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Indian banks and Basel II

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ABSTRACT

Basel II initially published in June 2004, was intended to create an international standard for banking regulators to control how much capital bank need to put aside to guard against the types of financial and operational risks bank faces. Basel II attempted to accomplish this by setting up risk and capital management requirement designed to ensure that a bank has adequate capital for the risk the bank exposes itself to through its lending and investment practices. This paper helps in detailed study about the Basel II and also helps in to find out the relationship between capital adequacy, non performing assets and net profits of some selected private and public sector banks. This paper also explores the effect on Net profit due to change in Capital Adequacy ratio and non Performing Assets.

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Introduction

The Basel Committee on Banking Supervision provides a forum for regular cooperation on banking supervisory matters. It seeks to promote and strengthen supervisory and risk management practices globally. The Basel Committee introduced a Capital Measurement System in 1988, called the Basel Capital System. This system provided for the with a minimum capital standard of 8% by end-1992. In June, 1999, the Basel Committee issued a proposal for a New Capital Adequacy Framework to replace the 1988 Accord. A revised framework was issued on 26 June, 2004.

The Basel II Capital Accord

Primarily, this Accord was drafted to improve risk management and to improve fraud detection. But over the time banking sector witnessed many bank failures. To overcome all these it was argued that Basel II should be designed in a way, to offer protection to bank depositors, by ensuring the reserves kept by banks cover the risks taken by the bank. This is how it offers a new risk-sensitive calculation methodology. It shifts the operational focus of banks from solely a profit-based view to a risk-based view, i.e. banks now have to, by regulatory law, make risk-aversion, risk-mitigation, risk-avoidance and risk transference a core part of their loan approval and profit-generation mechanisms. Banks will be forced to cover a certain percentage (%) of capital to cover market, credit and operational risk.

Basel II is based on three pillars

- Pillar 1: Requires minimum of capital
- Pillar 2: Requires supervisory review process
- Pillar3: Requires quantitative and qualitative disclosure

The First Pillar – Minimum Capital Requirements

Pillar I sets out minimum regulatory capital requirements—the amount of capital banks must hold against risks. It retains Basel I's minimum requirement of 8 percent of capital-to-risk-weighted assets.

The Second Pillar - Supervisory Review Process

Pillar II defines the process for supervisory review of an institution's risk management framework and, ultimately, its capital adequacy. It sets out specific oversight responsibilities for the board and senior management, thus reinforcing principles of internal control and other corporate governance practices established by regulatory bodies in various countries worldwide.

The Third Pillar – Market Discipline

Pillar III aims to bolster market discipline through enhanced disclosure by banks. It “sets out disclosure requirements and recommendations in several areas, including the way a bank calculates its capital adequacy and its risk assessment methods.” The purpose of Pillar 3 — market discipline is to complement the minimum capital requirements (Pillar 1) and the supervisory review process (Pillar 2). The Committee aims to encourage market discipline by developing a set of disclosure requirements which will allow market participants to assess key pieces of information on the scope of application, capital, risk exposures, risk assessment processes, and hence the capital adequacy of the institution.

Basel II Approaches

Basel II approaches are divided into three categories, ranging from a basic approach to an extremely sophisticated one. These divisions are based on three different approaches to the Rating System used in implementing a Basel II solution. Basel II defines a rating system as:

Standardized

This approach is similar to the current Basel I Accord in that it requires fixed risk weightings to be applied to different types of assets. The range of collateral and credit risk mitigation tools that can be utilized to decrease the associated risk of an asset has been expanded to include guarantees and credit derivatives.

Foundation Internal Ratings Based (FIRB)

This approach is one of the approaches based on the Internal Ratings Based Approach (IRB). This approach requires

a financial institution to utilize formulas developed by the Committee to calculate risk weightings in addition to its own assessments.

Advanced Internal Ratings Based (AIRB)

This approach is also based on the Internal Ratings Based Approach (IRB), and it is most sophisticated and complex form. In this approach, a financial institution will be expected to have in place sophisticated models and processes, of its own, which enable it to collect, store and utilize loan loss and probability of default statistics over time in a statistically rigorous manner.

Review of literature

- Michael J Phelan: in his study "PROBABILITY AND STATISTICS APPLIED TO THE PRACTICE OF FINANCIAL RISK MANAGEMENT; The Case of J P Morgan's RiskMetrics" has describes applications of probability and statistics in RiskMetrics™, J P Morgan's methodology for quantifying market risk. The methodology implements an analytical approach to financial risk in trading, arbitrage, and investment based on the statistics of market moves in equities, bonds, currencies and commodities. The public unveiling of RiskMetrics™ in October of 1994 attracted widespread interest among regulators, competing financial institutions, investment managers, and corporate treasurers, while the available technical documentation offers us a unique opportunity for informed statistical research on the theory and practice of financial risk management. For the purpose of identifying problems for further research, this discussion focuses on applications of statistics in RiskMetrics™, which range from data analysis of daily returns and locally Gaussian processes to stochastic volatility models and It processes for the term structure of interest rates. The latter problems reflect the author's particular interest in stochastic inference for Markov processes and multivariate dependencies. Another important theme of this discussion, however, is devoted to attracting statisticians to the study of financial risk management and developing the foundations for collaborative work with financial economists and practicing risk managers. For this reason, this is also an expository document that touches several areas of active statistical research with applications to problems of risk management.

- Oldfield, G and A. Santomero, "The Place of Risk Management in Financial Institutions", the purpose of this paper is to address two issues. It defines the appropriate role played by institutions in the financial sector and focuses on the role of risk management in firms that use their own balance sheets to provide financial products. A key objective is to explain when risks are better transferred to the purchaser of the assets issued or created by the financial institution and when the risks of these financial products are best absorbed by the firm itself. However, once these risks are absorbed, they must be efficiently managed. So, a second part of the current analysis develops a framework for efficient and effective risk management for those risks which the firm chooses to manage within its balance sheet. The goal of this activity is to achieve the highest value added from the risk management undertaken.

- Bank for international settlement: "Computing Capital for Incremental Risk in the Trading Book" and "Revisions to the Basel II market risk framework" - consultative documents issued by the Basel Committee on Banking Supervision" 22 July 2008; the report suggest that "Major banking organisations have experienced significant losses over the last year, most of which were sustained in banks' trading books" stated Nout Wellink, Chairman of the Basel Committee and President of the

Netherlands Bank. "Against this backdrop, the Basel Committee's incremental risk proposal will better align regulatory capital requirements with the risk exposure of banks' trading book positions." The guidelines support one of the key recommendations for strengthening prudential oversight set out in the *Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience*, which was presented to G7 Finance Ministers and Central Bank Governors in April 2008. These proposals were developed jointly by the Basel Committee and the International Organization of Securities Commissions (IOSCO). Mr Christopher Cox, chairman of IOSCO's Technical Committee and Chairman of the US Securities and Exchange Commission, noted

- In October 2007, the Basel Committee consulted on proposed guidelines for computing capital for incremental *default* risk, or the risk that is incremental to the default risk already reflected in a bank's value-at-risk (VaR) model. The application of such an incremental *default* risk charge, however, would not have captured recent losses in CDOs of ABS and other resecutrisations held in the trading book. The losses that materialised during the market turmoil have not arisen from actual *defaults* but rather from credit migrations combined with widening of credit spreads and the loss of liquidity. Given this and other observations from the market turmoil, as well as comments received through the consultative process, the Committee decided to expand the scope of the capital charge. The proposed incremental risk charge (IRC) would capture price changes due to defaults as well as other sources of price risk, such as those reflecting credit migrations and significant moves of credit spreads and equity prices.

- The Basel Committee also proposes improvements to the Basel II Framework concerning internal VaR models. It has further aligned the language with respect to prudent valuation for positions subject to market risk with existing accounting guidance. In addition, it has clarified that regulators will retain the ability to require adjustments to current value beyond those required by financial reporting standards, in particular where there is uncertainty around the current realisable value of a position due to illiquidity. Once the Basel Committee has finalised the revised requirements, it expects firms to comply with them by 1 January 2010. However, firms will be allowed an additional year to incorporate into their IRC models all risks covered by the proposed IRC beyond default and migration risks for positions subject to credit risk. Until the IRC is implemented in 2010 and to ensure that firms hold adequate capital for resecutrisations, an interim treatment will apply. This interim treatment will be specified in a separate proposal that will be issued by the Basel Committee later in 2008. Over a longer term horizon, the Committee also intends to review the VaR approach for the trading book including the specific risk capital charges under the standardised approach. In conjunction with this proposal, the Basel Committee will conduct a two-stage quantitative impact study of the IRC on firms' capital requirements. In the first stage, the Committee plans to rely largely on data collected in connection with the 2007 incremental default risk proposal to examine the impact of incorporating default and migration risk into the IRC. In stage two, additional data will be collected to examine the impact of incorporating other risks. Bank for international settlement: "International Convergence of Capital Measurement and Capital Standards" This document is a compilation of the June 2004 Basel II Framework, the elements of the 1988 Accord that were

not revised during the Basel II process, the 1996 Amendment to the Capital Accord to Incorporate Market Risks, and the 2005 paper on the Application of Basel II to Trading Activities and the Treatment of Double Default Effects.

- Bank for international settlement: "Basel Committee on Banking Supervision announces enhancements to the Basel II capital framework" report issued on 16 January 2009. The Basel Committee on Banking Supervision today issued a package of consultative documents to strengthen the Basel II capital framework. These enhancements are part of a broader effort the Committee has undertaken to strengthen the regulation and supervision of internationally active banks in light of weaknesses revealed by the financial markets crisis. Nout Wellink, Chairman of the Basel Committee and President of the Netherlands Bank, said that "the proposed enhancements will help ensure that the risks inherent in banks' portfolios related to trading activities, securitisations and exposures to off-balance sheet vehicles are better reflected in minimum capital requirements, risk management practices and accompanying disclosures to the public."

- Santomero, A and Jeffrey T. Trester: "financial innovation and bank risk taking". In this paper we investigate the effect of one change in the financial sector, namely, the growing ease with which assets created by the banking sector can be sold to other investors. Of interest is whether the reduced cost of value communication and asset sales leads to higher levels of risky lending by the banking sector. Of equal interest is whether these same changes result in riskier banks, i.e., ones that are more vulnerable to instability and failure. The results suggest that the risky asset portfolio held by the banking sector unambiguously increases as a result of the innovations considered. A reduction in illiquidity increases the banking sector's willingness to provide risk capital for real sector investment. On the other hand, it does not imply that banks will become more risky. Rather, there exists a trade-off between external shock risk, which is alleviated by increased asset liquidity, and the risk taking by banks on the returns of their assets, which is encouraged by these market changes.

- Kero Afroditi: "Banks Risk Taking, Financial Innovation and Macroeconomic Risk." European University Institute on April 2010. This paper shows how financial innovation, together with the observed changes in the structure of macroeconomic risk in the U.S. economy, can explain the strong growth in primary and secondary credit markets since the 1990s. In the empirical part we document the fall in macroeconomic risk, the financial innovation in the financial markets and the expansion of the prime and secondary credit market. We also show that changes in macroeconomic risk are closely related to the evolution of the prime market. In the theoretical part of the paper we study

Objective of the Study

- To study the Basel II
- To find out the relationship between Capital adequacy, Non Performing Assets and Net profits
- To find out the effect on Net profits due to change in capital adequacy ratio and non performing assets

Methodology

The study is based on secondary data. The data were collected from the Capitaline software. It shows the published annual reports of the banks record. The data has also been collected from various websites, magazines and journals.

Period of study

The study covers a period of 11 years from 2000 to 2011.

Sampling

Various public sector banks and private sector banks have been studied. The list is as below:

Interpretation

The table 2 shows the net profit of public sector banks. It shows that the banks performance is improving. There is an increase in the net profit over the research period.

Interpretation

The table 3 shows the net profit of private sector banks. It shows that the banks performance is improving. There is an increase in the net profit over the research period.

Interpretation

From the table 4 and 5 it can be analysed that most of the Indian banks have good capital adequacy ratio. The banks have improved on their capital adequacy ratio in line with the Basel II norms. The financial health of Indian banking system has improved significantly in terms of capital adequacy ratio during the research period. In comparison to the mandated limit of 9% CAR posed by the Basel II, the average capital adequacy ratio of commercial banks went up to 22.46% in the year 2008.

Interpretation

From the table 6 it can be analysed that NPA's of all the public sector banks have shown a declining trend. The banks have improved a lot.

Interpretation

From the table 7 it can be analysed that NPA's of all the private sector banks have shown a declining trend. The banks have improved a lot.

Interpretation

From table 8 and 9 it can be analysed that there is a negative correlation between Capital adequacy ratio and NPA's. In Public sector banks there is a negative correlation except for Oriental bank of commerce. In private sector banks there is a mixed response. Some of the banks are having positive and some are having negative correlation. Indusind Bank, HDFC bank, Kotak Mahindra bank and Jammu and Kashmir bank are having a positive correlation where as Federal bank, Axis bank, ICICI Bank are having a positive correlation

Interpretation

From table 10 and 11 it can be analysed that there is a positive correlation between Capital adequacy ratio and Net profits in all the private sector banks except for Jammu and Kashmir bank. In public sector banks also there is a positive correlation except for SBI, corporation bank and Oriental Bank of commerce.

Interpretation

From the table 12 and 13 it can be analysed that there is a negative correlation between NPA's and Net profit in all the private and public sector banks except for Kotak Mahindra bank.

Regression Results of PUBLIC SECTOR BANKS

Interpretation

The main findings of the regression analysis the variables NPA's and Capital adequacy ratio on Net profit have been summarized in the table 14. It shows that NPA's is the main factor that affects the net profits in the public sector banks taken under research study.

Interpretation

The main findings of the regression analysis the variables NPA's and Capital adequacy ratio on Net profit have been summarized in the table 15.

Table 1. List of private and public sector banks

PUBLIC BANKS	PRIVATE BANKS
STATE BANK OF INDIA	INDUSIND BANK
OBC BANK	HDFC BANK LTD.
CORPORATION BANK	FEDERAL BANK
SYNDICATE BANK	AXIS BANK
BANK OF INDIA	KOTAK BANK
IOB	ICICI BANK LTD.
CENTRAL BANK	J&K BANK

Analysis Table 2. Net profit of Public sector Banks

	STATE BANK OF INDIA	OBC BANK	CORPORATION BANK	SYNDICATE BANK	BANK OF INDIA	IOB	CENTRAL BANK
2001	1604.25	202.89	261.84	234.94	251.88	115.93	46.46
2002	2431.62	320.55	308.1	250.55	508.83	230.21	163.3
2003	3105	456.95	415.99	344.13	851	416.1	305.52
2004	3681	686.07	504.14	434.13	1008.32	512.76	618.11
2005	4304.52	726.07	402.17	402.9	340.05	651.36	357.41
2006	4406.67	557.16	444.46	536.49	701.44	783.34	257.42
2007	4541.31	580.81	536.14	716.06	1123.17	1008.43	498.01
2008	6729.12	353.22	734.99	848.07	2009.4	1202.34	550.16
2009	9121.23	890.42	892.78	912.82	3007.35	1325.79	571.24
2010	9166.05	1134.68	1170.25	813.32	1741.07	706.96	1058.23
2011	8264.52	1502.87	1413.27	1047.95	2488.71	1072.54	1252.41

Source: Capitaline software

Table 3. Net profit of Private sector banks

YEAR	INDUSIND BANK	HDFC BANK	FEDERAL BANK	AXIS BANK	KOTAK MAH. BANK	ICICI BANK	J&K BANK
2001	40.54	210.12	61.04	86.12	49.6	161.1	167.56
2002	50.75	297.04	82.01	134.14	54.52	258.3	261.72
2003	90.17	387.6	105.01	192.18	44.96	1206.18	337.75
2004	262.06	509.5	136.31	278.31	78.73	1637.11	406.33
2005	210.15	665.56	90.09	334.58	84.89	2005.2	115.07
2006	36.81	870.78	225.21	485.08	118.23	2540.07	176.84
2007	68.22	1141.45	292.73	659.03	141.37	3110.22	274.49
2008	75.05	1590.2	368.05	1071.03	293.93	4157.73	360
2009	148.34	2244.94	500.49	1815.36	276.1	3758.13	409.84
2010	350.31	2948.7	464.55	2514.53	561.11	4024.98	512.38
2011	577.33	3926.4	587.08	3388.49	818.18	5151.38	615.2

Source: Capitaline software

Table 4 Capital adequacy ratio of Public sector banks

	STATE BANK OF INDIA	OBC BANK	CORPORATION BANK	SYNDICATE BANK	BANK OF INDIA	IOB	CENTRAL BANK
2001	12.79	11.81	13.3	11.72	12.23	10.24	10.02
2002	13.35	10.99	17.9	12.12	10.68	10.82	9.58
2003	13.5	14.04	18.5	11.03	12.02	11.3	10.51
2004	13.53	14.47	20.11	11.49	13.01	12.49	12.43
2005	12.45	9.21	16.23	10.07	11.52	14.21	12.15
2006	11.88	11.04	13.92	11.73	10.75	13.04	11.03
2007	12.34	12.51	12.76	11.74	11.75	13.27	10.4
2008	13.54	12.12	12.09	11.22	12.04	11.93	9.39
2009	12.97	12	13.66	12.68	13.21	12.7	11.75
2010	12	10.83	15	12.7	12.63	12.7	10.81
2011	10.69	12.3	12.9	11.2	11.42	13.28	10.74

Source: Capitaline software

Table 5 Capital adequacy ratio of Private Sector banks

year	INDUSIND BANK	HDFC	FEDERAL BANK	AXIS BANK	KOTAK BANK	ICICI BANK LTD.	JAMMU AND KASHMIR BANK
2001	15	11.09	10.29	9	0	11.57	17.44
2002	12.51	13.93	10.63	10.65	30.47	11.44	15.46
2003	12.13	11.12	11.23	10.9	25.7	11.1	16.48
2004	12.75	11.66	11.48	11.21	15.25	10.36	16.88
2005	11.62	12.16	11.27	12.66	12.8	11.78	15.15
2006	10.54	11.41	13.75	11.08	11.27	13.35	13.52
2007	12.54	13.08	13.43	11.57	13.46	11.69	13.24
2008	11.91	15.09	22.46	13.73	18.65	13.97	12.8
2009	12.33	15.09	20.14	13.69	19.86	15.92	13.46
2010	13.4	16.45	17.27	15.8	18.05	19.14	14.81
2011	14.39	15.32	15.39	12.65	18.73	17.63	13.3

Source: Capitaline software

Table 6. NPA's of public Sector Banks

year	STATE BANK OF INDIA	OBC BANK	CORPORATION BANK	SYNDICATE BANK	BANK OF INDIA	IOB	CENTERAL BANK
2001	6.03	3.6	1.98	4.05	6.72	7.01	9.72
2002	5.63	3.2	2.31	4.63	6.02	6.32	7.98
2003	4.5	1.4	1.65	4.29	5.37	5.23	6.74
2004	3.48	0	1.8	2.58	4.5	2.85	5.57
2005	2.65	1.29	1.12	1.59	2.8	1.27	2.98
2006	1.88	0.49	0.64	0.86	1.49	0.65	2.59
2007	1.56	0.49	0.47	0.76	0.95	0.55	1.7
2008	1.78	0.99	0.32	0.97	0.52	0.6	1.45
2009	1.79	0.65	0.29	0.77	0.44	1.33	1.24
2010	1.72	0.87	0.31	1.07	1.31	2.52	0.69
2011	1.63	0.98	0.46	0.97	0.91	1.19	0.65

Source: Capitaline software

Table 7. NPA's of Private Sector banks

year	INDUSIND BANK	HDFC BANK.	FEDERAL BANK	AXIS BANK	KOTAK BANK	ICICI BANK LTD.	J&K BANK
2001	5.17	0.45	10.08	3.43	0	2.19	2.12
2002	6.59	0.5	8.6	3.46	0.01	5.48	1.88
2003	4.25	0.37	4.95	2.39	0.11	5.21	1.58
2004	2.72	0.16	2.89	1.29	0.17	2.21	1.48
2005	2.71	0.24	2.21	1.39	0.37	1.65	1.41
2006	2.09	0.44	0.95	0.98	0.24	0.72	0.92
2007	2.47	0.43	0.44	0.72	1.98	1.02	1.13
2008	2.27	0.47	0.23	0.42	1.78	1.55	1.07
2009	1.14	0.63	0.3	0.4	2.39	2.09	1.38
2010	0.5	0.31	0.48	0.4	1.73	2.12	0.28
2011	0.28	0.19	0.6	0.29	0.72	1.11	0.2

Source: Capitaline software

Table 8

Correlation Table between CAR & NPAs		Correlation Table between CAR & NPAs	
Correlation Table		Correlation Table	
Bank	Correlation Coefficient	Bank	Correlation Coefficient
State Bank of India	0.492	Indusind Bank	0.03
Oriental Bank of Commerce	-0.278	HDFC Bank	0.123
Corporation Bank	0.962	Fedral Bank	-0.676
Syndicate Bank	-0.086	Axis Bank	-0.77
Bank of India	-0.114	Kotak Mahindra Bank	0.084
Indian Overseas Bank	-0.859	ICICI Bank	-0.349
Canara Bank	-0.227	Jammu & Kashmir Bank	0.631

Table 9

Table 10		Table 11	
Correlation Table between CAR & NP		Correlation Table between CAR & NP	
Correlation Table		Correlation Table	
Bank	Correlation Coefficient	Bank	Correlation Coefficient
State Bank of India	-0.442	Indusind Bank	0.445
Oriental Bank of Commerce	-0.067	HDFC Bank	0.814
Corporation Bank	-0.391	Fedral Bank	0.776
Syndicate Bank	0.255	Axis Bank	0.696
Bank of India	0.453	Kotak Mahindra Bank	0.128
Indian Overseas Bank	0.606	ICICI Bank	0.793
Canara Bank	0.2	Jammu & Kashmir Bank	-0.276

Table 12

Correlation Table between NPA & NP	
Correlation Table	
Bank	Correlation Coefficient
State Bank of India	-0.79
Oriental Bank of Commerce	-0.493
Corporation Bank	-0.699
Syndicate Bank	-0.822
Bank of India	-0.722
Indian Overseas Bank	-0.862
Canara Bank	-0.722

Table 13

Correlation Table between NPA & NP	
Correlation Table	
Bank	Correlation Coefficient
Indusind Bank	-0.649
HDFC Bank	-0.178
Fedral Bank	-0.722
Axis Bank	-0.679
Kotak Mahindra Bank	0.405
ICICI Bank	-0.612
Jammu & Kashmir Bank	-0.676

Table 14. Regression Results of public sector banks

SR. No.	VARIABLES	SBI	OBC	Corporation	Syndicate	Bank of India	IOB	CENTERAL Bank of India
1	Capital adequacy ratio							
2	Non-performing assets	Y	y	y	y	y	y	y
	Variations explained by all the variables	62.8	28.8	50.5	71.0	66.1	82.4	52.3
	Variations explained by most significant variables	62.4 (NPA)	24.3 (NPA)	48.9 (NPA)	67.6 (NPA)	52.2 (NPA)	75.1 (NPA)	52.1 (NPA)

Table 15. Regression Results of Private sector banks (Summary)

SR. No.	VARIABLES	Indusind	HDFC	Fedral	Axis	Kotak Mahindra	ICICI	Jammu & Kashmir
1	Capital adequacy ratio	y	y	y	y		y	
2	Non-performing assets	y				y	y	y
	Variations explained by all the variables	63.7	74.1	67.4	53.5	17.3	75.7	49.4
	Variations explained by most significant variables	63.7 (Both equally)	66.2 (CAR)	60.2 (CAR)	48.4 (CAR)	16.4 (NPA)	75.7 (Both equally)	45.7 (NPA)

It shows that in some banks NPA is the main factor that affects the net profits in the public sector banks taken under research study.

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