unencumbered, high-quality assets that can be converted into cash to meet its liquidity needs for a 30-day time horizon under an acute liquidity stress scenario specified by supervisors. The standard requires that the ratio be no lower than 100%. Its implementation is planned for 2015. To ensure that investment banking inventories, off-balance sheet exposures, securitization pipelines and other assets and activities are funded with at least a minimum amount of stable liabilities in relation to their liquidity risk profiles the new Accord introduces *Net Funding Stability Ratio (NFSR)*. It is defined as the ratio, for a bank, of its “available amount of stable funding” divided by its “required amount of stable funding”. The standard requires that the ratio be no lower than 100%.

**Transition Phase for the Liquidity Standards under Basel III:** Both the LCR and NSFR are currently subject to an observation period by the BCBS, with a view to addressing any unintended consequences that the standards may have for financial markets, credit extension and economic growth. At the latest, any revisions would be made to the LCR by mid-2013 and to the NSFR by mid-2016. Accordingly, the LCR, including any revisions, will be introduced as on 1 January 2015 and the NSFR, including any revisions, will move to a minimum standard by 1 January 2018. The LCR and NSFR will thus become binding for the banks from 1 January 2015 and 2018, respectively i.e. banks will have to ensure that they maintain the required LCR and NSFR at all times starting from January 2015 and January 2018, respectively. While the LCR and NSFR standards would become binding only from January 2015 and 2018, respectively, the supervisory reporting under the Basel III framework is expected from 2012. Accordingly, banks are required to furnish statements on LCR and NSFR and statements based on monitoring metrics/tools prescribed under Basel III framework to Chief General Manager-in-Charge, Department of Banking Operations and Development (DBOD), Central Office, Reserve Bank of India, Mumbai on best efforts basis from the month ending /quarter ending June 2012.

**How is Basel III an improvement over Basel II?**<sup>10</sup>

The enhancements of Basel III over Basel II come primarily in four areas: (i) augmentation in the level and quality of capital; (ii) introduction of liquidity standards; (iii) modifications in provisioning norms; and (iv) better and more comprehensive disclosures.

**(i) Higher Capital Requirement:** As can be seen from the comparative data in the Table , Basel III requires higher and better quality capital. The minimum total capital remains unchanged at 8 per cent of risk weighted assets (RWA). However, Basel III introduces a capital conservation buffer of 2.5 per cent of RWA over and above the minimum capital requirement, raising the total capital requirement to 10.5 per cent against 8.0 per cent under Basel II. This buffer is intended to ensure that banks are able to absorb losses without breaching the minimum capital requirement, and are able to carry on business even in a downturn without deleveraging. This buffer is not part of the regulatory minimum; however, the level of the buffer will determine the dividend distributed to shareholders and the bonus paid to staff.

**(ii) Liquidity Standards:** To mitigate liquidity risk, Basel III addresses both potential short-term liquidity stress and longer-term structural liquidity mismatches in banks' balance sheets. To cover short-term liquidity stress, banks will be required to maintain sufficient high-quality unencumbered liquid assets to withstand any stressed funding scenario over a 30-day horizon as measured by the liquidity coverage ratio (LCR). To mitigate liquidity mismatches in the longer term, banks will be mandated to maintain a net stable funding ratio (NSFR). The NSFR mandates a minimum amount of stable sources of funding relative to the liquidity profile of the assets, as well as the potential for contingent liquidity needs arising from off-balance sheet commitments over a one-year horizon. In essence, the NSFR is aimed at encouraging banks to exploit stable sources of funding.

**(iii) Provisioning norms:** The Basel Committee is supporting the proposal for adoption of an 'expected loss' based measure of provisioning which captures actual

losses more transparently and is also less procyclical than the current ‘incurred loss’ approach. The expected loss approach for provisioning will make financial reporting more useful for all stakeholders, including regulators and supervisors.

**(iv) Disclosure requirement:** The disclosures made by banks are important for market participants to make informed decisions. One of the lessons of the crisis is that the disclosures made by banks on their risky exposures and on regulatory capital were neither appropriate nor sufficiently transparent to afford any comparative analysis. To remedy this, Basel III requires banks to disclose all relevant details, including any regulatory adjustments, as regards the composition of the regulatory capital of the bank.

**Refer table-12**

**References:**

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2. *Basel I and Basel II Compliance: Issues for Banks in India*, by Sreejata Banerjee, WP 68/2012, Madras School of Economics, Chennai, Gandhi Mandapam Road, Chennai 600 025, India, May 2012.
3. *Capital Adequacy Standards - Basel Accords I and II* by R Kannan
4. *RBI Master Circular on Guidelines New Capital Adequacy Framework*, July 2012.
5. *ibid* (2)
6. *"International Convergence of Capital Measurement and Capital Standards: A Revised Framework"*, BCBS, BIS, Basel, June 26, 2004
7. *Basel Committee on Banking Supervision (2005), An Explanatory Note on the Basel II Internal Rating Based Risk Weight Functions*, BIS, Bank for International Settlements Press & Communications CH-4002 Basel, Switzerland.
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9. *Reserve Bank of India Master Circular No. RBI/2011-12/530 DBOD.No.BP.BC.98 /21.06.201/2011-12 May 2, 2012, on Basel III proposals implementation in Indian Banks*
10. *“Basel III in International and Indian Contexts: Ten Questions We Should Know the Answers For”* by Duvvuri Subbarao, RBI Bulletin October 2012.

**TABLES AND DIAGRAMS**

**Table-1 Asset Classes and Weights**

<b>Weight</b>	<b>Asset type</b>
0 %	Cash held Claims on OECD central governments Claims on central governments in national currency
20 %	Cash to be received Claims on OECD banks and regulated securities firms

	Claims on non-OECD banks below 1 year Claims on multilateral development banks Claims on foreign OECD public-sector entities
50%	Residential mortgage loans
100%	Claims on the private sector (corporate debt, equity, etc.) Claims on non-OECD banks above 1 year Real estate Plant and Equipment

**Source:** Basel Committee on Banking Supervision (2005), An Explanatory Note on the Basel II Internal Rating Based Risk Weight Functions, BIS, Bank for International Settlements.

**Table 2** The distribution of CRAR in Indian Banking Industry during the implementation period of Basel I (1996-2006) (No. of Banks)

Level	< 4%	4% - MRR	MMR- 10%	> 10%	< 4%	4% - MRR	MMR- 10%	> 10%
<b>Year</b>	<b>Nationalised Banks</b>				<b>SBI Group</b>			
1996-97	2	-	6	11	-	-	3	5
1997-98	1	-	6	12	-	-	1	7
1998-99	1	-	4	14	-	-	-	8
1999-00	1	-	4	14	-	-	-	8
2000-01	1*	1	2	15	-	-	-	8
2001-02	1	1	2	15	-	-	-	8
2002-03	-	-	1	18	-	-	-	8
2003-04	-	-	1	18	-	-	-	8
2004-05	-	-	2	18	-	-	-	8
2005-06	-	-	-	20	-	-	-	8

Level	< 4%	4% - MRR	MMR- 10%	> 10%	< 4%	4% - MRR	MMR- 10%	> 10%
<b>Year</b>	<b>Indian Private Banks (Old and New)</b>				<b>Foreign Banks</b>			
1996-	3	1	8	22	-	-	14	24



97								
1997-98	2	2	8	22	-	-	12	30
1998-99	2	2	5	25	1	-	14	29
1999-00	2	2	3	25	-	-	5	37
2000-01	2*	1	5	23	-	-	4	38
2001-02	1*	1	3	25	1*	-	2	37
2002-03	2	-	3	25	-	-	-	36
2003-04	1	1	-	28	-	-	-	33
2004-05	1	1	5	22	-	-	1	30
2005-06	2	-	2	23	-	-	2	27

Note: 1) MRR is Minimum Regulatory Requirement (8% till 1998-99, 9% thereafter)

2) Nationalised banks Include IDBI Bank from 2004-05.

3) - indicates nil, \* indicates negative

Source: RBI, Reports on Trend and Progress of Banking in India, various issues

**Table-3** INR in Crores

	2002	2003	2004	2005	2006	2007	2008	2009
<b>Gross NPA</b>	41430	39012	35007	38558	38817	36568	38117	46689
<b>% to Gross Advance</b>	10.4	8.9	7.2	5.3	3.3	2.5	2.3	2.3
<b>Net NPA</b>	20787	18548	13302	14181	14087	14560	16740	21272
<b>% to Net Advance</b>	5.5	4.4	2.9	1.9	1.2	1.0	1.0	1.1

Source: RBI Data

**Table-4**

<b>Basel II</b>		
<b>Pillar 1</b>	<b>Pillar 2</b>	<b>Pillar 3</b>
Minimum Regulatory Capital <ul style="list-style-type: none"> <li>• Credit Risk</li> <li>• Market Risk</li> <li>• Operational Risk</li> </ul>	Supervisory Review Process	Market Discipline

**Table-5**

Tier 1 Capital	Tier 2 Capital
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<b>1. Paid up Capital, Statutory Reserves, disclosed free reserves</b>	<b>1. Revaluation Reserve</b> (at a discount of 55%)
<b>2. Capital Reserve</b> (E.g. Surplus from sales of assets)	<b>2. General Provision &amp; Loss Reserves</b>
<b>3. Eligible Innovative Perpetual Debt Instruments(IPDI)</b> - upto 15% of Tier 1 Capital	<b>3. Hybrid Debt Capital Instruments:</b> Eg. Perpetual Cumulative Preference Shares, Redeemable Non-Cumulative Preference Share, Redeemable Cumulative Preference Share
<b>4. Perpetual Non-Cumulative Preference Shares (PNPS)</b> - 3 & 4 can be max 40% of Tier1	<b>4. Subordinate Debt:</b> fully paid up, unsecured, subordinated to other creditors, free of restrictive clauses
	<b>5. Remaining IPDI &amp; PNPS</b> from Tier1 Capital

**Table-6**

<u>Type of Risk/ Approach</u>	<b>Simple to Most Sophisticated &amp; Advanced Approach</b>		
Credit Risk	Standardized Approach	Foundation Internal Rating Based Approach	Advanced Internal Rating Based Approach
Market Risk	Standardized Approach	Internal Model Approach	
Operational Risk	Basic Indicator Approach	Standardized Approach	Advanced Measurement Approach

**Table-7****Credit Risk Assessment Approaches**

Data Input/ Approach	Standardized Approach	Foundation IRB	Advanced IRB
1. Probability at Default	Predicted by External Credit Rating Agency	Provided by bank based on own estimates	Estimated by Bank based on historical records
2. Loss Given Default		Supervisory values set by Basel Committee	Provided by bank based on own estimates
3. Exposure at Default		Supervisory values set by Basel Committee	Provided by bank based on own estimates
4. Maturity		Supervisory values set by the Committee or at National discretion provided by bank based on own estimates.	Provided by bank based on own estimates
5. Data Requirement		Historical Data of 5 years	Historical Data for past 7 years

**Table-8**

<b>Banks with less than 6% of Tier 1 Capital Adequacy Ratio as on March 2008</b>	<b>Banks with less than 9% of Capital Adequacy Ratio as on March 2008</b>
Bank of Maharashtra	Bank of Maharashtra
Central Bank	Central Bank
UCO Bank	Vijaya Bank
Vijaya Bank	Dena Bank
	IDBI Bank

**Table-9**

<b>S. No.</b>	<b>Approach</b>	<b>The earliest date of making application by banks to the RBI</b>	<b>Likely date of approval by the RBI</b>
a.	Internal Models Approach (IMA) for Market Risk	April 1, 2010	March 31, 2011
b.	The Standardised Approach (TSA) for Operational Risk	April 1, 2010	September 30, 2010
c.	Advanced Measurement Approach (AMA) for Operational Risk	April 1, 2012	March 31, 2014
d.	Internal Ratings-Based (IRB) Approaches for Credit Risk (Foundation- as well as Advanced IRB)	April 1, 2012	March 31, 2014

**Table-10**

<b>Capital to Risk-Weighted Assets Ratio under Basel I and II – Bank Group-wise</b>				
<b>(As at end-March)</b>				
<b>(Per cent)</b>				
<b>Bank Group</b>	<b>Basel I</b>		<b>Basel II</b>	
	<b>2011</b>	<b>2012</b>	<b>2011</b>	<b>2012</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Public sector banks	11.78	11.88	13.08	13.23
Nationalized banks*	12.15	11.84	13.47	13.03
SBI group	11.01	11.97	12.25	13.70
Private sector banks	15.15	14.47	16.46	16.21
Old private sector banks	13.29	12.47	14.55	14.12
New private sector banks	15.55	14.90	16.87	16.66
Foreign banks	17.71	17.31	16.97	16.74

Note: \*: Includes IDBI Bank Ltd.

Source: Trends and Progress in Banking, RBI, 2012

**Table-11(a)**

	<b>Regulatory Capital</b>	<b>As % to RWAs</b>
(i)	Minimum Common Equity Tier 1 ratio	5.5
(ii)	Capital conservation buffer (comprised of Common Equity)	2.5
(iii)	Minimum Common Equity Tier 1 ratio plus capital conservation buffer [(i)+(ii)]	8.0
(iv)	Additional Tier 1 Capital	1.5
(v)	Minimum Tier 1 capital ratio [(i) +(iv)]	7.0
(vi)	Tier 2 capital	2.0
(vii)	Minimum Total Capital Ratio (MTC) [(v)+(vi)]	9.0
(viii)	Minimum Total Capital Ratio plus capital conservation buffer [(vii)+(ii)]	11.5

Source: Reserve Bank of India Master Circular No. RBI/2011-12/530 DBOD.No.BP.BC.98 /21.06.201/2011-12 May 2, 2012

**Table- 11(b) Transitional Arrangements (% of RWAs)**

<b>Minimum capital ratios</b>	<b>Jan 1, 2013</b>	<b>Mar 31, 2014</b>	<b>Mar 31, 2015</b>	<b>Mar 31, 2016</b>	<b>Mar 31, 2017</b>
Minimum Common Equity Tier 1 (CET1)	4.5	5	5.5	5.5	5.5
Capital conservation buffer (CCB)		0.625	1.25	1.875	2.5
<b>Minimum CET1+ CCB</b>	<b>4.5</b>	<b>5.625</b>	<b>6.75</b>	<b>7.375</b>	<b>8</b>
Minimum Tier 1 capital	6	6.5	7	7	7
Minimum Total Capital*	9	9	9	9	9
Minimum Total Capital +CCB	9	9.625	10.25	10.825	11.5

Source: Reserve Bank of India Master Circular No. RBI/2011-12/530 DBOD.No.BP.BC.98 /21.06.201/2011-12 May 2, 2012

**Table-12**

**Comparative Analysis Basel 1, 2 & 3 at a glance**

	<b>Basel 1</b>	<b>Basel 2</b>				<b>Basel 3</b>
<b>Types of Risk Covered</b>	Credit Risk Market Risk	Credit Risk, Market Risk & Operational Risk				Credit Risk Market Risk Operational Risk Liquidity Risk Counter Cycle Risk
<b>Main tools of Risk Management</b>	Capital to Risk Weighted Assets Ratio (CRAR)	1. CRAR 2. Supervisory Review 3. Market Discipline				1. CRAR 2. Supervisory Review 3. Market Discipline 4. Liquidity Coverage Ratio 5. Counter cycle Buffer 6. Capital Conservation Buffer 7. Leverage Ratio
<b>Ways of Calculation of Risk Weighted Assets and CRAR</b>	<ul style="list-style-type: none"> <li>Simple but standard</li> <li>4 major risk categories of assets and risk weights according to it</li> </ul>	<ul style="list-style-type: none"> <li>From Simple to Complex &amp; flexible Approach</li> <li>Lesser Risk Weights in Complex Approaches</li> </ul>				Same as Basel 2 but additional capital for Capital Conservation & Contra Cyclical Buffer
		Type of Risk	Method 1	Method 2	Method 3	
		Credit Risk	Standardized Approach	Foundation Internal Rating Based	Advanced Internal Rating Based	
		Market Risk	Standardized Approach	Internal Model Approach		
Operational Approach	Basic Indicator Approach	Standardized Approach	Advanced Measurement Approach			
<b>Major Contribution</b>	First International Measure to cover banking risk	1. Covered Operational risk apart from credit & market risk 2. Recognized differentiation & brought flexibility 3. Better asset quality helped banks to reduce Capital Requirements				<ul style="list-style-type: none"> <li>Liquidity Risk Management</li> <li>Will help to build capital during good time, which can be used in stressed situation by Counter Cycle Buffer</li> <li>Introduction of Capital Conservation Buffer</li> </ul>

<b>Limitations</b>	<ul style="list-style-type: none"> <li>• Too simple to cover all risks</li> <li>• Banks had to raise additional capital</li> </ul>	<ol style="list-style-type: none"> <li>1. Additional Capital requirement for Op. Risk</li> <li>2. Higher capital requirement in stressed situation as asset quality reduces. Capital markets also dry at that time.</li> <li>3. High costs for up gradation of technology, disclosure &amp; information system</li> <li>4. Increased supervisory review required in case of advanced approaches</li> <li>5. Subprime crises exposed the inadequate credit &amp; liquidity risk covers of banks</li> </ol>	<ul style="list-style-type: none"> <li>• Requirement of additional CRAR between 2.5% to 5%</li> <li>• Increased requirement of common equity share capital also.</li> </ul>
<b>Minimum CRAR according to BCBS</b>	CRAR= 8%	CRAR= 8% Tier 1= 4%	CRAR= 10.5% TO 13% Tier 1= 6% Common Equity= 4.5%
<b>Minimum CRAR according to RBI</b>	CRAR= 9%	CRAR= 9% Tier 1= 6% Common Equity= 3.6% GOI recommended CRAR for PSU= 12%	CRAR= 11.5% Tier 1 = 7% Common Equity= 5.6%
<b>Introduction</b>	1988: Credit Risk 1996: Market Risk	2004	2010
<b>Implementation in India: Time line</b>	1994	First Phase: 2008: Foreign Banks in India, Indian Banks with presence outside India: Basic Approaches Second Phase: 2009: Other Scheduled Commercial Banks Till 2014: Complete Implementation	2013 to 2018 in phased manner