

## ***The Impact of Capital Adequacy under BASEL-II on Indian Private Sector Banks***

**Ms. Mamta Shah  
Dr. Mahua Dutta**

### Abstract

The Indian Banking system is witnessing a significant change over the past few decades. Several new institutions have sprung up and many of them have also failed due to global crisis or due to one or the other reason. For the efficient and smooth functioning of these institutions, proper governance norms for these institutions are urgently called for. Capital Adequacy norms given by BASEL Accord are one of the most significant developments for managing risk in banks. The present paper is an attempt to analyze the Capital adequacy norms and their implication in Indian private Banking Industry. The study is confined to ten private sector banks and their capital adequacy ratio for the last ten years for interpretation for the purpose of analysis. Regression analysis is used for the purpose of statistical calculation. The analysis of the statistical data pointed out to the conclusion that maintaining higher capital adequacy ratio by private sector banks was a not only a contributor towards achievement of higher efficiency, but was also a significant role player in risk aversion for these banks.

### Introduction

Amidst globalization, Banking System in India has attained vital importance. Day by day there have been increasing banking complexities in banking transactions, capital requirements, liquidity, credit and risks associated with them. The Basel Committee on Banking Supervision provides a forum for regular cooperation on the issues relating to banking supervisory matters. Its objective is to enhance understanding of key supervisory issues and improve the quality of banking supervision worldwide. It seeks to do so by exchanging information on national supervisory issues, approaches and techniques, with a view to promoting common understanding. The Committee's Secretariat is located at the Bank for International Settlements (BIS) in Basel, Switzerland. The committee drafted a first document to set up an international 'minimum' amount of capital that banks should hold. This minimum is a percentage of the total capital of a bank, which is also called the minimum risk-based capital adequacy. In 1988, the Basel I Capital Accord (agreement) was created. In 1988, BCBS (Basel committee for Banking Supervision) introduced capital measurement system called Basel capital accord, also called as Basel 1. Basel I defined capital based on two tiers:

**Tier 1 (Core Capital):** Tier 1 capital included stock issues (or share holders equity) and declared reserves, such as loan loss reserves set aside to cushion future losses or for smoothing out income variations. It focused almost entirely on credit risk. **Tier 2 (Supplementary Capital):** Tier 2 capital included all other capital such as gains on investment assets, long-term debt with maturity greater than five years and hidden reserves (i.e. excess allowance for losses on loans and leases). However, short-term unsecured debts (or debts without guarantees), were not included in the definition of capital.

BASEL-1 defined capital structure and risk weights for banks. The minimum capital requirement was fixed at 8% of risk weighted assets (RWA). Although BASEL-1 was the first international instrument assessing the importance of

Ms. Mamta Shah  
Faculty  
Guru Nanak Institute of Management  
(GNIM), New Delhi

Dr. Mahua Dutta  
Faculty  
Institute of Management Studies  
(IMS), Noida

risk in relation to capital, it was a milestone in the finance and banking history. It must however be remembered that it still suffers many limitations. Firstly, fixation of 8% capital ratio to protect banks from credit risk was far from adequate. Similarly no recognition was given to risk associated with maturity of credit, risk associated with different currencies and macroeconomics risk. Due to these limitations, Basel Committee decided to propose a more risk-sensitive framework in June 1999 which is known as BASEL-II accord.

**BASEL-II :** The objective of BASEL-II was to promote safety and soundness in the financial system; enhance competitive equality; constitute a more comprehensive approach to addressing risks; and to develop approaches to capital adequacy that are appropriately sensitive to the degree of risk involved in a banks' positions and activities. The Basel II capital accord is a three-pillared framework as detailed below:

**Minimum Capital Requirement:** Just like in Basel I requirements, a minimum capital requirement has to be maintained, based on certain calculations.

**The Supervisory Review Process:** The Central Bank (RBI) of the country has to ensure that each bank has an adequate capital to adopt better management techniques.

**Market Discipline:** There should be a mandatory disclosure on risk management practices with transparency.

The introduction of Basel-II in India since 1992-93, consequent upon the recommendations of the Committee on the Financial System (1991) has ushered in a sea change as regards the regulatory framework of the financial sector is concerned. Although the regulatory structure has gradually been tightened over the years with the avowed objective of moving towards international best practices, relatively little attention has been paid towards assessing the effectiveness of regulations. The objective of capital regulation has been to reduce bank failures and promote banking stability. Another objective has been to reduce losses to depositors and the deposit insurer when the bank fails. The widespread criticism in respect of the old Accord seems to have led the Basel Committee

on Banking Supervision (BCBS) to propose the new Consultative Paper on Capital Adequacy Framework in June 1999 which aims to further strengthen the soundness of the financial system. The primary objectives of the new Accord are (a) the promotion of safety and soundness of the financial system, (b) the enhancement of competitive quality and (c) the constitution of a more comprehensive approach to addressing risks. These objectives are sought to be attained via three cardinal principles: (a) minimum capital requirements, (b) supervisory review of capital adequacy and (c) effective use of market discipline.

#### **Indian Scenario for Implementation of Capital Adequacy Norms**

The process of implementing Capital Adequacy norms as per Basel II accord in India was planned to be carried out in phases. Phase I was for foreign banks operating in India and Indian banks having operational presence outside India with effect from March 31,2008. In phase II, all other scheduled commercial banks (except Local Area Banks and RRBs) were adhere to Basel II guidelines by March 31, 2009.. The minimum capital to risk-weighted asset ratio (CRAR) in India was placed at 9%, one percentage point above the Basel II requirement. However, All the banks have their Capital to Risk Weighted Assets Ratio (CRAR) above the stipulated requirement of Basel guidelines (8%) and RBI guidelines (9%). As per Basel II norms, Indian banks should maintain tier I capital of at least 6%. Failure to adhere to Basel II norms can attract RBI action including restricting lending and investment activities. Since fund raising has been difficult in the recent turbulent times, the financial circles in India wondered whether the full implementation of Basel II norms would be deferred. However, the implementation is unlikely to be deferred with the Government taking steps to recapitalize some public sector banks. The Government announced 1st round of recapitalization for 3 banks, viz., Central Bank, UCO Bank and Vijaya Bank.

Of the hurdles which were faced by the country for implementation of BASEL-II, the first and foremost was the prevalence of poor risk management and measurement that called for an

urgent need to improve the same. This could give impetus to the use of internal rating system by the international banks. The Second requirement was capital infusion for risk capital requirement by the banks. Also, Basel II gives some scope to extend the rating of issues to issuers, this would only be an approximation and it would be necessary for the system to move to ratings of issuers. Encouraging ratings of issuers would be a challenge.

### **Objective of the Study**

The primary objective of the present study is to investigate the relationship between changes in attitudes to risk and the level of capital in the banking sector, and, in particular, those of private sector banks in India. The aim of present study is to validate relationship between capital adequacy of banks during the period and its impact on bank's efficiency. The other major key objective is to analyze the status of capital adequacy of Indian Private Sector banks.

### **Brief Review of Literature**

A thorough review of the literatures related to the topic shows that few studies have been conducted in this area. Athanasoglou (2005) examined the effect of bank specific, industry specific and macroeconomic determinants on bank profitability. The coefficient of capital variable was positive and highly significant, reflecting the sound financial condition of Greek banks. Ngo (2006) investigated the relationship between bank capital and profitability. The results showed no significant relationship between capital and profitability. Orgler and Taggart (1983) developed a market model for optimal capital structure for banks. In their model, lower capital ratios provide banks with more favorable tax treatment. Shrieves and Dahl (1992) pointed out that managerial risk aversion might influence banks' capital structure. Most individuals are thought to be risk-averse, and there is no good reason for thinking that bank managers are more risk averse than the average shareholder. Several studies-Peltzman (1970), Mingo (1975) and Kimball and James (1983)-examined the effectiveness of capital regulations in the period

before numeric standards were adopted in 1981. These results, though mixed, tend to indicate that regulators were ineffective in influencing banks' capital ratios. A problem with interpreting these studies results from the fact that the regulatory requirements for any given bank organization were set on a case-by-case basis and the factors used to evaluate capital adequacy were likely to be highly correlated with those used by the market. The theoretical case for higher capital standards leading to greater risk assumption and possibly, higher probability of failure is far from clear cut. Koehn and Santomero (1980) and Kim and Santomero (1988) showed that an increase in the required equity-to-total asset ratio by regulators might induce an increase or decrease in the portfolio risk undertaken by the bank. In a pair of studies, Furlong and Keeley (1989) and Keeley and Furlong (1990) argued that the framework used in prior studies took the expected cost of deposits as a constant that is independent of the bank's capital position or risk.

### **Research Methodology**

The Study would undertake an exploration of the inter-linkages between capital adequacy and risk for Indian private sector banks with a view to examine the implications of changes in the regulatory framework (more specifically, those aspects of this framework impinging on capital adequacy) on the banking system. Data for the private sector banks is taken into consideration and implementation of Basel-II norms of capital adequacy are studied for the purpose of research. The interpretation of the data is based on quantitative analysis.

### **Source of Data Collection**

Data is secondary in nature and has been collected from various reports of private banks published by Reserve bank of India and Capital Line. For, this study, ten private banks named Axis, HDFC IOB, Kotak Mahindra, Std. Chartered, Barclays, Dhanlaxmi, Federal and catholic are taken.

**Time Period** - Data from the year March 1997 to March 2011 is used for the purpose of analysis.

**Calculation.** As we know that BASE –II norms prescribed Capital Adequacy ratio of 8% the banks having capital ratio more than 8% are assigned value as “1” and those with less than 8% are assigned value as “0”. Mean of capital adequacy ratio for the past ten years of all the banks is considered for calculation purpose as shown in **Table I**.

### Data Analysis and Interpretations

Data of Indian private sector banks is analyzed using regression Analysis. Regression analysis will estimate the value of variable from a known value of other variable to which it is related. In this model one dependent variable which is capital adequacy ratio and other independent variable BASEL NORMS is taken into consideration. The dependent variable in this regression analysis is Capital Adequacy ratio of banks. Ten Private sector banks are taken into consideration for analysis. Mean of Capital Adequacy ratio of all banks for the last 10 years is taken for regression statistics.

### Regression Equation

$$Y=a+bX$$

Where Y =Intercept(a) OR The point where the regression line crosses the Y axis, OR the value of Y when X=0

Slope(b) = The change in variable Y(the dependent variable) with a unit change in X(the independent variable)

**Table II** shows the summarized results of analysis using mean of all banks as dependent variable. Calculating results of regression by excel value of-

$$R \text{ square} = 0.718484$$

R- Square of the regression is the fraction of the variation in dependent variable which is accounted for independent variable. The R-Square .718484 indicates that 71.8% of the banks are significantly influenced by their capital adequacy ratio.

**Table III** summaries results of regression analysis by taking year wise mean of the data as dependent variable. The regression results shows value of -

$$R \text{ square} = 0.555853$$

The R-square .555853 shows that 55.58% times the capital adequacy ratio has significantly influenced the decision making of the banks.

**Table IV** includes implementation of BASEL-II norms for the analysis of results. As we know that BASE –II norms prescribed Capital Adequacy ratio of 8%. So the banks having capital ratio more than 8% are assigned value as “1” and those with less than 8% are assigned value as “0”.

$$R \text{ square} = .600325$$

The value of R-square is .600325 means 60.032 banks are following the BASEL -2 norms. 9Table V)

The P-Value states the confidence that one can have in the estimated values being correct, given the constraints of the regression analysis. The regression methods perform this statistical test to compute probability, called a p-value, for the coefficients associated with each independent variable. The null hypothesis for this statistical test states that a coefficient is not significantly different from zero. Small p-values reflect small probabilities, and suggest that the coefficient is, indeed, important for model with a value that is significantly different from zero (the coefficient is NOT zero). Like in this analysis a coefficient with a p value of 0.05, is statistically significant at the 95% confidence level; the associated variable is an effective predictor. Variables with coefficients near zero do not help predict or model the dependent variable; they are almost always removed from the regression equation, unless there are strong theoretical reasons to keep them.

Thus results of the analysis have been calculated at 95% confidence level. It indicates in all the cases P-Value is less than .05%. Regression coefficient is positive in all the cases showing that Capital Adequacy is very significant for bank's performance. The value of R2 was significantly greater than zero in all the cases, Which shows that Capital Adequacy does have affect on Banks behavior over and above the influence of bank's own target.

## Conclusion

The Model used in analysis is Regression analysis of data is exploratory which shows that Capital Adequacy does have affect on Banks behavior over and above the influence of bank's own target, Hence our observations have two important implications for BASEL-II norms. Firstly capital adequacy ratio has significant *influence on* bank's decision-making and secondly higher level of capital adequacy helps banks to minimize risk. We can conclude that capital adequacy ratio is one of the key benchmark for judging efficiency of banks. The performance and efficiency of banks can be judged by using Capital Adequacy ratio, Basel –II norms plays very significant role in banks for protecting and safeguarding the interest of investors and customers.

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Table I : Mean of Capital Adequacy Ratio for the Past Ten Years of all the Banks is considered for Calculation

Banks	Mean of capital adequacy of banks. Banks wise
AXIS	11.955333
HDFC	13.239333
ICICI	13.892667
KOTAK MAHINDRA	13.383333
STD CHARTED	6.9133333
BARCLAYS	15.022667
CATHOLIC SYRIAN	7.766
DEUTSCHE BANK	10.76
DHANLAXMI BANK	10.786667
FEDERAL BANK	13.483333
Year	Mean of Capital Adequacy of private sector banks year wise
1997	5.794
1998	5.745
1999	6.455
2000	5.722
2001	11.247
2002	16.467
2003	14.72
2004	12.971
2005	12.746
2006	11.732
2007	14.811
2008	14.302
2009	15.825
2010	14.624
2011	12.593

Table II : Summarised Results of Analysis using mean of all levels as Dependent Variables

YEAR	CAPITAL ADEQUACY RATIO in cr														
	2012/03	2011/03	2010/03	2009/03	2008/03	2007/03	2006/03	2005/03	2004/03	2003/03	2001/03	2000/03	1999/03	1998/03	1997/03
AXIS	13.66	12.65	15.8	13.69	13.73	11.57	11.08	12.66	11.21	10.9	10.65	9	11.37	11.64	9.72
HDFC	15.71	15.32	16.45	15.09	13.6	13.08	11.41	12.16	11.66	11.12	13.93	11.09	12.19	11.86	13.92
ICICI	16.26	17.63	19.14	15.92	13.97	11.69	13.35	11.78	10.36	11.1	11.44	11.57	19.64	11.06	13.48
KOTAK MAHINDRA	16.51	18.73	18.05	19.86	18.65	13.46	11.27	12.8	15.25	25.7	30.47	0	0	0	0
STD CHARTED	0	14.48	14.81	11.56	10.59	10.44	9.93	10.46	10.87	10.56	0	0	0	0	0
BARCLAYS	14.99	14.89	16.99	17.07	21.11	13.68	22.92	20.85	37.16	45.68	0	0	0	0	0
CATHOLIC SYRIAN	11.08	11.22	10.82	0	11.21	9.58	11.26	11.35	11.23	10.58	9.57	6.08	0	2.51	0
DEUTSCHE BANK	15.1	15.12	16.45	15.25	13.58	10.62	12.74	16.22	14.42	17.35	14.55	0	0	0	0
DHANLAXMI BANK	8.79	10.81	12.47	14.44	9.21	9.77	9.75	10.16	13.56	10.45	11.23	9.69	10.02	10.06	11.39
FEDERAL BANK	13.83	15.39	17.27	20.14	22.46	13.43	13.75	11.27	11.48	11.23	10.63	10.29	11.33	10.32	9.43
mean	12.593	14.624	15.825	14.302	14.811	11.732	12.746	12.971	14.72	16.467	11.247	5.772	6.455	5.745	5.794



Table III : Summaries Results of Regression Analysis

SUMMARY OUTPUT		Mean of capital adequacy of all banks							
<b>Regression Statistics</b>									
Multiple F	0.847634								
R Square	0.718484								
Adjusted R Square	0.607373								
Standard Error	6.706821								
Observations	10								
<b>ANOVA</b>									
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>				
Regression	1	1033.212	1033.212	22.96974	0.00136829				
Residual	9	404.833	44.98145						
Total	10	1438.045							
	<i>Coefficient</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>	
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
X Variable	1.63819	0.341811	4.792676	0.000984	0.864959696	2.411421	0.86496	2.411421	

Table IV : Implementation of BASEL II Norms for the Analysis of Results

SUMMARY OUTPUT		year wise of capital adequacy							
<b>Regression Statistics</b>									
Multiple F	0.745556								
R Square	0.555853								
Adjusted R Square	0.521688								
Standard Error	2.685929								
Observations	15								
<b>ANOVA</b>									
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>				
Regression	1	117.3723	117.3723	16.26959	0.00142				
Residual	13	93.7848	7.214215						
Total	14	211.1571							
	<i>Coefficient</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>	
Intercept	6.537362	1.459422	4.47942	0.00062	3.384473	9.69025	3.384473	9.69025	
X Variable	0.647446	0.160515	4.033558	0.00142	0.300675	0.994218	0.300675	0.994218	

Table V : BASEL - 2 Norms

SUMMARY As per Basel norms-II for capital adequat								
<b>Regression Statistics</b>								
Multiple F	0.774806							
R Square	0.600325							
Adjusted R	0.489214							
Standard Error	0.596043							
Observations	10							
<b>ANOVA</b>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	4.802597	4.802597	13.51828	0.006249			
Residual	9	3.197403	0.355267					
Total	10	8						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
X Variable	0.111688	0.030377	3.676721	0.005101	0.04297	0.180406	0.04297	0.180406