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Risks; Performance and Future
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Abstract

The aim of this paper is to analysis in detailed the major financial risks which are faced by the banking sector in general and Indian banks in particular. For the purpose a loss function is devised to estimate the various components of the credit risk which result in the net losses for the banks. The study is supported by empirical analysis conducted on financial data of a cross section of banks in Public Sector, Private Sector and Foreign Banks operating in India. Suggestions are also put forward mainly to minimize the credit risk.

The Indian Banking Sector has come a long way since 1960s, the end of which decade marked the first major paradigm shift in the banking scenario. During 1969, there was nationalization of 14 major commercial banks in keeping with socialistic policies then pursued by the government. Another major paradigm shift was witnessed by the Indian financial system in the year 1991. The Phase of the liberalization of the Indian economy was started by Dr. Manmohan Singh, then Finance Minister under Prime Minister Narasimhan Rao government. A strong need was felt to liberate the Indian financial system from the state control and allow the economic forces to operate freely so as to ensure the efficiency of the financial operations as well as bring about an appropriate allocation of the available financial resources. This period was marked by majors reforms in the banking and the financial sectors. The main objectives underlying the banking sector reforms in India were to enhance the stability, efficiency and complete transparency in the functioning of the Indian banking system.

It was imperative in order to integrate the Indian financial system with its global counterparts. Consequently, Basel Prudential Norms had to implement in Indian Banking Sector. The Prudential Norms applicable to the banks in general, can be traced to “The Basel Committee on Banking Regulations and Supervisory Practices”, which in 1987 submitted its report and arrived at consensus of 8% as the minimum capital-adequacy ratio. Thus, this framework referred to as Basel-I Framework. It represented a pioneering attempt at integrating and harmonizing the capital standard of the banks across the countries. The above Basel-I Accord in its original version included mainly the credit-risks in the banks’ operations.

In 1996, an amendment was sought to also include the market-risks in this framework. This approach was aimed at risk-sensitive nature of the banks’ investments and able to capture their risk-exposure more comprehensively. However in India, Basel-I framework required 9% of minimum capital adequacy ratio, which slightly higher than the BIS norms.

In order to address the inadequacy of Basel-I framework, a revised framework was introduced in June 2004. To support the main objective of Basel-I that is, to broadly maintain aggregate level of capital adequacy ratio to 9%, a need to adopt more advanced risk-sensitive approach for calculating capital adequacy ratio under the revised Basel-II framework. Basel II framework consider a three-pillar approach to regulatory capital measurement and capital standards – (a) Pillar 1 (minimum capital requirements); (b) Pillar 2 (supervisory oversight); and (c) Pillar 3 (market discipline and disclosures).

Pillar 1 represents the capital requirement of a bank in relation to the credit risk in its portfolio, which is a significant change from the “one size fits all” approach of Basel I. Pillar 1 allows flexibility to banks and supervisors to choose from among the Standardised Approach and

Internal Ratings Based Approach to calculate the capital requirement for credit risk exposures. The main impact of Pillar 1 of Basel II framework is geared towards maintaining a continued state of liquidity and financial stability in all the banks. The minimum capital adequacy ratio recommended under the Basel II norms continues to be at nine percent, at alone as well as consolidated level. The new standards for minimum capital requirement will be achieved by employing the methodology for assigning risk-weighted approach on the basis of credit risk, market risk and also specifies capital requirement for operational risk. However, the banks are expected to operate at the level well above the minimum capital requirement. The banks are also required to achieve the tier I capital ratio of six per cent not later than March 31, 2010.

Pillar 2 deals with the 'Supervisory Review Process (SRP), which requires the banks to established an Internal Capital adequacy Assessment Process (ICAAP) to cover the entire spectrum of risks which are either not fully included or which are completely ignored under the other two pillars. The ICAAP represents an important component of the Supervisory Review Process. This pillar would obviously receive the high priority which it deserves in implementation strategy of the banks. It is essential to note that the ICAAP as the name suggests is essentially a bank-driven process. Pillar 2 provides a tool to ICAAP to keep checks on the adequacy of capitalisation levels of banks and also distinguish among banks on the basis of their risk management systems and profile of capital. ICAAP takes into account the credit-concentration risk, interest rate risk in the banking books, business and strategic risk, liquidity risk and other residual risks such as reputation risk and business cycle risk. Thus enabling Pillar 2 to allow discretion to supervisors to (a) link capital to the risk profile of a bank; (b) take appropriate remedial measures if required; and (c) the banks to maintain capital at a level higher than the regulatory minimum.

Pillar 3 provides a framework for the improvement of banks' disclosure standards for financial reporting, risk management, asset quality and regulatory sanctions. This pillar also indicates the remedial measures that regulators can take to keep a check on erring banks and maintain the integrity of the banking system. Further, Pillar 3 allows banks to maintain confidentiality over certain information, disclosure of which could impact competitiveness or breach legal contracts. The basic premise underlying this pillar is that the market would be quite responsive to the disclosures made and the banks would be accordingly rewarded or penalized keeping with nature of their disclosures. This will ensure great transparency in banking operations. This pillar enables the banks to project their image of being responsible and accountable to their depositories in particulars and to the member of public in general.

To meet the needs of changing business dynamics in banking sector has led to introduction of Basel-III norms. It is observed in the light of the recently advocated new Basel-III Norms, wherein a stricter approach increases the capital adequacy requirements by further including a mandatory capital conservation buffer of 2.5% and a discretionary counter-cyclical buffer of 2.5% of the capital to be maintained during the periods of high credit growth to be utilized during the periods of economic downswings.

Based on Basel III frameworks, even RBI has released guidelines for Indian Banks on 2 May, 2012 Implementation of these guidelines will begin from January 1, 2013 and the process will be completed by March 31, 2018.

Highlights

- Banks required to maintain a minimum 5.5% in common equity (as against the current 3.6%) by March 31, 2015

- Banks to create a capital conservation buffer (consisting of common equity) of 2.5% by March 31, 2018
- Banks to maintain a minimum overall capital adequacy of 11.5% (against the current 9%) by March 31, 2018
- Conditions stipulated to increase the loss absorption capacity of banks' Additional Tier I; Banks not to issue additional Tier I capital to retail investors
- Risk-based capital ratios to be supplemented with a leverage ratio of 4.5% during parallel run
- Banks allowed to add interim profits (subject to conditions) for computation of core capital adequacy
- Banks to deduct the entire amount of unamortised pension and gratuity liability from common equity Tier I capital for the purpose of capital adequacy ratios from January 1, 2013.

The main concern which led to the evolution of the Prudential Norms initiated by the Basel Committee was the variety of risks which are inherent in the very nature of financial operations of the banks universally. Broadly speaking, these risks are classified into three major categories, namely: the credit risks, the market risks and the operational risks.

Credit Risks

Credit risks emerge from default due to non-payment of loans by individuals, companies and other borrowers. Banks can choose any of three methods to calculate credit risk 1) the

standardized model 2) the internal ratings-based (IRB) model a) the foundation approach and b) the advance approach. As per the latest RBI guidelines vide Master Circular No.

DBOD.BP.BC.23/21.06.001/2009-2010 dated July 7, 2009

1) The Standardized Model for Credit Risks

The Standardized model under Basel I follow a portfolio approach, whereby assets are classified into different categories of risk baskets: - Claims on Organization for Economic Coordination and Development (OECD) has a 0% risk weight, Claims on banks incorporated in OECD has a 20% risk weight, Claims on residential mortgage has a 50% risk weight and Claims on consumers and corporates has a 100% risk weight. These risk weights are multiplied with their respective exposures to get Risk-Weighted Assets (RWAs). The Bank allocates weight risk to each of its assets and off-balance sheet positions (after conversion by using CCF). Capital charged for credit risk is summation of each RWAs multiplied by the Total capital requirement of 8%.

This model follows the same methodology as Basel I, but it is more risk sensitive under Basel II by dividing commercial obligator into finer gradation of risk classifications, with risk weights that are a function of external independent credit rating agencies such as Standard & Poor's, Moody's and Fitch. The table 1 mentioned below shows how credit ratings provided by three rating agencies are mapped on comparable basis. Similar credit ratings are also available for sovereigns and banks.

Table 1: Total Capital Requirements on Corporate obligations under the Standardized

Model of BIS II

External Credit Rating	AAA- to AA-	A+ to A-	BBB+ to BB-	Below BB-	Unrated
Risk weight under BIS II	20%	50%	100%	150%	100%
Capital requirement under BIS II	1.6%	4%	8%	12%	8%
Risk weight under BIS I	100%	100%	100%	100%	100%
Capital requirement under BIS I	8%	8%	8%	8%	8%

To calculate the minimum capital requirement for credit risk purpose, all credit exposure- each known as the exposure at default (EAD) - in each risk weigh bucket are summed up, weighted by the appropriate risk from table 2.1 and then multiplied by the overall total capital requirement of 8 percent. This approach takes credit risk mitigation into account by adjusting the transaction's EAD to reflect collateral, credit derivatives, guarantee and offsetting on balance sheet netting.

2) Internal Ratings-Based (IRB) Models for Credit Risk

Under the Foundation Internal Rating Based (FIRB), banks are generally expected to provide their own estimates of PD and rely on the supervisory estimates for other risk components, namely LGD, EAD and M while under the Advance Internal Rating Based (AIRB), banks provide their own estimates of PD, LGD and EAD and their own calculation of M. The definition mentioned below for core components of FIRB and AIRB are for corporate, sovereign and bank

exposures. Based on the above variable the expected losses due to default can be computed as follows:

$$\text{Expected Losses} = \text{PD} \times \text{LGD} \times \text{EAD}$$

There are certain minimum requirements of eligibility in order to apply the IRB approach (i.e., demonstration that the bank maintains the necessary information systems to accurately implement the IRB approach) and there is supervisory review of compliance with these minimum requirements.

Probability of Default (PD)

All banks whether using Foundation and Advance IRB approach, have to provide an internal estimate of the PD associate with the borrowers of each grade. To calculate PDs the historical data, risk profile, nature of investment and financing of counterparty are necessary for period that must cover entire economic cycle or minimum of five year (Youbaraj Paudel, 2007). Banks must use information and techniques that take appropriate account of the long-run experience when estimating the average PD (i.e. long term average PD) for each rating grade. For example, banks may use one or more of the three specific techniques: internal default experience, mapping to external data, and statistical default models. Banks may use data on internal default experience for the estimation of PD. A bank must demonstrate in its analysis that the estimates are reflective of underwriting standards and of any differences in the rating system that generated the data and the current rating system. In case where only limited data are available, underwriting standards or rating systems have changed, the bank must add a greater margin of conservatism in its estimate of PD. Mappings must be based on a comparison of internal rating criteria to the criteria used by

the external rating agency and a comparison of the internal and external ratings of any common borrowers. The external agency's criteria underlying the data used for quantification must be oriented to the risk of the borrower and not reflect transaction characteristics. A bank is allowed to use a simple average of PD estimates for individual borrowers in a given grade, where such estimates are drawn from statistical default prediction models.

Loss Given Default (LGD)

LGD is defined as the percentage of EAD the bank might lose in case the borrower defaults. It is facility- specific due to losses generally understood to be influenced by key transaction characteristics such as presence of collateral, guarantee and the degree of subordination.

There are two approaches by which the banks can calculate LGD of an exposure under the IRB Approach:

- a. A foundation approach
- b. An advanced approach

Estimation of LGD must cover a period of at least one complete cycle or minimum a period of seven years from at least one source for both the approaches.

LGD under the Foundation IRB Approach

The Table 2, the estimates of LGDs for both unsecured and secured exposures under F-IRB framework has been provided:-

LGD for unsecured and non-recognised collateralised exposures			
Type of exposure	Minimum LGD %		
Senior Unsecured claim	45		
Subordinated Claim	75		
LGD for collateralised exposures-Under eligible collateral			
Type of Collateral	Minimum LGD %	Threshold level of collateralisation required for partial recognition of collateral for the exposure (C*)	Required level of (over) collateralisation for full recognition of collateral for the exposure (C**)
Eligible financial collateral ®	-	-	-
Eligible financial receivables	35	-	125
Eligible Commercial Real Estate (CRE)/ Residential Real Estate (RRE)	35	30	140
Other collateral*	40	30	140

(Source: RBI)

® $LGD^* = LGD \times (E^*/E)$ where LGD is that of senior unsecured exposure before recognition of collateral (45%), E is the current value of exposure (i.e cash lent or securities lent or post) E* is the exposure value after risk mitigation.

* may include industrial properties, land, ship, aircraft, inventories etc. but excludes physical asset acquired by the bank as a result of loan default.

LGD under the Advance IRB Approach

In A-IRB approach, Banks must use their own internal estimates of LGD (i.e. The LGD attached to any particular exposure should be minimum of downturn LGD or long run default weighted average LGD associated with that exposure, in case a default occur.). Downturn LGD is defined as LGDs that should reflect the economic downturn conditions in situations where the loss severities are expected to be higher. It is noted that in foundation approach LGD is estimated based on the current value of the collateral whereas in case of the advanced approach, all collateral values must be evaluated in the light of historical recovery rates. While calculating historical LGD and then estimate the probable future LGD, banks should consider all the factors which may have a probable effect on the cost of holding (e.g. interest forgone) or collecting on a defaulted facility should be considered before for LGD calculation. Direct and indirect cost associated with the recovery process should be taken into account. It should also takes into account both accounting loss and the economic loss.

Exposure at Default (EAD)

Exposure at Default gives an estimate of the amount outstanding (drawn amounts plus likely future drawdowns of yet undrawn lines) when the borrower defaults. Under foundation IRB approach, EAD estimate of the on balance sheet exposures (i.e. the drawn amount) should not be less than the sum of the amount by which a bank's regulatory capital would be reduced if the exposure were fully written off and any associated specific provisions and partial write offs. For the off balance sheet items, exposure is calculated as the committed but undrawn amount multiplied by a credit conversion factor (CCF). EAD under Advance IRB approach, banks must

estimate an EAD for each facility that aims to reflect economic downturn conditions i.e. downturn EAD to capture the relevant risks. This downturn EAD cannot be less than the long-run average EAD for that type of facility. The Banks will be allowed to use their internal estimates of CCFs.

Effective maturity (M)

For banks using the F-IRB approach, effective maturity (M) will be 2.5 years. Banks using advanced IRB approach are required to measure effective maturity. M is defined as the greater of one year and the remaining effective maturity in years as defined below. In all cases, M will be no greater than 5 years.

$$\text{Effective Maturity (M)} = \sum_t t * CF_t / \sum CF_t \quad \dots (1)$$

Where CF_t denotes the cash flows (principal, interest payments and fees) contractually payable by the borrower in period t (expressed in number of years).

Capital requirement

$$K = \left[LGD \times N \left[\frac{1}{\sqrt{1-R}} \times G(PD) + \frac{\sqrt{R}}{\sqrt{1-R}} \times G(0.999) \right] - PD \times LGD \right] \times \left(\frac{1 + (M - 2.5) \times b(PD)}{1 - 1.5 \times b(PD)} \right) \quad \dots (2)$$

$$\text{Correlation (R)} = 0.12 \times \left\{ \frac{1 - e^{(-0.5*PD)}}{1 - e^{(-0.5)}} \right\} + 0.24 \left[\mathbf{1} - \left\{ \frac{1 - e^{(-0.5*PD)}}{1 - e^{(-0.5)}} \right\} \right] \quad \dots (3)$$

$$\text{Maturity adjustment (b)} = \{0.11852 - 0.05478 \times \ln(PD)\}^2 \quad \dots (4)$$

$$\text{Risk-weighted assets (RWA)} = K \times 12.5 \times \text{EAD} \quad \dots (5)$$

Where,

K = Minimum capital requirement expressed as a percentage of EAD for the exposure

EAD = Exposure at Default

LGD = Loss Given Default of the exposure

PD = One year Probability of Default of the borrower

M = Remaining effective maturity of the exposure

R = Asset Correlation (Correlation between borrower's exposure and systematic risk factor)

$N(x)$ = Cumulative normal distribution for a standard normal random variable (i.e. probability that a normal random variable with mean zero and variance of one is less than or equal to x)

$G(z)$ = Inverse Cumulative normal distribution for a standard normal random variable (i.e. value of x such that $N(x) = z$).

Ln = Natural Logarithm

Market Risks

Market risks are the possibility of loss due to adverse market conditions. It is the risk faced by corporate owing to change in perceived value of the instruments. It is risk of losses in on and off balance sheet positions arising from movements in market prices. There are two types of market

risk 1) Standardised Approach 2) Internal Models Approach. As per the latest RBI guidelines vide Master Circular No. DBOD.BP.BC.17/21.01.002/2010-2011 dated July 1, 2011

1) Standardised Approach:

Standardised approach uses a building-block approach in which specific risk and the general risk arising from positions in financial instruments are calculated separately. Specific risk refers to risk of loss caused by an adverse price movement of a security principally due to factors related to the issuer. The specific risk charge is designed to protect against an adverse movement in the price of an individual security owing to factors related to the individual issuer. The specific risk charge is graduated for various exposures under three heads i.e. claims on Government, claims on banks, claims on others. The capital requirements for general market risk are designed to capture the risk of loss arising from changes in market interest rates. Under the standardised 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, it has been decided to adopt Standardised Duration method to arrive at the capital charge. Accordingly, banks are required to measure the general market risk charge by calculating the price sensitivity (modified duration) of each position separately. Under this method, the mechanics are as follows:

- first calculate the price sensitivity (modified duration) of each instrument;
- next apply the assumed change in yield to the modified duration of each instrument between 0.6 and 1.0 percentage points depending on the maturity of the instrument
- slot the resulting capital charge measures into a maturity ladder with the fifteen time bands.

- subject long and short positions (short position is not allowed in India except in derivatives and Central Government Securities) in each time band to a 5 per cent vertical disallowance designed to capture basis risk
- Carry forward the net positions in each time-band for horizontal offsetting subject to the disallowances.

2) Internal Models Approach (IMA)

IMA calculates market risk capital charge as sum of general market risk charge shall be higher of Higher of previous day's Value-at-risk (VaR) or average VaR over last 60 business days multiply by multiplier factor (absolute floor of 3 as set by supervisory authority) and specific risk (as specified by Standard Approach)

$$MRC = \max\{VaR_{t-1}; (m_c + p_c) \times VaR_{avg}\} + \max\{sVaR_{t-1}; (m_s + p_s) \times sVaR_{avg}\} \quad \dots (6)$$

Where:

m_c and m_s are the multiplication factors to be set by the RBI on the basis of their assessment of the quality of the bank's risk management system, subjected to absolute minimum of three for the both the factors.

p_c and p_s is the plus/ add on factors, generally ranging from 0-1, to be decided by the banks based on the result of the back testing its VaR model.

It requires the banks to comply with both qualitative and quantitative aspects.

Quantitative standards to be consider for IMA:

- VaR must be computed on a daily basis. While calculating VaR, a horizon of 10 days and observation period of at least 1 year historical data with one tailed confidence level of 99% is to be used.
- No particular type of model is prescribed. So long as each model used captures all the material risks run by the bank .The banks can use any type of model- variance-covariance matrices, historical simulations or Monte Carlo simulation.
- Recognize correlation within Categories as well as a cross categories (FI and FX etc.)
- Banks should update their data sets no less frequently than once every three months and should also reassess them whenever market prices are subject to material changes.

Qualitative aspects to be consider for IMA:

- Board and senior management should be actively involved. Daily reports for Risk Unit to be reviewed by Senior Management in order to take appropriate remedial action, if required.
- Bank's risk measurement system must be well documented to describe the basic principles of risk management system and to provide empirical technique used to measure market risk.
- Independent Risk Control Unit responsible for design and implementation of Bank's risk management systems
- Regular Back-testing and Stress testing
- Initial and on-going Validation of Internal Model
- Risk measurement system should be used in conjunction with Trading and Exposure Limits.
- Independent review of risk measurement systems by internal audit.

Operational Risks

The Operational risk as per Basel Committee is defined as the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events. The direct or indirect loss includes the cost to fix the operational risk problem, payment to third parties and write down due to the loss incurred from operational risk events. It further includes other types of losses or events which should be reflected in the charge such as near misses, latent losses or contingent losses. However, strategic and reputation risk is not included in the definition of operational risk by Basel Committee. As per the latest RBI guidelines vide Master Circular No. DBOD.BP.BC.23/21.06.001/2009-2010 dated July 7, 2009

The Basel Committee has proposed that banks should use one or a combination of three alternative approaches while calculating operational risk capital. These approaches vary in level of sophistication:

- (a) The Basic Indicator Approach: The Basel Committee in Jan 2001, proposed an indicator to calculate capital required for operational risk which is the bank's gross income multiple by 15% given in the equation (7)

$$\text{Regulatory capital for operational risk} = 0.15 \times \text{Average of 3 years of Gross Income} \quad \dots (7)$$

Where value of 15% was proposed by Basel committee, after conducting a study on small number of commercial banks.

- (b) The Standardised Approach (TSA)/Alternative Standardised Approach (ASA):

In the standard approach divides bank’s activities into eight business lines: commercial banking, retail banking, retail brokerage, corporate finance, trading & sales, payment & settlement, agency services and asset management. Within each business line, gross income is a board indicator that serves as a proxy for the scale of operation. Hence, the scale of operation indicates risk exposure associated within each of these business lines. The capital charge for each business line is calculated by multiplying gross income by a factor (denoted beta) assigned to each business line. Beta serves as a proxy for the industry-wide relationship between the operational risk loss experience for a given business line and the aggregate level of gross income for that business line.

Table: The values of the β

Business Lines	Indicator	Beta Factors (%)	Beta Values (%)
Corporate finance	Gross Income	β_1	18
Trading & sales	Gross Income	β_2	18
Retail banking	Gross Income	β_3	12
Commercial banking	Gross Income	β_4	15
Payment & Settlement	Gross Income	β_5	18
Agency services	Gross Income	β_6	15
Asset management	Gross Income	β_7	12
Retail brokerage	Gross Income	β_8	12

(Source: RBI)

$$K_{TSA} = \left\{ \sum_{1-3 \text{ year}} \text{Max}[\sum(GI_{1-8} \times \beta_{1-8}), 0] \right\} / 3 \quad \dots (8)$$

Where: K_{TSA} = the capital charge under the standardised approach

GI_{1-8} = annual gross income in a given year, for each business lines.

β_{1-8} = a fixed percentage, set by the supervisory committee.

The Alternative Standardised Approach (ASA)

Under the ASA, the operational risk capital charge methodology is same as for TSA except there are two business lines- retail banking and commercial banking. In this method, loans & advances of these business lines is multiplied by a fixed factor “m”- which is replaces gross income as the exposure indicator. The betas for retail and commercial banking remain unchanged from TSA.

The ASA operational risk capital charge for retail banking can be expressed as

$$KRB = \beta_{RB} \times m \times LARB \quad \dots (9)$$

Where

KRB is the capital charge for the retail banking business line.

β_{RB} is the beta for the retail banking business line.

$LARB$ is total outstanding retail loans and advances (non-risk weighted and gross of provisions), averaged over the past three years

m is 0.035

Similarly the capital charge for the commercial banking is calculated. The total capital charge for the ASA is calculated as the simple summation of the regulatory capital charges for retail and commercial banking.

(c) Advanced Measurement Approach (AMA):

Under the AMA, the regulatory capital requirement will equal to the risk measure generated by the bank's internal operational risk measurement using quantitative and qualitative criteria. There are certain qualitative standards which banks are required to follow in order to adopt the AMA for the operational risk management. The bank must have an independent operational risk management function that will be responsible for the design and the implementation of codifying the firm level policies and procedures as well as ensuring the control by implementing risk-reporting system. Further, this system should be regularly reviewed and validated by internal/external auditors. A bank must demonstrate that its approach is able to capture potential severe 'tail' loss events through its quantitative standards, as there are losses with a low frequency but higher in the magnitude . This approach use one year holding period and a 99.9th percentile confidence interval. Operational risk capital charge is sum of expected loss and unexpected loss. Expected loss of the banks can be determined through internal provision. For estimate unexpected losses, bank's internal measurement system must reasonably on the combined use of internal and relevant external loss data, scenario analysis and bank-specific business environment and internal control factors.

Methodology of the Study

Our study is based on a time-series data of the volume of bank credit in India vis-à-vis fundamental macroeconomic variables between 2006-07 and 2012-13. It aims at devising a suitable stochastic loss function for the banks. This function comprises key variables like interest rate, credit-spread, risk-adjusted capital adequacy ratios, composite risk index comprising credit and market risks and the random error term comprising operational risks. The methodology

employed in our study uses the concept of Loss function which is defined as the aggregate losses suffered by the banks as result of various types of risks. Symbolically this loss function is denoted by: $L_i = f [A_i, M_i, r_i, c_i, s_i, p_i, u_i]$ where, L_i denotes the concept of Loss function represented by the aggregate losses suffered by the banks as a result of various types of risks which are represented by explanatory variables enclosed in parenthesis on right hand side of the equation, A_i denote the asset-base of the banks, M_i denote the total volume of bank credit, r_i denote the interest rate, c_i denote capital adequacy ratio of the banks, s_i denote the credit spread of the banks, p_i denote the composite risk index of the banks based on kernel density function, u_i denote the random error term and f denotes the functional form. The variable p_i in the above equation denotes the composite risk index based on major risks faced by the banks, identified as credit risk, market risk and operational risk. In order to facilitate meaningful comparison between the banks, we take the ratio of the Net Losses to the asset base and also the ratio of the credit flows to the asset base of the Individual banks. Hence the modified Loss Function is state as:

$$\frac{L_i}{A_i} = f \left[\frac{M_i}{A_i}; r_i; c_i; s_i; p_i; u_i \right] \quad \dots \quad (10)$$

The parameters of this loss function will be estimated by employing the time-honoured method of the Technique of Regression on Panel Data. The database included the abovementioned financial details of the banks in three different sectors, namely, 26 PSBs, 19 Private Banks and 18 Foreign Banks operating in India are included for the purpose (having net worth above 500 Crores) for financial years 2006-07 and 2012-13. The scope of this paper is limited to a detailed empirical analysis of the credit risks which are domain components of total risks faced by the banks.

Results of Panel Regression

Public Sector banks:

Residual standard error: 0.002644 on 151 degrees of freedom

Multiple R-squared: 0.9148, Adjusted R-squared: 0.8973

F-statistic: 52.29 on 31 and 151 DF, p-value: $< 2.2e-16$

It is observed that the explanatory variables have significant impact the net losses of banks. Also the interest rates and credit spreads have reasonably significant impact on the net losses followed by Capital Adequacy Ratios (CARs)

Private Sector banks:

Residual standard error: 0.004221 on 115 degrees of freedom

Multiple R-squared: 0.8687, Adjusted R-squared: 0.8402

F-statistic: 30.45 on 25 and 115 DF, p-value: $< 2.2e-16$

It is observed that the explanatory variables have significant impact the net losses of banks. Further CARs also significant impact net losses followed by the interest rates

Foreign Banks

Residual standard error: 0.01259 on 103 degrees of freedom

Multiple R-squared: 0.6192, Adjusted R-squared: 0.5342

F-statistic: 7.282 on 23 and 103 DF, p-value: $4.476e-13$

It is observed that in this sector all the explanatory variables have relatively lesser significant impact on the net losses of the banks. This is because fact that total volume of their transactions is much lesser compared to banks in other sectors. Hence, none of the variables are significant enough to be compared as causing impact on the net losses.

The empirical analysis of the Loss Function chapter has revealed that in terms of the order of significance, the interest rate and the capital adequacy ratio have emerged most significant variables. However, under the quasi-regulatory monetary regime which is followed in India, Banks have relatively little freedom in manipulating these variables at their own choice. Under this scenario a suitable policy mechanism needs to be evolved in order to reduce the impact of financial risk faced by the banks in India by devising a desirable framework of policies which are aimed at reducing the impact of credit risk.

The Model suggested over here explains the behavior of the banks whose capital adequacy ratio lies below the minimum prescribed by the Regulator, in which case their decision will be to maintain higher capital cushion. The idea of a capital cushion is established as a caution against any future contingency as stated by Wall and Peterson (1987). It will be shown that banks will set this cushion whenever the capital adequacy ratio is not wholly controllable (or stochastic) and when important sanctions to enforce the capital requirements are in place. In such cases, banks would maintain this cushion to prevent the stochastic capital ratio from reaching values below the permitted minimum in order to avoid being penalized by the Regulator.

Two Theoretical Models have been formulated to explain the manner in which the banks set their capital to assets ratio in the context of the capital adequacy requirements specified by the Regulatory Authority which is enforced through sanctions. Both these models aim at the same

goal. The first model namely the Market Model describes the behavior of the banks which are not under the regulatory purview and they keep their capital to assets ratio higher than the one specified by the regulatory authority. This model synthesizes in a theoretical formulation the issues proposed in the banking literature which justify an optimum capital structure. This structure includes liquidity premium, operations costs associated with the deposits and insurance premia. Conversely Wall and Peterson (1987, 1995) devised an alternative model based on the factors highlighted above. The second model explains the behavior of the banks which set their capital to assets ratio lower than that specified by the Regulator in which case their decision will consist in not merely maintaining the minimum required norm but also in maintaining a Capital Cushion against any future contingencies.

Since in India, all the banks in all the three sectors maintain their respective capital adequacy ratios usually higher than the one specified by the Indian regulator (RBI) the Indian banks will be more amenable to the first model stated above. This model provide every individual banks with an ability to determine its own level of optimum Capital adequacy ratio, but it should not below minimum specified by RBI.

Inference of the Model

From the model illustrated above, it becomes apparent that Optimal Market Capital Ratio is directly related to, cost of deposit, capital ratio and random variable ($\sigma_{u_1}^2$); whereas it is inversely related to risk free interest. This reflects that a high level of banking demand for capital will be associated with high costs of deposits and a high variability of capital ratio. For a given level of risk free interest, the higher the deposit interest is, the lower will be the liquidity premium

depositors willing to pay. This would reduce the incentive for the banks to capture debt. Moreover, operation costs are a good indicator of efficiency and probability of bankruptcy of a bank (Berger, 1995). The sign of variability of capital ratio indicate that the greater dispersion of retained earnings (main source of capital in savings banks) of the bank is, the greater the issues of other capital instruments liked subordinated debt, hybrid debts capital instruments in order to avoid a bank in becoming bankrupt.

This study recommends that if the model suggested over here is implemented by the Indian banks it will ensure the prevalence of sound banking principles and prevent the strain on Government exchequer from frequent capital injections to the PSBS as shown in the preceding analysis. This study has not used the above model because in India, detailed data on the outstanding debts for individual banks is not necessarily available especially in the case of private and foreign banks. However, this does not reduce the efficacy of the model suggested above.

An Alternative Formula for Internal Rating Based Credit Risk Weight

One of the important requirements of the Basel-II framework for the banks is to increase their reliance on the Internal Rating Based (IRB) Approach for the banks which is devised to gauge the credit-worthiness of their individual borrowing entities. The purpose of this index is to ensure that the banks are able to recover their credit with the interest accrued thereupon within the stipulated period of the credit sanctioned. This study suggests a simple formula for devising such an index.

Let M denote the amount of credit which a bank is supposed to extend to any borrowing entity at the rate of interest: r for the time-horizon: t . If D denotes the probability of that entity committing a default in its repayment of the extended credit amount within the stipulated period. The

probability D can be arrived at by the past credit history and financial soundness of the particular borrower and/or through market intelligence. Then, $(1-D)$ will denote the probability that the same borrower meets the stipulated schedule. In order to work out the expected return of the bank per unit of its asset we consider the quantity: M/A and the corresponding returns to the bank: R/A . The expected return of the bank from its credit is expressed by the following equation:

$$E(R/A) = [(1-D) M/A (1+r)^t] - [D (M/A) (1+r)^{t_1}] - C \quad \dots (11)$$

t denotes the duration of the loan and where t_1 denotes the time duration of default. Usually, t_1 is lesser than t . In case if $t_1=t$ then the loss suffered by the bank in terms of its returns is maximum, where C denotes the total cost of estimating the default probability through the following process and r denotes the PLR plus margin charged by a bank on loans.

The efficacy of the above credit-risk index depends upon the ability of a bank to safeguard its recovery of the extended credit by charging the defaulter a penalty rate of interest or seeking additional collaterals or a recall of the credit facility. It also largely depends upon the near correct estimate of the probability of default: D .

D follows the probability distribution.

$$f(D) = \frac{e^{\alpha x}}{1 + e^{\alpha x}} \quad \dots (12)$$

where $x = (x_1, \dots, x_n)$ denotes a vector of variables which causes the loan default.

$$\text{Hence, } (1 - D) = 1 - \frac{e^{\alpha x}}{1 + e^{\alpha x}} \quad \dots (13)$$

$P(X_1 = 1) = (1, 0)$ such that:

$$X = \alpha_1 X_1 + \dots + \alpha_n X_n$$

In order to minimize the default probability we differentiate (5.12) with respect to $X_1 \dots X_n$ and equate the first partials to zero as under:

$$\begin{aligned} \frac{\partial}{\partial X_1} \left[1 - \frac{e^{\alpha X}}{1 + e^{\alpha X}} \right] &= 0 \\ &\vdots \\ &\vdots \\ \frac{\partial}{\partial X_n} \left[1 - \frac{e^{\alpha X}}{1 + e^{\alpha X}} \right] &= 0 \end{aligned} \quad \dots (14)$$

The solutions to eqn. (5.13) provides a vector of values for X_1, \dots, X_n which minimize the default probability D.

It is also suggested that the main Credit Rating Agencies operating in India be brought under the purview of an institutional mechanism along the lines of the Nationally Recognized Statistical Rating Organization (NRSRO) operating in the US, in order to eliminate any possibility of biases creeping in the Credit Rating Process and that these agencies must be under the payroll of the banks rather than the individual borrowers

Conclusion

In the light of the salient features of the proposed Basel-III Framework, per se, the said framework provides relatively greater safeguards to the banks against the losses arising out of the credit risk as well as the impact of the periodic cyclical behavior of the macro economy. However, the continued maintenance of the proposed two liquidity ratios of 2.5% each are perhaps likely to create certain short-term problems of the credit-flows especially during the

periods of economic and/or political uncertainties especially for smaller banks operating in India because these two additional buffers over and above the maintenance of the mandatory capital adequacy requirements will further diminish the available funds at the disposal of these banks for extending the credit requirements during the periods of economic upswings and shrink the base of profitability of these banks, making them operationally unviable in the long run. In this context, the method proposed in this Study which centres around the application of the model built by Wall and Peterson (1987, 1995) to determine the Optimal Capital Adequacy Requirements for the individual banks and which has been effectively applied by the Spanish Savings Banks can, perhaps prove to be more effective. Besides, the Alternative Index for evaluating the credit risk vis-à-vis the individual borrowers, which is fairly simple to evaluate can prove to be a ready safeguard for the banks to precisely evaluate the extent of credit risk.

Further, it also suggests creating an Autonomous Institutional Framework to cover the functioning of the Credit Rating Agencies operating in India, along the lines of the Institutes of Chartered Accountants and Company Secretaries, need arising, through an Act of Indian Parliament, to regulate and monitor the functioning of all the Credit Rating Agencies on a continued basis, so as to ensure a greater degree of standardization and accountability on their parts. This suggestion stems from occurrence of the global banking crisis during the recent past. Such an institutional mechanism has already been recently created in the US as a sequel to the abovementioned event along the lines of 'Nationally Recognized Statistical Rating Organization' (NRSRO).

To sum up, this paper suggests one of the significant approaches to have a fresh look at the analysis of the credit risks faced by the banks and the measures to minimise the same.

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Appendix

S.no	NATIONALISED BANKS	Net Loss/ Total Assets						
		2007	2008	2009	2010	2011	2012	2013
1	Allahabad Bank	0.01	0.01	0.01	0.01	0.01	0.01	0.00
2	Andhra Bank	0.01	0.01	0.00	0.00	0.01	0.01	0.01
3	Bank of Baroda	0.01	0.01	0.01	0.01	0.01	0.01	0.01
4	Bank of India	0.01	0.01	0.01	0.01	0.01	0.01	0.01
5	Bank of Maharashtra	0.01	0.01	0.01	0.01	0.01	0.01	0.01
6	Central Bank of India	0.02	0.01	0.01	0.01	0.01	0.01	0.01
7	Corporation Bank	0.01	0.01	0.00	0.00	0.00	0.00	0.00
8	Dena Bank	0.01	0.01	0.01	0.00	0.00	0.00	0.00
9	Indian Bank	0.01	0.01	0.00	0.00	0.00	0.00	0.01
10	Indian Overseas Bank	0.01	0.01	0.01	0.01	0.01	0.01	0.01
11	Oriental Bank of Commerce	0.02	0.01	0.01	0.01	0.01	0.01	0.01
12	Punjab & Sind Bank	0.01	0.00	0.00	0.00	0.00	0.00	0.01
13	Punjab National Bank	0.02	0.01	0.01	0.01	0.01	0.01	0.01
14	Syndicate Bank	0.01	0.01	0.01	0.01	0.01	0.01	0.01
15	UCO Bank	0.01	0.01	0.01	0.01	0.01	0.01	0.02
16	Union Bank of India	0.01	0.01	0.01	0.01	0.01	0.01	0.01
17	United Bank of India	0.01	0.01	0.01	0.01	0.01	0.01	0.01
18	Vijaya Bank	0.01	0.01	0.01	0.01	0.01	0.01	0.01
19	State Bank of India (SBI)	0.01	0.01	0.01	0.01	0.01	0.02	0.02
20	State Bank of Bikaner & Jaipur	0.01	0.01	0.01	0.01	0.01	0.01	0.01
21	State Bank of Hyderabad	0.01	0.00	0.00	0.00	0.01	0.01	0.01
22	State Bank of Indore	0.01	0.00	0.00	0.01	-	-	-
23	State Bank of Mysore	0.01	0.01	0.01	0.01	0.01	0.01	0.01
24	State Bank of Patiala	0.01	0.01	0.00	0.01	0.01	0.01	0.01
25	State Bank of Travancore	0.01	0.01	0.01	0.00	0.01	0.01	0.01
26	IDBI Bank Ltd.	0.00	0.00	0.00	0.00	0.00	0.01	0.01

(Source:IBA)

S.no	NATIONALISED BANKS	Credit Volume/Total Assets						
		2007	2008	2009	2010	2011	2012	2013
1	Allahabad Bank	0.61	0.60	0.60	0.59	0.62	0.51	0.54
2	Andhra Bank	0.59	0.60	0.64	0.62	0.66	0.57	0.57
3	Bank of Baroda	0.58	0.59	0.63	0.63	0.64	0.51	0.53
4	Bank of India *	0.60	0.63	0.63	0.61	0.61	0.55	0.55
5	Bank of Maharashtra	0.59	0.61	0.58	0.57	0.61	0.51	0.48
6	Central Bank of India	0.56	0.59	0.58	0.58	0.62	0.56	0.55
7	Corporation Bank	0.57	0.59	0.56	0.57	0.61	0.53	0.52
8	Dena Bank	0.58	0.60	0.60	0.62	0.63	0.51	0.50
9	Indian Bank	0.52	0.57	0.61	0.61	0.62	0.53	0.55
10	Indian Overseas Bank	0.57	0.59	0.62	0.62	0.63	0.51	0.58
11	Oriental Bank of Commerce	0.60	0.60	0.61	0.61	0.59	0.54	0.56
12	Punjab & Sind Bank	0.53	0.59	0.60	0.58	0.62	0.58	0.57
13	Punjab National Bank	0.59	0.60	0.63	0.63	0.64	0.53	0.61
14	Syndicate Bank	0.58	0.60	0.63	0.65	0.68	0.59	0.57
15	UCO Bank	0.63	0.61	0.62	0.60	0.61	0.55	0.58
16	Union Bank of India	0.61	0.60	0.60	0.61	0.64	0.58	0.57
17	United Bank of India	0.52	0.51	0.57	0.55	0.59	0.52	0.55
18	Vijaya Bank	0.57	0.56	0.57	0.59	0.59	0.51	0.52
19	State Bank of India (SBI)	0.60	0.58	0.56	0.60	0.62	0.57	0.55
20	State Bank of Bikaner & Jaipur	0.59	0.61	0.64	0.65	0.65	0.57	0.57
21	State Bank of Hyderabad	0.57	0.58	0.57	0.60	0.61	0.55	0.57
22	State Bank of Indore	0.63	0.62	0.65	0.67	-	-	-
23	State Bank of Mysore	0.61	0.64	0.63	0.65	0.65	0.56	0.59
24	State Bank of Patiala	0.61	0.62	0.63	0.61	0.63	0.52	0.58
25	State Bank of Travancore	0.65	0.64	0.66	0.65	0.65	0.54	0.54
26	IDBI Bank Ltd.	0.60	0.63	0.60	0.59	0.62	0.54	0.56

(Source:IBA)

S.no	NATIONALISED BANKS	Capital Adequacy - Basel II %						
		2007	2008	2009	2010	2011	2012	2013
1	Allahabad Bank	12.52%	11.99%	13.11%	13.62%	12.96%	12.83%	11.03%
2	Andhra Bank	11.33%	11.61%	13.22%	13.93%	14.38%	13.18%	11.76%
3	Bank of Baroda	11.80%	12.91%	14.05%	14.36%	14.52%	14.67%	13.30%
4	Bank of India *	11.75%	12.95%	13.01%	12.94%	12.17%	11.95%	11.02%
5	Bank of Maharashtra	12.06%	10.85%	12.05%	12.78%	13.35%	12.43%	12.59%
6	Central Bank of India	10.40%	10.42%	13.12%	12.24%	11.64%	12.40%	11.49%
7	Corporation Bank	12.76%	12.09%	13.61%	15.37%	14.11%	13.00%	12.33%
8	Dena Bank	11.52%	11.09%	12.07%	12.77%	13.41%	11.51%	11.03%
9	Indian Bank	14.14%	12.74%	13.98%	12.71%	13.56%	13.47%	13.08%
10	Indian Overseas Bank	13.27%	11.93%	13.20%	14.78%	14.55%	13.32%	11.85%
11	Oriental Bank of Commerce	12.51%	12.12%	12.98%	12.54%	14.23%	12.69%	12.04%
12	Punjab & Sind Bank	12.88%	11.57%	14.35%	13.10%	12.94%	13.26%	12.91%
13	Punjab National Bank	12.29%	12.96%	14.03%	14.16%	12.42%	12.63%	12.72%
14	Syndicate Bank	11.74%	11.22%	12.68%	12.70%	13.04%	12.24%	12.59%
15	UCO Bank	11.56%	10.09%	11.93%	13.21%	13.71%	12.35%	14.22%
16	Union Bank of India	12.80%	12.51%	13.27%	12.51%	12.95%	11.85%	11.45%
17	United Bank of India	12.02%	11.24%	13.28%	12.80%	13.05%	12.69%	11.66%
18	Vijaya Bank	11.21%	11.22%	13.15%	12.50%	13.88%	13.06%	11.32%
19	State Bank of India (SBI)	12.34%	13.54%	14.25%	13.39%	11.98%	13.86%	12.92%
20	State Bank of Bikaner & Jaipur	12.89%	13.50%	14.52%	13.30%	11.68%	13.76%	12.16%
21	State Bank of Hyderabad	12.51%	12.35%	11.53%	14.90%	14.25%	13.56%	12.36%
22	State Bank of Indore	11.77%	11.31%	13.46%	13.53%	0.00%	0.00%	0.00%
23	State Bank of Mysore	11.47%	12.34%	12.99%	12.42%	13.76%	12.55%	11.79%
24	State Bank of Patiala	12.38%	12.50%	12.60%	13.26%	13.41%	12.30%	11.12%
25	State Bank of Travancore	11.68%	12.68%	14.03%	13.74%	12.54%	13.55%	11.70%
26	IDBI Bank Ltd.	13.73%	11.95%	11.57%	11.31%	13.64%	14.58%	13.13%

(Source:IBA)

S.no	NATIONALISED BANKS	Composite Risk Index						
		2007	2008	2009	2010	2011	2012	2013
1	Allahabad Bank	4.04	2.69	2.30	2.06	2.94	2.78	5.31
2	Andhra Bank	0.36	0.32	0.43	0.42	1.09	1.92	3.10
3	Bank of Baroda	4.50	3.31	2.46	2.70	3.18	4.12	5.23
4	Bank of India	4.97	3.87	3.38	3.15	5.11	3.21	1.92
5	Bank of Maharashtra	2.50	1.66	1.45	2.99	2.42	1.01	0.52
6	Central Bank of India	4.67	4.53	4.60	3.29	3.42	0.90	3.89
7	Corporation Bank	1.18	0.79	0.71	0.79	1.47	2.11	2.36
8	Dena Bank	3.36	1.39	1.68	1.85	2.12	1.27	1.38
9	Indian Bank	0.82	0.60	0.47	0.57	1.46	3.10	4.41
10	Indian Overseas Bank	2.30	2.44	4.54	3.90	5.04	4.97	5.41
11	Oriental Bank of Commerce	1.88	3.57	2.41	3.28	3.80	5.45	5.25
12	Punjab & Sind Bank	0.60	0.40	0.39	0.45	0.83	1.21	1.74
13	Punjab National Bank	5.18	4.51	1.40	4.31	4.92	1.13	(0.13)
14	Syndicate Bank	3.61	4.02	3.39	4.25	4.16	3.06	1.77
15	UCO Bank	3.83	4.45	4.11	4.26	5.28	5.41	5.37
16	Union Bank of India	5.02	0.79	1.75	4.26	5.31	4.80	5.61
17	United Bank of India	3.05	2.03	2.86	3.52	3.04	2.73	3.56
18	Vijaya Bank	1.19	1.16	1.56	2.60	2.96	2.49	1.37
19	State Bank of India (SBI)	(2.25)	(2.20)	(2.18)	(2.14)	(2.15)	(2.23)	(2.26)
20	State Bank of Bikaner & Jaipur	1.95	1.35	1.34	1.12	1.24	2.33	2.13
21	State Bank of Hyderabad	0.47	0.34	0.86	1.20	2.18	2.50	2.44
22	State Bank of Indore	1.34	0.83	1.00	1.11	-	-	-
23	State Bank of Mysore	0.58	0.54	0.66	1.25	1.76	1.81	1.94
24	State Bank of Patiala	2.11	1.40	1.40	2.12	2.43	2.05	1.91
25	State Bank of Travancore	2.40	1.76	0.98	1.49	1.69	2.06	1.51
26	IDBI Bank Ltd.	5.18	4.47	4.46	5.05	5.38	5.01	5.45

S.no	NATIONALISED BANKS	Interest rate %						
		2007	2008	2009	2010	2011	2012	2013
1	Allahabad Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
2	Andhra Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
3	Bank of Baroda	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
4	Bank of India *	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
5	Bank of Maharashtra	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
6	Central Bank of India	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
7	Corporation Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
8	Dena Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
9	Indian Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
10	Indian Overseas Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
11	Oriental Bank of Commerce	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
12	Punjab & Sind Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
13	Punjab National Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
14	Syndicate Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
15	UCO Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
16	Union Bank of India	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
17	United Bank of India	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
18	Vijaya Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
19	State Bank of India (SBI)	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
20	State Bank of Bikaner & Jaipur	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
21	State Bank of Hyderabad	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
22	State Bank of Indore	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
23	State Bank of Mysore	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
24	State Bank of Patiala	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
25	State Bank of Travancore	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
26	IDBI Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%

(Source: RBI)

S.no	NATIONALISED BANKS	Credit Spread %						
		2007	2008	2009	2010	2011	2012	2013
1	Allahabad Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
2	Andhra Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
3	Bank of Baroda	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
4	Bank of India	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
5	Bank of Maharashtra	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
6	Central Bank of India	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
7	Corporation Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
8	Dena Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
9	Indian Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
10	Indian Overseas Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
11	Oriental Bank of Commerce	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
12	Punjab & Sind Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
13	Punjab National Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
14	Syndicate Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
15	UCO Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
16	Union Bank of India	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
17	United Bank of India	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
18	Vijaya Bank	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%
19	State Bank of India (SBI)	3.72%	3.65%	3.82%	3.60%	4.05%	4.62%	3.93%
20	State Bank of Bikaner & Jaipur	3.72%	3.65%	3.82%	3.60%	4.05%	4.62%	3.93%
21	State Bank of Hyderabad	3.72%	3.65%	3.82%	3.60%	4.05%	4.62%	3.93%
22	State Bank of Indore	3.72%	3.65%	3.82%	3.60%	4.05%	4.62%	3.93%
23	State Bank of Mysore	3.72%	3.65%	3.82%	3.60%	4.05%	4.62%	3.93%
24	State Bank of Patiala	3.72%	3.65%	3.82%	3.60%	4.05%	4.62%	3.93%
25	State Bank of Travancore	3.72%	3.65%	3.82%	3.60%	4.05%	4.62%	3.93%
26	IDBI Bank Ltd.	3.99%	3.67%	4.01%	3.83%	4.28%	4.10%	3.76%

(Source: RBI)

S.No.	Pvt Banks	Net Loss/Total Assets						
		2007	2008	2009	2010	2011	2012	2013
1	City Union Bank Ltd.	0.01	0.01	0.00	0.00	0.00	0.00	0.00
2	ING Vysya Bank Ltd.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	SBI Commercial & International Bank Ltd.	0.02	0.01	0.01	0.00	0.00	-	-
4	The Bank of Rajasthan Ltd.	0.01	0.01	0.01	0.01	-	-	-
4	The Catholic Syrian Bank Ltd.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
5	The Dhanalakshmi Bank Ltd.	0.02	0.01	0.01	0.00	0.00	0.00	0.01
6	The Federal Bank Ltd.	0.02	0.01	0.01	0.02	0.02	0.02	0.02
7	The Jammu & Kashmir Bank Ltd.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
8	The Karnataka Bank Ltd.	0.02	0.01	0.01	0.01	0.01	0.01	0.01
9	The Karur Vysya Bank Ltd.	0.02	0.01	0.01	0.01	0.01	0.01	0.00
10	The Lakshmi Vilas Bank Ltd.	0.01	0.01	0.01	0.01	0.01	0.01	0.01
11	Nainital Bank Ltd.	0.01	0.01	0.01	0.01	0.01	0.01	0.02
12	The Ratnakar Bank Ltd.	0.02	0.02	0.01	0.01	0.00	0.00	0.00
13	The South Indian Bank Ltd.	0.02	0.01	0.01	0.01	0.01	0.00	0.00
14	Axis Bank Ltd.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Development Credit Bank Ltd.	0.02	0.00	0.03	0.03	0.03	0.02	0.01
16	HDFC Bank Ltd.	0.00	0.00	0.01	0.01	0.01	0.00	0.00
17	ICICI Bank Ltd.	0.01	0.01	0.01	0.02	0.02	0.02	0.01
18	Indusind Bank Ltd.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Kotak Mahindra Bank Ltd.	0.00	0.01	0.01	0.01	0.01	0.01	0.01
20	YES Bank	-	0.00	0.00	0.00	0.00	0.00	0.00

(Source: IBA)

S.No.	Pvt Banks	Credit Volume/Total Assets						
		2007	2008	2009	2010	2011	2012	2013
1	City Union Bank Ltd.	0.62	0.62	0.61	0.59	0.63	0.66	0.66
2	ING Vysya Bank Ltd.	0.62	0.57	0.53	0.55	0.60	0.61	0.58
3	SBI Commercial & International Bank Ltd.	0.49	0.54	0.43	0.32	0.41	-	-
4	The Bank of Rajasthan Ltd.	0.47	0.47	0.45	0.48	-	-	-
4	The Catholic Syrian Bank Ltd.	0.57	0.56	0.52	0.58	0.67	0.64	0.65
5	The Dhanalakshmi Bank Ltd.	0.53	0.52	0.57	0.62	0.64	0.60	0.56
6	The Federal Bank Ltd.	0.59	0.58	0.58	0.62	0.62	0.62	0.62
7	The Jammu & Kashmir Bank Ltd.	0.60	0.58	0.56	0.54	0.52	0.55	0.55
8	The Karnataka Bank Ltd.	0.59	0.56	0.52	0.53	0.55	0.57	0.61
9	The Karur Vysya Bank Ltd.	0.64	0.65	0.61	0.61	0.63	0.64	0.63
10	The Lakshmi Vilas Bank Ltd.	0.62	0.59	0.63	0.60	0.61	0.63	0.66
11	Nainital Bank Ltd.	0.47	0.48	0.46	0.45	0.51	0.48	0.50
12	The Ratnakar Bank Ltd.	0.46	0.40	0.47	0.56	0.59	0.57	0.49
13	The South Indian Bank Ltd.	0.58	0.61	0.58	0.62	0.62	0.68	0.64
14	Axis Bank Ltd.	0.50	0.54	0.55	0.58	0.59	0.59	0.58
15	Development Credit Bank Ltd.	0.51	0.54	0.55	0.56	0.58	0.61	0.58
16	HDFC Bank Ltd.	0.51	0.48	0.54	0.57	0.58	0.58	0.60
17	ICICI Bank Ltd.	0.57	0.56	0.58	0.50	0.53	0.52	0.54
18	Indusind Bank Ltd.	0.53	0.55	0.57	0.58	0.57	0.61	0.60
19	Kotak Mahindra Bank Ltd.	0.55	0.55	0.58	0.55	0.58	0.60	0.58
20	YES Bank	0.57	0.56	0.54	0.61	0.58	0.52	0.47

(Source: IBA)

S.No	Pvt Banks	Capital Adequacy - Basel II %						
		2007	2008	2009	2010	2011	2012	2013
1	City Union Bank Ltd.	12.58%	12.48%	12.69%	13.46%	12.75%	12.57%	13.98%
2	ING Vysya Bank Ltd.	10.56%	10.20%	11.65%	14.91%	12.94%	14.00%	13.24%
3	SBI Commercial & International Bank Ltd.	20.93%	25.06%	21.24%	27.31%	28.16%	0.00%	0.00%
4	The Bank of Rajasthan Ltd.	11.32%	11.87%	11.50%	7.52%	0.00%	0.00%	0.00%
4	The Catholic Syrian Bank Ltd.	9.58%	10.87%	12.29%	10.82%	11.22%	11.08%	12.29%
5	The Dhanalakshmi Bank Ltd.	9.77%	9.21%	15.38%	12.99%	11.80%	9.49%	11.06%
6	The Federal Bank Ltd.	13.43%	22.46%	20.22%	18.36%	16.79%	16.64%	14.73%
7	The Jammu & Kashmir Bank Ltd.	13.24%	12.80%	14.48%	15.89%	13.72%	13.36%	12.83%
8	The Karnataka Bank Ltd.	11.03%	12.17%	13.48%	12.37%	13.33%	12.84%	13.22%
9	The Karur Vysya Bank Ltd.	14.51%	12.58%	14.92%	14.49%	14.41%	14.33%	14.41%
10	The Lakshmi Vilas Bank Ltd.	12.43%	12.73%	10.29%	14.82%	13.19%	13.10%	12.32%
11	Nainital Bank Ltd.	12.89%	12.32%	13.10%	15.68%	16.90%	15.09%	14.43%
12	The Ratnakar Bank Ltd.	34.34%	49.15%	42.30%	34.07%	56.41%	23.20%	17.11%
13	The South Indian Bank Ltd.	11.08%	13.80%	14.76%	15.39%	14.01%	14.00%	13.91%
14	Axis Bank Ltd.	11.57%	13.73%	13.69%	15.80%	12.65%	13.66%	17.00%
15	Development Credit Bank Ltd.	11.34%	13.38%	13.30%	14.85%	13.25%	15.41%	13.61%
16	HDFC Bank Ltd.	13.08%	13.60%	15.70%	17.44%	16.22%	16.50%	16.80%
17	ICICI Bank Ltd.	11.69%	14.92%	15.53%	19.41%	19.54%	18.52%	18.74%
18	Indusind Bank Ltd.	12.54%	11.91%	12.55%	15.33%	15.89%	13.85%	15.36%
19	Kotak Mahindra Bank Ltd.	13.46%	18.65%	20.01%	18.35%	0.00%	0.00%	0.00%
20	YES Bank	13.60%	13.60%	16.60%	20.60%	0.00%	0.00%	0.00%

(Source: IBA)

S.No	Pvt Banks	Interest rate %						
		2007	2008	2009	2010	2011	2012	2013
1	City Union Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
2	ING Vysya Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
3	SBI Commercial & International Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
4	The Bank of Rajasthan Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
4	The Catholic Syrian Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
5	The Dhanalakshmi Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
6	The Federal Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
7	The Jammu & Kashmir Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
8	The Karnataka Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
9	The Karur Vysya Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
10	The Lakshmi Vilas Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
11	Nainital Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
12	The Ratnakar Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
13	The South Indian Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
14	Axis Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
15	Development Credit Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
16	HDFC Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
17	ICICI Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
18	Indusind Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
19	Kotak Mahindra Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
20	YES Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%

(Source: RBI)

S.No.	Pvt Banks	Credit Spread%						
		2007	2008	2009	2010	2011	2012	2013
1	City Union Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
2	ING Vysya Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
3	SBI Commercial & International Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
4	The Bank of Rajasthan Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
4	The Catholic Syrian Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
5	The Dhanalakshmi Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
6	The Federal Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
7	The Jammu & Kashmir Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
8	The Karnataka Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
9	The Karur Vysya Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
10	The Lakshmi Vilas Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
11	Nainital Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
12	The Ratnakar Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
13	The South Indian Bank Ltd.	4.37%	4.88%	5.23%	5.06%	5.11%	4.88%	4.88%
14	Axis Bank Ltd.	4.37%	4.88%	5.25%	5.14%	5.16%	5.32%	5.57%
15	Development Credit Bank Ltd.	4.37%	4.88%	5.25%	5.14%	5.16%	5.32%	5.57%
16	HDFC Bank Ltd.	4.37%	4.88%	5.25%	5.14%	5.16%	5.32%	5.57%
17	ICICI Bank Ltd.	4.37%	4.88%	5.25%	5.14%	5.16%	5.32%	5.57%
18	Indusind Bank Ltd.	4.37%	4.88%	5.25%	5.14%	5.16%	5.32%	5.57%
19	Kotak Mahindra Bank Ltd.	4.37%	4.88%	5.25%	5.14%	5.16%	5.32%	5.57%
20	YES Bank	4.37%	4.88%	5.25%	5.14%	5.16%	5.32%	5.57%

(Source: RBI)

S.No.	Pvt Banks	Composite Risk Index						
		2007	2008	2009	2010	2011	2012	2013
1	City Union Bank Ltd.	0.65	0.48	0.50	0.38	0.72	0.90	1.27
2	ING Vysya Bank Ltd.	2.14	1.14	1.73	2.20	1.40	0.87	0.10
3	SBI Commercial & International Bank Ltd.	0.01	-	0.00	0.00	0.01	-	-
4	The Bank of Rajasthan Ltd.	0.24	0.33	0.46	1.33	-	-	-
4	The Catholic Syrian Bank Ltd.	1.09	0.58	0.72	0.69	1.66	1.45	1.31
5	The Dhanalakshmi Bank Ltd.	0.57	0.20	0.23	0.40	0.40	0.97	3.42
6	The Federal Bank Ltd.	1.20	0.46	0.56	1.28	2.81	3.29	3.14
7	The Jammu & Kashmir Bank Ltd.	3.31	2.20	2.36	0.62	0.79	0.81	0.69
8	The Karnataka Bank Ltd.	2.18	1.17	0.97	1.88	3.46	1.76	3.57
9	The Karur Vysya Bank Ltd.	0.28	0.18	0.21	0.29	0.20	1.35	1.45
10	The Lakshmi Vilas Bank Ltd.	1.04	0.65	0.53	2.52	1.10	3.03	3.57
11	Nainital Bank Ltd.	-	-	-	-	-	-	-
12	The Ratnakar Bank Ltd.	0.17	0.06	0.04	0.11	0.10	0.13	0.08
13	The South Indian Bank Ltd.	1.45	0.36	1.12	0.60	0.90	1.31	3.32
14	Axis Bank Ltd.	3.62	2.60	2.63	3.41	2.98	1.20	(0.11)
15	Development Credit Bank Ltd.	0.79	0.29	1.06	1.06	0.61	0.48	0.60
16	HDFC Bank Ltd.	3.40	2.95	3.30	3.33	3.48	2.96	2.73
17	ICICI Bank Ltd.	(2.03)	(1.99)	(2.00)	(2.01)	(2.02)	(2.09)	(2.13)
18	Indusind Bank Ltd.	3.60	2.90	1.50	1.00	1.10	1.65	1.87
19	Kotak Mahindra Bank Ltd.	3.50	2.81	3.01	3.20	3.03	3.56	3.68
20	YES Bank	-	0.09	0.33	0.12	0.13	0.27	0.08

S. No	Foreign Banks	Net Loss/Total Assets						
		2007	2008	2009	2010	2011	2012	2013
1	ABN Amro Bank N.V.	0.00	0.00	0.01	0.02	0.02	0.01	0.01
2	Abu Dhabi Commercial Bank Limited	0.05	0.03	0.02	0.02	0.01	0.00	0.00
3	Antwerp Diamond Bank N.V.	-	-	-	0.05	0.09	0.07	0.06
4	Bank of America NA	0.00	0.00	0.00	0.00	0.00	0.00	-
5	Bank of Bahrain and Kuwait B.S.C.	0.08	0.04	0.02	0.00	0.01	0.01	0.04
6	Barclays Bank PLC	-	0.00	0.03	0.05	0.03	0.02	0.02
7	BNP Paribas	0.01	0.00	0.00	0.01	0.00	0.00	0.00
8	Citibank N.A..	0.00	0.00	0.01	0.01	0.00	0.00	0.01
9	Deutsche Bank AG	0.00	0.00	0.01	0.01	0.01	0.00	0.00
10	JPMorgan Chase Bank	0.01	0.01	0.00	0.01	0.00	0.00	0.00
11	MIZUHO Corporate Bank Ltd.	0.01	0.01	0.00	0.00	0.00	0.00	0.01
12	Shinhan Bank	-	-	-	-	-	-	-
13	Societe Generale	0.00	-	-	0.00	0.00	0.00	0.00
14	Standard Chartered Bank	0.01	0.01	0.01	0.01	0.01	0.02	0.03
15	State Bank of Mauritius Ltd.	-	-	-	0.00	0.00	0.01	0.02
16	The Bank of Nova Scotia	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	The Development Bank of Singapore Ltd.	-	0.00	0.00	0.00	0.00	0.00	0.01
18	HSBC	0.01	0.01	0.01	0.01	0.01	0.00	0.01

(Source: IBA)

S. No	Foreign Banks	Credit Volume/Total Asset						
		2007	2008	2009	2010	2011	2012	2013
1	ABN Amro Bank N.V.	0.64	0.56	0.52	0.56	0.48	0.45	0.57
2	Abu Dhabi Commercial Bank Limited	0.26	0.28	0.21	0.23	0.19	0.24	0.55
3	Antwerp Diamond Bank N.V.	0.60	0.61	0.72	0.63	0.66	0.78	0.84
4	Bank of America NA	0.46	0.43	0.34	0.27	0.48	0.38	0.63
5	Bank of Bahrain and Kuwait B.S.C.	0.36	0.53	0.47	0.56	0.51	0.54	0.93
6	Barclays Bank PLC	0.06	0.59	0.51	0.36	0.35	0.38	0.36
7	BNP Paribas	0.56	0.50	0.38	0.40	0.51	0.53	0.72
8	Citibank N.A..	0.50	0.46	0.38	0.38	0.36	0.37	0.47
9	Deutsche Bank AG	0.28	0.36	0.35	0.46	0.50	0.44	0.78
10	JPMorgan Chase Bank	0.13	0.13	0.07	0.08	0.23	0.22	0.36
11	MIZUHO Corporate Bank Ltd.	0.69	0.70	0.51	0.50	0.64	0.67	1.40
12	Shinhan Bank	0.27	0.44	0.44	0.45	0.44	0.52	0.86
13	Societe Generale	0.13	0.12	0.17	0.18	0.23	0.34	0.59
14	Standard Chartered Bank	0.51	0.45	0.38	0.46	0.46	0.46	0.58
15	State Bank of Mauritius Ltd.	0.26	0.47	0.48	0.66	0.52	0.57	0.71
16	The Bank of Nova Scotia	0.67	0.68	0.69	0.67	0.67	0.60	0.82
17	The Development Bank of Singapore Ltd.	0.20	0.26	0.22	0.25	0.32	0.35	0.58
18	HSBC	0.42	0.39	0.29	0.26	0.30	0.33	0.39

(Source: IBA)

S.No	Foreign Banks	Capital Adequacy ratio Basel II %						
		2007	2008	2009	2010	2011	2012	2013
1	ABN Amro Bank N.V.	11.34%	10.20%	12.66%	12.50%	11.65%	12.46%	14.50%
2	Abu Dhabi Commercial Bank Limited	27.66%	55.73%	47.57%	47.57%	45.25%	80.88%	66.82%
3	Antwerp Diamond Bank N.V.	46.48%	41.91%	26.79%	26.79%	33.73%	25.60%	32.72%
4	Bank of America NA	13.33%	12.14%	12.73%	12.73%	14.51%	17.59%	18.40%
5	Bank of Bahrain and Kuwait B.S.C.	22.00%	24.56%	25.52%	25.52%	23.28%	38.60%	34.70%
6	Barclays Bank PLC	13.68%	21.11%	17.07%	17.07%	14.89%	14.99%	19.09%
7	BNP Paribas	10.76%	11.79%	12.37%	12.37%	11.92%	14.70%	13.82%
8	Citibank N.A..	11.06%	12.13%	13.23%	13.23%	17.31%	16.03%	15.90%
9	Deutsche Bank AG	10.62%	15.44%	15.25%	15.25%	15.03%	14.12%	14.08%
10	JPMorgan Chase Bank	16.14%	17.72%	15.90%	15.90%	22.99%	23.96%	26.89%
11	MIZUHO Corporate Bank Ltd.	34.40%	27.80%	37.58%	37.58%	87.25%	60.27%	48.11%
12	Shinhan Bank	89.27%	62.62%	36.80%	36.80%	50.73%	40.25%	34.48%
13	Societe Generale	31.82%	28.00%	22.47%	22.47%	16.23%	36.61%	29.35%
14	Standard Chartered Bank	10.44%	11.56%	11.56%	11.56%	11.88%	11.05%	13.00%
15	State Bank of Mauritius Ltd.	38.99%	41.13%	38.01%	38.01%	45.66%	39.02%	55.02%
16	The Bank of Nova Scotia	23.26%	20.15%	13.38%	13.38%	18.59%	24.00%	21.40%
17	The Development Bank of Singapore Ltd.	29.24%	21.25%	15.70%	16.96%	14.98%	14.38%	12.99%
18	HSBC.	11.06%	15.31%	15.31%	15.31%	18.03%	16.04%	17.10%

(Source: IBA)

S. No	Foreign Banks	Interest rate %						
		2007	2008	2009	2010	2011	2012	2013
1	ABN Amro Bank N.V.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
2	Abu Dhabi Commercial Bank Limited	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
3	Antwerp Diamond Bank N.V.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
4	Bank of America NA	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
5	Bank of Bahrain and Kuwait B.S.C.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
6	Barclays Bank PLC	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
7	BNP Paribas	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
8	Citibank N.A..	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
9	Deutsche Bank AG	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
10	JPMorgan Chase Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
11	MIZUHO Corporate Bank Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
12	Shinhan Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
13	Societe Generale	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
14	Standard Chartered Bank	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
15	State Bank of Mauritius Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
16	The Bank of Nova Scotia	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
17	The Development Bank of Singapore Ltd.	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%
18	HSBC	15.75%	16.75%	15.75%	9.50%	10.75%	10.25%	10.25%

(Source: RBI)

S. No	Foreign Banks	Credit Spread %						
		2007	2008	2009	2010	2011	2012	2013
1	ABN Amro Bank N.V.	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
2	Abu Dhabi Commercial Bank Limited	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
3	Antwerp Diamond Bank N.V.	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
4	Bank of America NA	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
5	Bank of Bahrain and Kuwait B.S.C.	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
6	Barclays Bank PLC	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
7	BNP Paribas	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
8	Citibank N.A..	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
9	Deutsche Bank AG	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
10	JPMorgan Chase Bank	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
11	MIZUHO Corporate Bank Ltd.	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
12	Shinhan Bank	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
13	Societe Generale	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
14	Standard Chartered Bank	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
15	State Bank of Mauritius Ltd.	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
16	The Bank of Nova Scotia	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
17	The Development Bank of Singapore Ltd.	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%
18	HSBC	5.75%	6.53%	8.10%	7.17%	5.64%	5.74%	5.50%

(Source: RBI)

S. No	Foreign Banks	Composite Risk Index						
		2007	2008	2009	2010	2011	2012	2013
1	ABN Amro Bank N.V.	0.86	(0.73)	(0.66)	0.06	(0.68)	1.69	0.60
2	Abu Dhabi Commercial Bank Limited	0.05	-	-	0.00	0.18	-	-
3	Antwerp Diamond Bank N.V.	-	-	-	0.92	0.66	0.52	-
4	Bank of America NA	-	-	-	-	-	-	-
5	Bank of Bahrain and Kuwait B.S.C.	0.01	0.13	0.00	0.10	0.07	0.47	0.35
6	Barclays Bank PLC	-	1.04	(1.72)	(1.78)	1.18	0.78	2.03
7	BNP Paribas	-	-	0.45	-	-	0.12	-
8	Citibank N.A..	(1.99)	(2.07)	(2.10)	(2.24)	(2.06)	(2.16)	(2.08)
9	Deutsche Bank AG	0.02	0.49	1.13	1.41	1.23	0.33	0.46
10	JPMorgan Chase Bank	0.70	0.72	0.12	0.40	-	-	-
11	MIZUHO Corporate Bank Ltd.	-	-	-	-	-	-	1.45
12	Shinhan Bank	-	-	-	-	-	-	-
13	Societe Generale	-	-	-	-	-	-	-
14	Standard Chartered Bank	(1.98)	(2.10)	(1.85)	(2.32)	0.78	(2.19)	(2.05)
15	State Bank of Mauritius Ltd.	-	-	-	0.23	0.46	0.20	0.24
16	The Bank of Nova Scotia	-	-	-	-	-	-	0.57
17	The Development Bank of Singapore Ltd.	-	0.03	0.20	0.57	0.86	1.83	(0.04)
18	HSBC	1.22	(0.76)	(0.96)	(2.30)	(1.85)	(1.72)	1.84

About the Author

Dr. Poonam Bisht is double master in commerce M.com (University of Mumbai) and finance holding MS (Finance) with CFA Charter from ICFAI. She was conferred a Ph.D degree in Economics from University of Mumbai in 2012 for her thesis tittle: “Basel II norms and Indian Banking Sector: Some Issues”. She has over seven year experience in financial sector from some of leading Corporates.