CHAPTER - I
INTRODUCTION

1.1: Rationale of the Study:

In India, since independence the establishment of new banks, changing bank policies, programs, operations and procedures so as to strengthen the banking structure with a view to cater to the banking needs of common man have been largely mandated by Reserve Bank of India (RBI) based on the specific recommendations of expert Committee Reports. The institutional structure of banks from single agency to multi agency system and all matters concerning policy, planning, operations and procedures have undergone need based change and that continues even today. All the loans, deposits and other utility service products of banks are brought onto the integrated technology platform and customers are encouraged to take their transactions on alternate channels such as mobile, internet, through ATMs etc. The financial results of banks reveal that the reforms have changed the objective of banks from social banking (profit for accounting purpose) to more of commercial banking (hunt for profit). Today banks are profit conscious in their business decision making. There is more of transparency in the accounts and less of window dressing. Top of it banks have entered the capital market and are determining/fixing pricing of products and services on both the side of balance sheet on their own. Particularly, since the last decade of bygone century, the successful introduction of reforms in banking as well as implementation of Basel Committee on Banking Supervision (BCBS) of Bank for International Settlement (BIS) led Basel-I and II Accord is a well-documented in its significance as India could withstand the Asian Currency Crisis 1997-98 (ACC) and even the Global Financial Crisis 2007-2009 (GFC)which brought about many bank failures even in many developed economies in the world.

Thus, the development of need based multi-agency banking and financial services sector in India has been revolutionary and now perhaps has no parallel in any other country in the world. The process of change to bring it closer to the international norms and standards is also set very comprehensively. There is total political consensus too in the country to make banking industry as strong financial institutions with ability to meet, sustain and compete in global markets[1].

Basel-III document titled “A Global Regulatory Framework For More Resilient Banks and Banking System”[2] was introduced in December 2010 and revised in June 2011 is the latest

[1]Banking in India: An Assessment of Changes; Southern Economist. Volume 50. Number19, February 1, 2012. By **Dr. Dilip K. Chellani**. Pages 5 to 8.

[2] “Basel-III Accord: A global regulatory framework for more resilient banks and banking systems” (Dec 2010) http://www.bis.org/publ/bcbs189_dec. 2010.htm**Note:** A revised version of the rules text has been published in June 2011.

regulatory framework stipulated by the BCBS of BIS comprising of Central Banks and Supervisory Authorities of 10 countries also known as G-10[3] countries, Head-quartered in Basel, Switzerland. The BIS developed a new set of regulations as Basel-III on December 16, 2010, to alleviate the shortcomings of the previous regulations I and II. Basel- III is by far one of the most revolutionary regulations in the banking industry globally. It is unprecedented in its pro-active oversight. The Basel-III[4] framework focuses on enhancing the banking sector's safety/liquidity and stability/solvency by emphasizing the need to improve the quality as well as quantity of bank's capital components by creating Capital Conservation Buffer (CCB) and Counter Cyclical Capital Buffer (CCCB) and maintaining leverage ratio, following liquidity standards and bringing transparency through enhanced disclosures. It enforces risk management at micro (individual bank's operations) level as well as systemic risk management at macro (banking industry) level. The former aims to help in raising the resilience of individual banking institutions in periods of stress, while the latter addresses wider risks that can be built up across the entire banking system and the whole economy. The main objective of the Basel-III consists in strengthening global capital and liquidity position so as to promote a more resilient banking sector by propounding following three measures/reforms, viz.,: i) capital reforms by enhancing on quality, quantity, consistency and transparency of capital by creating CCB and CCCB which is further strengthened by prescribing of leverage ratio, ii) liquidity reform by mandating maintenance of Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) and, iii) envisaging macro-prudential measures addressing systemic risks and inter-connectedness of entire banking sector with economy in general, also by bringing total transparency through enhanced disclosures.

Basel-III is outcome of the bank fund management lessons learnt from ACC and GFC. The ACC was mainly attributed to mismatch of short-term bank resources deployed in creation of long-term assets. The GFC which started mainly in USA and spread to other developed countries exposed substantial weakness in the Basel-II Norms for regulating commercial banks. In particular, large Bank Holding Companies (BHC) suffered decline in their Return

[3]The Group of Ten or G-10 refers to the group of countries that have agreed to participate in the General Arrangements to Borrow (GAB). The GAB was established in 1962, when the governments of eight International Monetary Fund (IMF) members viz. Belgium, Canada, France, Italy, Japan, Netherlands, United Kingdom, and United States and the central banks of two other countries viz. Germany and Sweden, agreed to make resources available to the IMF for drawings by participants, and under certain circumstances, for drawings by nonparticipants. The GAB was strengthened in 1964 by the association of the eleventh member Switzerland, the then a nonmember of the Fund, but the name of the G10 remained the same. The Basel- Committee thus now includes 11 members of G-10 plus Luxembourg and Spain. (Total members13).

[4] Basel III: Challenges for Public Sector Banks in India, Vinimaya, Vol. XXXV No.1. April-June 2014, NIBM, Pune. By R. K. Sinha and D. K. Chellani. Pages 34 to 45.

on Equity (ROE)from losses on Off-Balance Sheet (OBS) activities despite maintaining the capital ratios required under Basel-II. It is now known fact that the crisis in USA was culmination of contamination of sub-prime mortgage loans and the securitized products that led to an illiquidity spiral and soon became a solvency/stability issue for the banks. The inter-connection between sub-prime mortgage loans and securitized products in the financial system propagated it into a systemic financial crisis. Banks starved of liquidity, stopped lending to the real sector. There are many other reasons attributed to the outbreak of crisis and few notable ones are; Inadequate quantity and quality of capital, Insufficient liquidity buffers, Excessively leveraged financial institutions, Inadequate coverage of certain risks, Absence of a regulatory framework for addressing systemic risks, Proliferation of opaque and Poorly understood financial products in search of yields in the backdrop of an era of 'great moderation', Perverse incentive structure in securitization process, Lack of transparency in Over The Counter Markets (OTC) particularly the Credit Default Swaps (CDS), Inadequate regulation and supervision, a burgeoning under/unregulated banking system etc. However, the most glaring inadequacy has been the absence of a regulatory framework to deal with systemic risk. There has been an underlying assumption that strong institutions make a strong system. This has been proved to be fallacious as legitimate actions taken by individual institutions for self-preservation can destabilize the system. So, the lessons learnt from the crises led to a new paradigm that a strong regulatory system can only build strong institutions which may tide over the systemic risks and financial crisis[5]. The financial crisis thus, became a full-scale economic crisis. Since banks are essential to an economy and their failure affects the real sector, particularly when they are too big, the monetary authorities had no alternative but to rescue/bail out the banks by injecting fresh capital, guaranteeing their liabilities, purchasing their impaired assets etc.

The most glaring inadequacy observed during both the crisis periods was the absence of focus on strong regulatory framework to deal in various risks associated in banking operations. Basel-III provides a mechanism of various risk management tools and techniques capable of redressing all the shortcomings that have surfaced in the wake of the then GFC. Now the hard-learnt lessons (after crises) is that a strong regulatory framework would certainly make banks and financial institutions strong and resilient to withstand not only the enterprise wide problems but also the industry-level turmoil. Thus, Basel-III strives to make banks strong and resilient to withstand shocks of crisis. Basel-III signed in 2009-2010, goes live global from January 1, 2018. Thus, now all banks with international presence

[5]Speech by **Anand Sinha**, Dy. Governor RBI: "Approach to regulation and supervision in the post crisis world" Keynote address by **Shri Anand Sinha**, Deputy Governor, Reserve Bank of India at the program 'Supervisory Effectiveness in the Post Crisis World' organized by Centre for Advanced Financial Research and Learning (CAFRAL) at Mumbai on February 4, 2011.

are actively busy in designing and devising their capital structure to be fully compliant by January 1, 2018.

1.2 Basel- Accord in the Indian context:

According to RBI Report[6]the Indian financial landscape is dominated by the banking sector, accounting for over half of the total financial flows in the economy. Banks play a major role in not just purveying credit to the productive sectors of the economy but also as facilitators of financial inclusion. Although the Indian banking sector exhibited considerable resilience in the immediate aftermath of the GFC, it has been impacted by the global and domestic economic slowdown over the last two years. The subsequent RBI's Report[7]elaborates that, "The risks to global financial stability continued to remain at elevated levels, with global growth witnessing a fragile and multi-paced pattern of recovery. In the meanwhile, the global macro-financial risks shifted from advanced to emerging economies with the latter facing pressures from weakening prospects of growth, falling commodity prices and strengthening of the US dollar. Within the emerging world however, the Indian economy appeared quite resilient, given a modest recovery in the economy, declining inflation and buoyant capital flows that helped in maintaining the external sector balance". Report however further states that the performance of the Indian banking sector during the year remained subdued due to the following reasons; First, the banking sector experienced a slowdown in balance sheet growth in 2014-15, a trend that had set in since 2011-12. The slowdown was most notable in the case of bank credit, which dipped to a single-digit figure during the year. Second, while profits of the banking sector turned around from an absolute decline in the previous year, this positive growth was on account of a decline in the growth of operating expenses rather than a rise in the growth of income of the banks. Third, notwithstanding the increase in profit growth, the Return on Assets (ROA), a common indicator of financial viability, did not show any improvement in 2014-15. In particular, the profitability of Public Sector Banks (PSBs) diminished with their ROA declining 'significantly in recent years. And, fourth, the deterioration in the asset quality of banks in general[8], and PSBs in particular, continued during the year with rise in volume and proportion of stressed assets.

The Basel-I Capital Accord[9] of 1988 was implemented in India from April, 1998 and Basel-II proposal[10]of 1999 which was effective worldwide in 2004 was implemented in India in 2009. The Narasimham Committee (1991) in its Report recommended inter-alia all the banks are required to have a minimum Capital Adequacy of 8 Percent to the Risk Weighted Assets

[6] Report on Trends and Progress of Banking, by RBI, December 2012.

[7] Report on Trends and Progress of Banking, by RBI, December, 2015.

[8]Our study also presents the same empirical evidence. Please refer to Chapter–V, introduction.

[9]The International Convergence of capital Measurement and Capital Standards, Published by BIS, 1986.known as Basel-I Accord.

[10] International Convergence of Capital Measurement and Capital Standards-A Revised Framework, Published by BIS, 1999.

(RWAs). The Department of Banking Operations and Development (DBOD) of RBI is entrusted with the responsibility of regulation of banks under the regulatory provisions of Banking Regulation Act, 1949 and Reserve Bank of India Act, 1934. RBI issued series of specific guidelines to banks like on health code system, prudential norms of capital adequacy etc. so as to adhere to adopt and adept by adjusting to the systems and procedures as per specific indigenized requirements. During these implementation period banks in India successfully exhibited the adherences to these Norms. The experience of successful implementation of these international banking Basel- Norms I and II is a well-documented in its significance as India could withstand the GFC which crippled as said above even the many developed economies in the world. Having tasted the success (as not a single commercial bank in India was affected by the global melt down) in the implementation of earlier Norms, India readily agreed to implement the new set of Basel-III Norms. RBI had issued draft guidelines for implementation on December 30, 2012 and final guidelines on May 2, 2013. These Norms have been mandated by RBI[11]to be implemented progressively in India with effect from April 1, 2013 and all banks are required to be fully compliant by March-end 2018. Recently, RBI relaxed the time line for banks by one year i.e., now by March-end 2019 all banks in India have to be Basel-III compliant[12].

1.3: Objectives of the Study:

Broadly, the aim of study is to examine provisions of Basel-III Norms including risk management principles and practices, so as to be helpful in deepening and broadening the implications in the realm of qualitative aspects as well as in its compliance provisions. The focus of the study is to find the likely impact of Basel-III Norms on strengthening the banking system in India and its likely change in the structure (as proposed by the study) so that banks would be better equipped to withstand the economic turn-down and even sectorial crisis, if any arises.

The study attempts to examine the current capital structure and undertakes study of various strategies adopted by banks to augment the capital structure and also ascertains capital adequacy so as to become Basel-III compliant by March-end 2019 as mandated by RBI. Study attempts to examine various migration strategies adopted by banks in India to attain the required capital base during the years 2009-2014 (March end). Based on the experience gained, study aims to propose 4 alternate scenarios to augment more realistic required quantum of capital base of banks during the years 2015-2019 (March-end).

The study also makes a humble attempt by developing appropriate parameters of mergers of all existing 27 PSU Banks into five Big Banks on 1-4-2018 so that these banks would have good financial strength to become Basel-III compliant by March-end 2019 as well as to

[11]RBI Master Circular Number -. RBI/2013-14/70 DBOD No. BP.BC. 2/21.06.201/2013-14 dated 01-07-2013.
[12]RBI Circular Number-RBI/2013-14/538 DBOD No- BP-BC-102/21.06.201/2013-14 Dated 27-3-2014.

qualify for (in due course) to be reckoned as Domestic Systemically Important Banks (D-SIBs). Since PSBs in India have majority shareholding by Government of India (GOI), the study attempts to examine a novel concept of deficit capital infusion during the year 2018-2019 into these five D-SIBs on repatriation basis so as make these five D-SIBs banks Basel-III compliant in the capital adequacy by March-end 2019. The study then aims to propose that after the five years period of implementation of Basel-III Norms and gaining financial strength by March-end 2024, these D-SIBs would start repaying in the equal amount the same injected capital during the year 2018-2019 to GOI in next ten or less years from April 2024 to March-end 2034.

The broad aim of study is also to help bank regulators as well as policy makers in banks in their management of various risks as well as procuring of capital. It may also help the researchers in academic institutions and bank economists as reference-resource in understanding of the implications of Basel-Norms. The Study also opens door for new researches in relevant areas of banking as has been outlined in the relevant chapters.

The specific objectives of the study are as under:

To study the current capital structure and examine capital adequacy of banks in India so as to become Basel-III compliant by March end, 2019.

To review the available literature on evolution of Basel Norms and also analytical framework of Basel–III as provided under the BIS's Working Papers and other studies so as to examine its likely challenges in its implementation in India.

To suggest the possible suitable emerging institutional framework by restructuring through mergers of the all existing 27 PSB**s** into big five PSBs a kin to D-SIBs as envisioned in Basel-III.

1.4: Review of Literature:

Basel Norms through-out the world has been subject-matter of close scrutiny, wide-spread discussion and at times under severe-criticism. Accordingly, many research papers are available globally on the subject as well as in Indian context. However, we have attempted to cover a few select studies having international perspective and in Indian context of direct relevance to our study as under.

1.4.1: Literature Review in International Perspectives:

Numerous research papers were available on the Basel Accords with an objective to strengthen the banking structure and to bring about the resilience in banking system to withstand any financial crisis or bank failure. For the purpose of review of literature, we identified as many as 14 issues on which global studies (consisting of 26 Researches) were primarily focused and they are reviewed here as under for better comprehension and its relevance to our study. The identified issues are listed here as under in a random order without any order of merit or preference;

Sr. No.	Research Study Issues Identified on
1	Correlation between Bank Capital and Systemic Stability
2	Financial Crisis and Correlation with Bank Failures
3	Research on Cross-Border Banking Linkages and Impact on Bank Crisis
4	Capital Adequacy Ratios (CAR) and its efficacy in determining Banking Crisis
5	Financial Crisis and Correlation with Regulatory Norms
6	Correlation between Credit Growth on Financial Stability under Basel-Accord
7	Macro-Prudential Policy as Enunciated by Basel Norms and Its Correlation with Bank's Financial Stability.
8	Basel Capital Adequacy Norms and Liquidity Norms.
9	Basel- Capital Adequacy VS. Trade–Credit Expansion
10	Likely impact on Interest on Loans due to Basel-Capital Framework
11	The Impact of Basel-III on Trade Finance
12	Basel-III Norm's efficacy in Managing Systemic Risks
13	Study on Migration Dynamics; BIS-WP-443.
14	Review of Select Criticism of Basel-III

1. Study on "Correlation between Bank Capital and Systemic Stability"; A Working Paper of the World Bank by Anginer, Deniz and Demirguc-Kunt, Asli[13] talks about correlation between bank capital and systemic stability. The research paper distinguishes among various types of capital and examines their effect on system-wide fragility. The analysis finds that higher quality forms of capital reduces the systemic risk contribution of banks, whereas lower quality forms of capital can have a destabilizing impact, particularly during crisis periods. Study concludes that the impact of capital on systemic risk is less pronounced for smaller banks, similarly for banks located in countries with more generous safety nets and also in those countries with institutions that allow for better public and private monitoring of financial institutions. The study shows that regulatory capital is effective in reducing systemic risk and that regulatory risk weights are correlated with higher future asset volatility, but this relationship is 'significantly' weaker for larger banks. The paper also finds that increased regulatory risk-weights not correlated with future asset volatility increase the systemic fragility. Overall, the results presented in the study are consistent with the theoretical literature that emphasizes capital as a potential buffer in absorbing liquidity and economic shocks reducing contagious defaults for which Basel has emphasized the adequacy of capital and buffers. Yener Altunbas[14], Santiago Carbo, Edward P.M. Gardener and Philip Molyneux

[13]**Anginer, Deniz & Demirguc-Kunt, Asli**: Working Paper of the World Bank. Development Research Group (June 2014) (W.B. Report No. – WPS6948)

[14]**YenerAltunbas∗, Santiago Carbo†, Edward P.M. Gardener∗ and Philip Molyneux**∗ Examining the Relationships between Capital, Risk and Efficiency in European Banking"', European Financial Management,Vol. 13, No. 1 (2007) 49–70.

analyzed the relationship between capital, risk and efficiency for a large sample of European banks between 1992 and 2000. Study finds that inefficient (European) banks appear to hold more capital and take on less risk. Empirical evidence presents the positive relationship between risk on the level of capital (and liquidity), possibly indicating regulators' preference for capital as a means of restricting risk-taking activities.

2. Studies on 'Financial Crisis and Correlation with Bank Failures': Barrell et al. (2009), Kato et al. (2010) and Wong et al. (2010)[15] have presented that there is a trade-off between using tighter banking regulation to reap the benefits from reducing the incidence of costly financial crises, and the cost imposed by higher regulatory requirements on households and companies via wider bank spreads. Kato (2010) used a general-to-specific approach to choose the preferred specification by considering the substitutability between Japanese banks' capital and liquidity. Tarashev and Zhu (2008)[16] used a standard portfolio credit risk model to estimate links between capital and the probability of bank default, which is treated as a signal for a systemic banking crisis. They interpret the banking system as a portfolio of banks and estimate the loss distribution arising from bank defaults. They concluded that bank failures are correlated and the correlations can be estimated from market information. Gauthier et al[17] (2010) Study used calibrated parameters and determined probability of banking crisis and finds that losses arise from systemic spillover effects either from counter-party exposures in the interbank markets or from asset fire sales that affect the mark-to-market value of banks' portfolios. Miles et al[18]. (2011) interpreted an assumed probability distribution for changes in annual GDP to calculate the probability of a banking crisis occurring in any given year for different levels of bank capital. They generated distributions of GDP with added stressed shocks by using calibrated parameters and determined probability of banking crisis. The study finds that "lower the capital the higher the probability of bank default, which is treated as a signal for a systemic banking crisis"; and "Bank failures are correlated" and "the correlations can be estimated from market information".

3. Cross-Border Banking Linkages and Impact on Bank Crisis by Martin Cihak, Sonia Munoz, and Ryan Scuzzarella[19]examined the question that when a country's banking system becomes more linked to the global banking network; does that system get more or less prone to a banking crisis? Using model simulations and econometric estimates based on a

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[15]**Barrell et al. (2009)Barrell, R., Davis, E. P., Fic, T., Kirby, D. H. S. and Liadze, I. (2009):"**Optimal regulation of bank capital and liquidity: How to calibrate new international standards"ocasional Paper Series No. 38, Financial Services Authority.

[16]**Nikola Tarashev and Haibin Zhu (2008):** Specification and Calibration Errors in Measures of Portfolio Credit Risk: The Case of the ASRF Model" **-** Monetary and Economic Department, Bank for International Settlements, Basel. Switzerland.

[17]**Céline Gauthier, Alfred Lehar, and MoezSouissi (2010);** Macro-prudential Regulation and Systemic Capital Requirements-Bank of Canada - Working Paper/Document (2010)-4

[18]**David Miles: "**What is the optimal leverage for a bank?"**(2011)**http://www.voxeu.org/article/what-optimal-leverage-bank.

[19]***Martin Čihák, Sònia Muñoz, And Ryan Scuzzarella****: "Cross-Border Banking Linkages And Impact On Bank Crisis" IMF Working Paper* ***(2011).***

world-wide dataset, it finds M-shaped relationship between financial stability of a country's banking sector and its interconnectedness. In particular, for banking sectors that are not very connected to the global banking network, increases in interconnectedness are associated with a reduced probability of a banking crisis. Once inter-connectedness reaches a certain value, further increase in interconnectedness can increase the probability of a banking crisis. The research findings suggest that it may be beneficial for policies to support greater inter-linkages for less connected banking systems, but after a certain point the advantages of increased interconnectedness become less clear.

4. CAR and Its Efficacy in Determining Banking Crisis: Martin Cihak and Klaus Schaeck[20] provided an empirical analysis of aggregate banking system ratios during systemic banking crises. Drawing upon a wide cross-country dataset, the study utilizes parametric and nonparametric tests to assess the power of these ratios to discriminate between sound and unsound banking systems. It also estimates by duration model to investigate whether the ratios help determine the timing of a banking crisis. Despite some weaknesses in the available data, the research findings offer initial evidence that some indicators are precursors for the likelihood and timing of systemic banking problems. Nevertheless, it cautions against sole reliance on these indicators and advocate supplementing them with other tools and techniques.

5. Financial Crisis and Correlation with Regulatory Norms by Ray Barrell, E Philip Davis, Tatiana Fic, Dawn Holland, Simon Kirby and IanaLiadze [21] found that raising capital adequacy standards and introducing binding liquidity requirements can have beneficial effects as they reduce the probability of a costly financial crisis, but may also reduce GDP by raising borrowing costs for households and companies. They further estimated both benefits and costs of raising capital and liquidity, with the benefits being in terms of reduction in the probability of banking crisis, while the costs are defined in terms of the economic impact of higher spreads for bank customers. They found that both of these results are contrary to the Modigliani-Miller theorem of irrelevance of the debt-equity choice. The result shows a positive net benefit from regulatory tightening, for a range of 2-6 percentage points increase in capital and liquidity ratios, depending on underlying assumptions**.**

There is a tradeoff between using tighter banking regulation to reap the benefits from reducing the incidence of costly financial crises, and the cost imposed by higher regulatory requirements on households and companies via wider bank spreads. The balance between these costs and benefits can be evaluated using data. In United Kingdom (UK), they

18 **Martin Čihák and Klaus Schaeck**: "Monetary and Capital Markets: How Well Do Aggregate Bank Ratios Identify Banking Problems?" IMF Working Paper **(2007**).

[21]**Ray Barrell, E Philip Davis, Tatiana Fic, Dawn Holland, Simon Kirby and IanaLiadze** "Optimal regulation of bank capital and liquidity: how to calibrate new international standards".**(2009).** National Institute of Economic and Social Research and Brunel University .**Occasional Paper series# 38 (July-2009).http://www.ephilipdavis.com/op38.pdf.**

estimated that a 1 point rise in the capital adequacy target would have reduced the probability of a crisis in 2007 and 2008 by five to six percent. Yan[22]et al**.** also undertook an insightful study on the long-term cost-benefit of the Basel III Norms for the UK. Their study suggests that the optimal tangible common equity capital ratio is 10 percent of RWAs, as against the Basel-III figure of 7%. They thus build a case for Basel-III having a net positive long-term effect on the UK economy. They also estimate the maximum net benefit when banks meet the Basel-III long-term liquidity requirements. Through their study, they actually infer that UK banks should raise common equity in their capital base in excess of the Basel-III stipulations.

6. Correlation between Credit Growths on Financial Stability under Basel- Accord by Ray Barrell and Dilruba Karim[23]conclude that credit growth is widely used as an indicator of potential financial stress, and it plays a role in the new Basel-III framework. The research took a sample of 14 OECD[24] countries and 14 Latin American and East Asian countries and investigate uni-variate and multi-variate early warning systems for crises in the post Bretton Woods period. It also discussed the relationship between GDP growth and credit growth in these countries, looking for changes in behavior as a consequence of liberalization. Study indicates that there is a limited role for credit in an early warning system, and hence little reason for the Basel-III structure. The study concluded that there is little evidence that the ratio of credit to GDP or credit growth is factor affecting the incidence of crises in OECD countries, although they may have a role in crisis determination in emerging markets**.**

7.Macro-Prudential Policy as enunciated by Basel Norms and its correlation with Bank's Financial Stability by Barth, James R. Caprio, Gerard, Jr., Levine, Ross[25] re-assess what works in banking regulation based on the new World Bank survey (Survey IV) of bank regulation and supervision around world. The paper briefly presents new and official survey information on bank regulations in more than 125 countries, makes comparisons with earlier surveys since 1999, and assesses the relationship between changes in bank regulations and banking system performance. The data suggest that many countries made capital regulations more stringent and granted greater discretionary power to official supervisory agencies over the past 12 years. However, most countries have not enhanced the ability and incentives of private investors to monitor banks rigorously and several have weakened such

[22]**Yan, Meilan ; Hall, Maximilian J.B. ; Turner, Paul (2010) –"** A cost–benefit analysis of Basel III: Some evidence from the UK

[23]**Ray Barrell and Dilruba Karim:**" Macro Prudential Policy and Credit - the right question but the wrong answer" (2012), Brunel University

[24] **ÖECD**: The **Organisation for Economic Co-operation and Development** is an intergovernmental economic organization with 35 member countries, founded in 1961 to stimulate economic progress and world trade. It is a forum of countries describing themselves as committed to democracy and the market economy, providing a platform to compare policy experiences, seeking answers to common problems, identify good practices and coordinate domestic and international policies of its members.

[25]**Barth, James R.; Caprio, Gerard, Jr.; Levine, Ross:** "The evolution and impact of bank regulations (2012) (WB title No. – WPS6288)

private monitoring incentives. Although it is difficult to draw causal inferences from these data, and while there are material cross-country differences in the evolution of regulatory reforms, yet the existing evidence suggests that many countries are making counterproductive changes to their bank regulations by not enhancing the ability and incentives of private investors to scrutinize banks.

Richard Barwell[26] in his book on Macro-Prudential Policies concludes that financial crises have plagued economies around the globe for centuries, yet no satisfactory policy solution has been found to significantly reduce the likelihood and severity of these devastating events. He stresses that Macro-prudential Policy may provide a coherent and comprehensive coverage of the issues of why, when and how policy makers should intervene to bring solution to this recurrent problem in discharging their responsibilities.

Demirgüç-Kunt and Detragiache[27] statistically studied whether the compliance with Basel Core Principles can be mapped to 'bank soundness'. Their study, covering more than 3,000 banks in 86 countries, however, fails to establish a relationship between compliance with Basel Core Principles and managing the systemic risk.

8. Basel Capital Adequacy Norms and Liquidity Norms: The Basel-III framework strengthens prudential requirements on banks with a view to achieving a safer financial system. New guidelines on capital, liquidity, maturity and leverage aim at reducing the incentives for building-up high-risk, highly leveraged banks assets responsible for the 2008-09 dislocation of the global financial system. As a low risk, highly collateralized assets, traditional forms of trade finance, such as letters of credit and other self-liquidating commitments to pay with a very small loss record, are clearly not the target of the re-regulation exercise. In this context a study by Auboin[28], finds that policymakers are mindful of the need to minimize any possible unintended consequences of the new framework. Still, concerns have been expressed over the potential impact of the supplementary leverage ratio on the supply of letters of credit and other short term, self-liquidating instruments**.** The question as to whether the leverage ratio for letters of credit requires a 100% or a 20% credit conversion factor rate has to be analyzed with a proper analytical framework. His paper addressed this challenge. It designed an analytical framework helping to single out a particular albeit key measure of the Basel-III package, in order to discuss its potential impact. A comprehensive description of the Basel-III Leverage and supplementary leverage ratios, and its rationale, is offered by Ojo**[29]** who highlights that the Basel Committee seems to have adopted the right approach in

[26]**Richard Barwell: (May 2013):** Macro-Prudential Policies:eBook- ISBNs: 9781137274465;PDF 9781137274472 EPUB.

[27]**AsliDemirgüç-Kunt and EnricaDetragiache (March 2010): "**Basel Core Principles and Bank Risk: Does Compliance Matter?". IMF Working Paper –WP/10/81

[28]**Auboin[28], 2010: "**Trade Finance under the Current Basel Regulatory Framework: What Are the Issues?" World bank website: http://siteresources.worldbank.org/INTRANETTRADE/Resources/TradeFinancech23.pdf

[29]**MARIANNE OJO (2013): "**Leverage Ratios and Basel III: Proposed Basel III Leverage and Supplementary Leverage Ratios"- SSRN-id2304018- July 2013.

its decision on 12 January, 2014 about its guidelines on leverage for trade Assets. Zicchino[30] describes the mechanisms under which the capital-to-asset ratio in the RWAs system of Basel-II had contributed to pro-cyclical lending during the period of application of the frame-work. His simple model shows how banks maximize their net worth by choosing the loan return, level of deposits, investment in trade securities and capital subject to cash-flow constraints, loan demand, financial constrain and balance-sheet identity. He demonstrated arithmetically that the optimal level of capital held by banks is (a) a negative function of the expected marginal cost of external funds (b) a positive function of the expected demand for loans (which itself is a function of existing economic conditions), (c) a negative function of the expected marginal cost of loans (d) a positive function of the volatility of loan demand (e) a negative function of the elasticity of the loan demand (bigger elasticity implying less monopoly power), and (f) a positive function of the regulatory capital. Another interesting study was made by Blum[31]**,** who considered CAR increased bank's riskiness. The issue highlighted by Blum was that, as raising equity was quite costly, particularly in an in temporal model in which the value of capital is higher tomorrow than today, hence the only possibility to increase equity tomorrow was to increase risk today. He showed that an increase in capital regulation can raise the marginal return on risk. The rationale is linked to the fact that under binding regulation, equity tomorrow is more valuable to the bank than it is today. In a regime of binding capital requirements, the amount that can be invested in the risky but profitable asset is restricted to a multiple of the value of equity. This implies that an additional unit of equity leads to an additional investment larger than one unit in the risky asset. Due to this leverage effect, equity is more valuable to a regulated bank. A bank facing binding capital rules has therefore a higher incentive to increase equity tomorrow. However, if a bank finds it prohibitively costly to raise additional equity in the capital market or is unable to do so, the only way to increase the amount of equity is to increase risk today.

9.Basel- Capital Adequacy vs. Trade–Credit Expansion; In 2011, the BIS through the BCBS has been offering an answer to the concerns on capital adequacy, but decided not to change the decision to subject to a 100% leverage tax on the letters of credit and other trade finance instrument standing Off Balance Sheet (OBS)item of banks. The trade and trade finance industries have made the point that letters of credit and the like, one of the oldest forms of trade financing, were not a source of leverage for financial institutions (ICC, 2013). In its regulation implementing the Basel-III guidelines, the European Union decided to reduce the leverage tax on such products, recognizing the importance of trade finance for growth. As other Members of the Basel- Committee favored the approach of the European Union, the

[30]**LEA ZICCHINO (2006) : 'A MODEL OF BANK CAPITAL, LENDING AND THE MACROECONOMY: BASEL I VERSUS BASEL II**- http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9957.2006.00517.x/abstract#fn27

[31]**Jurg Blum** (1999): "Do capital adequacy requirements reduce risks in banking**?"-**Journal of Banking & Finance 23 (1999) 755-771

Basel- Committee reconsidered its guidelines on leverage for trade Assets on 12 January, 2014. Marc Auboin and Isabella Blenginiy[32] study proposed a relatively simple model approach showing the conditions under which the initially proposed 100% leverage tax on non-leveraged activities such as letters of credit would reduce their natural attractiveness relative to higher-risk, less collateralized assets, which may stand in the balance sheet of banks. Under these conditions, the model shows that leverage ratio may nullify in part the effect of the low capital ratio that is commensurate to the low risk of such instruments. The interest of policy-makers in this matter is justified by the facts that: a large share of trade credit is still taking the form of securitized letters of credit; there is a causal relationship between the availability of trade credit and trade flows; developing countries (albeit not only) are intensive users of this form of secured way of financing trade. One of the difficulties in this normative debate is to evaluate the economic impact of a regulatory measure that will be in effect implemented in 2018 at the latest, but for which data have to be gathered by banks.

10. Likely impact on Interest on Loans due to Basel-Capital Framework: Thomas F. Cosimano and Dalia S. Hakur**[33]**, examined the aims of the Norms to broaden and deepen the understanding of the likely impact of the new capital requirements, introduced under the Basel-III framework, on bank lending rates and loan growth. Second, unlike the earlier studies which use aggregate bank data, this paper uses bank-by-bank data for advanced economies for the period 2001-2009 to investigate the impact of the new capital requirements. The paper also considers three different groupings of banks: (i) the 100 largest banks worldwide as measured by their total Assets in 2006; (ii) commercial banks or BHCs in advanced economies that experienced a banking crisis between 2007 and 2009; and (iii) the commercial banks or BHCs in advanced economies that did not experience a banking crisis between 2007 and 2009.The key findings of the paper are as follows. First, a one percent increase in the equity-to asset ratio is associated with a 0.12 percent increase in the loan rate for the 100 largest banks. For banks in countries that experienced a banking crisis during 2007-09, it is associated with a 0.09 percent average increase in the loan rate. For banks in countries that did not experience a banking crisis during 2007-09, it is associated with a 0.13 percent average increase. Thus, under normal credit conditions, the projected 1.3 percentage point increase in the equity-to-asset ratio that is required for banks and BHCs under the Basel-III framework is estimated to increase the loan rate by 16 basis points for the 100 largest banks. This translates into an upper bound of 0.12 percent higher ROE relative to the marginal cost of deposits, which is evidence against the Modigliani-Miller

[32]**Marc Auboin and Isabella Blenginiy(January 20, 2014)** in their paper "The Potential Unintended Consequences of the Leverage Ratio"

[33]**Thomas F. Cosimano** and **Dalia S. Hakur**[33]**(IMF-2011):** "Bank Behavior in Response to BASEL-III:A Cross-Country Analysis"

Theorem[34]. One possible source of the higher cost of equity relative to the upper bound found by Kashyap, Stein, and Hanson (2010) is the "too-big-to-fail" policy which lowers the risk to the banks' debt holders and which is not accounted for by the latter study's calibration. During times when the monetary authorities invoke the "excessive credit growth" regulation-(CCCB scenario) which requires banks and BHCs to increase the equity-to-asset ratio by up to 2.5 percentage points-loan rates would be raised further by up to 31 basis points. Another study by Elliott[35] and Alhas also examined the impact of increased capital requirement on lending rates (loan cost). They found that the total net additional cost of funding new capital requirement was quite modest in most financial markets, not the least because many financial institutions held ex ante target minimum ratio (for common equity) well above the regulatory requirements. Ray Barrell, E Philip Davis, Tatiana Fic, Dawn Holland, Simon Kirby and IanaLiadze[36] have also concluded that raising capital adequacy standards and introducing binding liquidity requirements can have beneficial effects if they reduce the probability of a costly financial crisis, but may also reduce GDP by raising borrowing costs for households and companies.

11. Impact of Basel-III on Trade Finance***;*** The Basel-III framework strengthens prudential requirements on banks with a view to achieving a safer financial system. New guidelines on capital, liquidity, maturity and leverage aim at reducing the incentives for building-up high-risk, highly leveraged banks assets responsible for the 2008-09 dislocation of the global financial system. As a low risk, highly collateralized assets, traditional forms of trade finance, such as letters of credit and other self-liquidating commitments to pay with a very small loss record, are clearly not the target of the re-regulation exercise. Instead, policymakers are mindful of the need to minimize any possible unintended consequences of the new framework. Still, concerns have been expressed over the potential impact of the supplementary leverage ratio on the supply of letters of credit and other short term, self-liquidating instruments. In this context the study by Marc Auboin and Isabella Blenginiy in their paper "The Potential Unintended Consequences of the Leverage Ratio"**[37]** proposed a relatively simple model approach showing the conditions under which the initially proposed

[34]The Modigliani–Miller theorem (of Franco Modigliani, Merton Miller) is a theorem on capital structure, arguably forming the basis for modern thinking on capital structure. The basic theorem states that, under a certain market price process (the classical random walk), in the absence of taxes, bankruptcy costs, agency costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed. It does not matter if the firm's capital is raised by issuing stock or selling debt. It does not matter what the firm's dividend policy is. Therefore, the Modigliani–Miller theorem is also often called the capital structure irrelevance principle.

[35]Douglas Elliott, Suzanne Salloy, and André Oliveira Santos: "Assessing the Cost of Financial Regulation" (2012)-IMF working Paper-12/ 233,https://www.imf.org/external/pubs/ft/wp/2012/wp12233.pdf

34Ray Barrell, E Philip Davis, Tatiana Fic, Dawn Holland, Simon Kirby and IanaLiadze[36]Optimal regulation of bank capital and liquidity: how to calibrate new international standards by 2 National Institute of Economic and Social Research and Brunel University.

[37]**Marc Auboin_and Isabella Blenginiy (January 20, 2014**) in their paper "The Potential Unintended Consequences of the Leverage Ratio"[37]

100% leverage tax on non-leveraged activities such as letters of credit would reduce their natural attractiveness relative to higher-risk, less collateralized Assets, which may stand in the balance sheet of banks. Under these conditions, the model shows that leverage ratio may nullify in part the effect of the low capital ratio that is commensurate to the low risk of such instruments. The decision by the Basel-Committee on 12 January, 2014to reduce the leverage ratio seems to be justified by the analytical framework developed in this paper. Allen[38] et.al. Make interesting observations about the real cause of concern in relation to Basel-III. While they concur that Basel III does threaten to reduce credit supply (and in-turn economic output), they believe the source of this problem is not the need to maintain higher capital. Instead, the challenge lies in "ensuring a coordinated adoption" of these new Norms across the breadth of entities in the financial services industry. They further remark that authorities should aim to utilize the long time horizon for Basel-III implementation to "engage both banks and investors in constructive dialogue" with regard to changes necessary in business operations. Blundell-Wignall and Atkinson[39] find that Basel-III would not end up achieving 'significant' results. They believe the banking industry has generally been able to curb "meaningful increases" in equity requirements in excess of what banks usually maintained prior to the 2008 crisis. In addition, implementation is too slow, "with little beginning before 2013 and phasing in running as late as 2023 for grandfathered changes to the definition of capital". They also look at the crucial issue of Basel II not clearly addressing the problem of 'promises' in the financial arena being treated unequally. The implications of this phenomenon on the reform process are profound, especially on aspects such as supervision and the incorporation of the shadow banking system into the regulatory. They also explore modifications in the RWAs framework so as to address issues of concentration in risk models. As a specific example, they suggest that 'a quadratic rule applied to deviations from a diversified benchmark portfolio' is one rational way of enhancing the overall framework.

12. Likely Efficacy of Basel-III Norms in Managing Systemic risks: According to Baitshepi Tebogo[40], the banking event attendant to the financial crisis of 2007– 2011, provided the immediate spark for what has been referred to as the worst financial crisis since the great depression of the early 1930s. With the intensity of financial globalization the velocity of the spread of this crisis was rapid and the consequences were felt by the world economy. The study by Baitshepi focused on the ability of the Basel III to reduce systematic risk which examined the principles of; capital adequacy and management, liquidity management,

[38]**Allen, Bill, Ka Kei Chan, Alistair Milne, and Steve Thomas** "Basel-III: Is the cure worse than the disease?"**(2012),** International Review of Financial Analysis, Vol. 25, pp. 159- 16.

[39]**Adrian Blundell-Wignall and Paul Atkinson** : "Thinking Beyond Basel III: Necessary Solutions for Capital and Liquidity"(2010) - OECD Journal: Financial Market Trends Volume 2010 – Issue 1 © OECD 2010

[40]**BaitshepiTebogo, (2012),** "Basel-III and Risk Management in Banking," Institute of Development Management, Botswana.

enhanced supervision and prudency in risk position and policies. It brings out how systematic risk can be hedge against in the future if these principles are well implemented.

Based upon the enhancements prescribed by Basel-III Norms as summarily mentioned above, with particular reference to the reduction in the likelihood of a financial crisis; Cynthia Obiri[41] concludes that the implementation of Basel-III will definitely result in prudent risk management in banking which is also reiterated by Blundell-Wignall and Atkinson[42].This is due to the fact that risks taken by systemically relevant banks, which contributed to the recent financial crisis, can be managed to a certain degree with Basel III's pro-cyclicality, leverage ratios and capital buffer.

13. Migration Dynamic to become Basel-III compliant: After the GFC, both the regulators and shareholders have exerted pressure on banks to build larger buffers of high-quality capital and reduce the riskiness of their portfolios. In essence all banks have to boost their capital ratio by increasing the capital and/or by reducing the RWAs. Benjamin H Cohen and Michela Scatigna[43] after study of 94 banks belonging to different economies such as developed and developing economies etc. examined the broad patterns in how banks have gone about achieving higher Credit risk-weighted capital ratios(CRAR) since the crisis. A key finding is that the "bulk of the adjustment has taken place through the accumulation of retained earnings, rather than through sharp adjustments in lending or asset growth". The study also concludes that the adjustment process to Basel-III is not yet complete…it would keep on evolving till the deadline.

1.4.2: Researches in Indian context:

In contrast to global perspective on implications of Basel-III Norms, there have been relatively fewer studies in India. Most of papers have focused on risk management tools and have studied as how PSBs (having as much as 70% of market share[44]) would be Basel-III compliant. The select studies conducted from 2006 onwards in Indian context and which are directly or indirectly related to capital adequacy framework of Basel- Norms are reviewed here as under:

Srivarahan[45] finds that In the present volatile and rapidly changing financial Scenario, it has become very challenging for the banks to manage complex and varied risks in a disciplined manner, so there is need to have good risk management practice not only to manage risk inherent in the business but also risk emanating from financial market as a whole. Risk

[41]**Cynthia Obiri(2012)**: Basel III - Prudent Risk Management in Banking?" Doctorate of Finance Student Swiss Management Centre,Research Paper -Commercial and Investment Banking,Electronic copy available at: tp://ssrn.com/abstract=2071543

[42]**Blundell-Wignall, A., & Atkinson, P., (2010)**: Thinking beyond Basel III: Necessary Solutions for Capital and Liquidity:. OECD Journal.

[43]**Benjamin H Cohen and MichelaScatigna(2014) Banks and capital requirements: channels of adjustment. BIS Working Papers No 443**

[44]As on March 31, 2014.

[45] ***Srivarahan*, K.R. (*2011*)**, "Risk Management in Commercial Banks: A Glimpse", The Management Accountant, August-2011, vol.46, issue 8.

management in commercial banks in India as it is practiced now is mainly an offshoot of recommendations of Basel and as modified suitably by RBI.

Ravi Mohan[46] observed that the relatively lower presence of foreign banks helped minimize the crisis direct impact on India's domestic economy. Foreign banks tend to be susceptible to capital flows reversal consequent to problems at host country, the parent bank or country of origin.

J. Usha[47]has assessed in details the status of operational risk management in the Indian banking system in the context of Basel-II. The expected coverage of banking assets and the approach adopted for operational risk capital computation is compared broadly with the position of the banking system in India, Asia, Africa and Middle East.

Bhattacharya [48] concluded that the process of Stress Testing involves identifying the potential movements, including which market variables to stress, how much to stress them and by what timeframe to run the stress analysis. It enables the banks to evaluate their financial position under scenario of varying severity and to control business risks.

Reddy[49]concluded that the market for credit derivatives in India is in a nascent stage and the originate-to-distribute model is significantly different from the one prevailing in advanced markets.

Jayadev[50]concludes that in a structurally transforming economy like India, with rapid upward mobility, credit demand will expand faster than GDP for several reasons. First, India will shift increasingly from services to manufacture whose credit intensity is higher per unit of GDP. Second, increased investment in infrastructure as projected by the Planning Commission will place enormous demands on credit. Finally, financial inclusion, which both the GOI and RBI are driving, will bring millions of low income households into the formal financial system with almost all of them needing credit. What all this means is that banks need to maintain higher capital requirements as per Basel-III at a time when credit demand is going to expand rapidly. The concern is that this will raise the cost of credit and hence militate against growth. The question here is: with the increased demand for credit, will the Basel-III capital framework increase cost of credit? What are the options before Indian banks?

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[46]**Rakesh Mohan (2009):** Challenges and Dynamics of Basel-Norms" : RBI Bulletinhttps://www.rbi.org.in/scripts/BS_ViewBulletin.aspx?Id=10281

[47]***Usha* Janakiramani (*2008*)** "*Operational Risk Management* in Indian Banks in the Context .Asia Pacific Journal of Finance and Banking Research Vol. 2. No.2. 2008

[48]**Himadri Bhattacharya (2011**) Jerome Kreuser3 SivaprakasamSivakumar: "Stress Testing Central Banks and Beyond". Research Gate – Feb-2011:, also https://www.researchgate.net/publication/228982118

[49]**Dr Y V Reddy's** "(Former RBI Governor) book **(2009)** *"India and the Global Financial Crisis-managing money and finance",Published by orient Blackswan*

[50]**M. Jayadev(2013),** Basel-III implementation: Issues and challenges for Indian banks, IIMB Management Review, Volume 25, Issue 2, June 2013, Pages 115-130, ISSN 0970-3896, http://dx.doi.org/10.1016/j.iimb.2013.03.010.

Mukul Jain[51] opines that the GOI should consider reducing its majority stakes in a variety of state-owned banks, as it attempts to cut the Rs.900 billion in recapitalization, needed to maintain present shareholding levels. GOI has so far rejected suggestions that it might reduce its shareholding in more than two dozen PSBs banks, including a stake of approximately 60% in the SBI, the nation's largest lender by market share. The RBI Governor has also in the recent past suggested that the GOI could save Rs.200 billion in recapitalization costs if it reduced its stakes in all state-owned banks to just 51 per cent.

Anita Mirchandani, and Swati Rathore [52] have concluded (by examining about the readiness of Indian nationalized banks group for Basel-III implementation (by an extrapolation of the analysis of above five big nationalized banks group) that the PSBs in India seem to have adequate capital to meet immediate capital adequacy requirement taking care of the estimated credit growth of about 16% in the Indian banking. However, complete implementation of Basel-III in next 6years will be a more challenging task where the emphasis will not be on Capital but, on Tier I capital that too more on Common equity**.**

Tanima Niyogi Sinha Roy and Basabi Bhattacharya[53]**;** undertakes a macro prudential analysis of the credit risk of PSBs during the liberalization period, using the Vector Auto regression methodology. The paper investigates the dynamic impact of changes in the macroeconomic variables on the default rate, the financial stability indicator of banks by simulating interactions among all the variables included in the model. Feedback effects from the banking sector to the real economy are also estimated. The impact of variations in different Monetary Policy Instruments such as Bank Rate, Repo Rate and Reverse Repo Rate on the asset quality of banks is examined using three alternative baseline models. Impulse Response Functions of the estimated models are augmented by conducting sensitivity and scenario stress testing exercises to assess the banking sector's vulnerability to credit risk in the face of hypothetically generated adverse macroeconomic shocks. Results indicate the absence of cyclicality and pro-cyclicality of the default rate, adverse shocks to output gap, real effective exchange rate appreciation above its trend value, inflation rate and policy-induced monetary tightening significantly affect bank's asset quality. Of the three policy rates, Bank Rate affects bank soundness with a lag and is more persistent while the two short-term rates impact default rate instantaneously but is much less persistent. Scenario stress tests reveal default rate of PSBs could increase on an average from 4% to

[51]**Jain, Mukul (2013**): "A Critical Review of Basel-III Norms for Indian PSU Banks". DRIEMS Business Review-VOl-1,No-1.Retrieved from http://www.driems.ac.in/mba/Download/5%20A%20CRITICAL%20REVIEW%20OF%20BASELIII%20NORMS %20FOR %20INDIAN%20PSU%20BANKS.pdf

[52]**Anita Mirchandani, and Swati Rathore(2013)**: Basel-III Implementation: Readiness of PSBs: Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 4(6):547-553© Scholar link Research Institute Journals, 2013 (ISSN: 2141-7024).

[53]**TanimaNiyogi Sinha Roy and Basabi Bhattacharya (2011):** Macroeconomic Stress Testing and the Resilience of the Indian Banking System: A Focus on Credit Risk".MPRA Paper from University Library of Munich, Germany, **JEL-codes:** E52 G21

7% depending on the type of hypothetical macro-economic scenario generated. An average buffer capital of 3% accumulated during the period under consideration could thus be inadequate for nearly twice the amount of Non-Performing Assets (NPAs) generated if macroeconomic conditions worsened. An important policy implication of the paper is that as the Indian economy moves gradually to Full Capital Account Convertibility, the banking sector is likely to come under increased stress in view of the exchange rate volatility with adverse repercussions on interest rates and bank default rates. In this emerging scenario, monetary policy stance thus emerges as an important precondition for banking stability. The study also highlights the inadequacy of existing capital reserves should macroeconomic conditions deteriorate and the urgency to strengthen the buffer capital position.

Prof. (Dr.) Vighneswara Swamy[54] with a comprehensive study titled "Basel-III: Implication for Indian Banking" has concluded that:

- Capital Requirement by 2018-19:"Assuming RWAs growth at 10%, Indian Banks would require additional minimum Tier-1 Capital of Rs.3.21 Lakhs Crores. With RWAs growth at 12% and 15% the requirement would go up to Rs.3.36Lakh cores and Rs.4.74 Lakhs Crores respectively".
- Impact of Increase in Loan-spreads on loan demand due to increase in CAR ratio under Basel-III: "Assuming no change in RWAs, 1% point increase in Capital-ratio would cause an increase in Loan-spread to the tune of 31.4 basis points-which would result in decrease in loan-demand by 18.8 basis points.
- Similarly, assuming for decline in RWAs, one percent point increase in capital ratio would cause an increase in loan spread to the tune of 22.0 basis points- which in turn would result in decrease in loan-demand by 13.2 basis points."
- Cost and benefit of Implementation of Basel-III: Between Rs.2.5 to 4.74 Lakhs Crores whereas the benefits in terms of prevention of banking crisis is estimated to be around Rs.16.01 Lakhs Crores.

Prof. Swamy concluded that there is "little cost and huge benefits for banks in India to be Basel-III Compliant".

Pallab Sikdar and **Munish Makkad**[55] conclude that Basel-III guidelines aim to improve banking sector's ability to endure long periods of economic and financial stress by laying down more rigorous and stringent capital and liquidity requirements for them. These regulations have been framed to enhance the quality, consistency and transparency of the capital base and strengthening the risk coverage of the capital framework. It may be

[54]**Prof. (Dr.) VighneswaraSwamy(2015)**:"BASEL-III: Implication for Indian Banking"-published by Indian Institute of Banking and Finance, Mumbai.

[55]**PallabSikdar and MunishMakkad (2014)**:"Shift from Basel-II to Basel-III – A Reporting Perspective on Indian Banking Sector"-IJCEM International Journal of Computational Engineering & Management, Vol. 17 Issue 1, January 2014 ISSN (Online): 2230-7893

concluded that the commercial banks operating in India are gradually moving in the right direction under the vigilant eyes of the RBI for phased implementation of various provisions enunciated within the Basel-III framework.

Shenoy, Mohane and Charan Sing[56] concluded in their study that the Indian banking system has remained largely unscathed in the GFC. This is mainly amongst others, on account of the relatively robust capitalization of Indian banks. The RBI had scheduled the start date for implementation of Basel-III norms over a 6-year period starting April 2013. The recent requirement of infusion of additional equity in view of the low economic growth and increasing NPAs of Indian banks paint a gloomy picture."

Dr. Mani Bhatia, Palak Mehta[57] examined that the Implementation of Basel-III Norms will have a net impact on the capital requirements of the Indian banks. They would require Rs. 5 Lakh Crore as an additional capital of which non-equity capital of Rs. 3.25 Lakh Crore whereas the equity capital will be 1.75 Lakh Crore. …….The biggest challenge Indian banks would face is the diminishing quality of assets and reduced profitability. Effective implementation of Basel-III is going to make Indian banks stronger and more stable that would deliver value to real sectors of the economy. So far it was required that there should be a complete change in the approaches of the banks to risk management. Before the implementation of Basel-III Indian banks were functioning on the standardized approaches of Basel-II. As Basel III is implemented globally Indian banks will have no choice but to make themselves prepare to attain this difficult task of capital enhancement. The large scale banks have to adopt the advanced approaches of risk management. The adoption of these advanced approaches to risk management by the banks would help them to manage their capital more efficiently and enhance their profitability".

C.S.Balasubramaniam[58] concludes that "**t**he challenge is to provide incentives for banks /financial institutions to recognize losses on account of NPAs as per Basel Norms. More than four years after the financial crisis, it is so widely accepted that many of the world's banks are burying/hiding losses and overstating their asset values, even the BIS is saying so in writing. It fully expects the taxpayers to pick up the tab should the need arise, too. The lack of transparency, credibility in banks' balance sheet fuels a vicious circle. When investors cannot trust the books, lenders can't raise capital and may have to fall back on their home countries 'governments for help. This further pressures sovereign finances, which in turn,

[56]**Shenoy, Mohane and CharanSingh(2014):** "Basel Banking Norms – A Primer", Indian Institute of Management, Bangalore working Paper - IIMB-WP N0. 470

[57]**Dr. Mani Bhatia, Palak Mehta(2015) :** "Basel-III Accord and Its Implications on Indian Banking: An Evaluation"- International Journal of Engineering Technology, Management and Applied Science, www.ijetmas.com March 2015, Volume 3 Issue 3, ISSN 2349-4476

[58]**C.S.Balasubramaniam(2012):** "Basel-III Norms And Indian Banking: Assessment And Emerging Challenges"- Abhinav National Monthly Refereed Journal Of Research In Commerce & Management- Volume No.1, Issue No.8 ISSN 2277-1166

weaken the banks even more. The adage 'too big to fail 'does not easily become applicable to banks often as the size of the banks 'capital, operations, NPAs, provisioning increases. This issue needs separate discussion as the challenge is greater and real".

1.4.3 Gap Perceived in the Researches so far:

As described in detail earlier, most of researches have aimed at the various risks and consequent threats of impending crisis and thereby how to hedge such risks to avoid in future the recurrence of this kind of crisis. Many other researchers have focused on how the Norms would impact the performance of commercial banks in general and in areas of loan (such as credit expansion or loan demand or loan interest rates etc.) in particular.

This study on the other hand first seeks to study the migration strategies adopted by banks in India during the preparatory years 2008 to 2014 to become Basel-III compliant. The study also seeks to look into the resultant dynamics on performance of banks in terms of credit growth, RWAs growth, changes in assets mix in terms of riskiness of assets quality etc. Further, the study also seeks to estimate a realistic estimation of quantity of capital required especially by the PSBs for Basel-III capital adequacy compliance-under-4-different scenarios of combination of growth in profits; growth of RWAs and also rates of plough back of profit into capital.

Finally, this study proposes merger of all 27 PSU banks as on 1-4-2018 into 5 Big Banks akin to D-SIBs and further net deficit capital infusion by GOI into these newly formed 5 Big Banks as on 31-3-2019 on a novel idea of "Repatriation Basis". The study concludes that these new 5 Big Banks will not only have Basel-III mandated capital adequacy but also have sufficient financial strength to repay back in next 10 years.

1.4.4 Global Reaction/Criticism of Basel-III:

Banking business is beset with various kinds of inherent risks. To protect the interest of the stakeholders, the BCBS proposed Basel-III Norms which aim at ensuring adequate quality and quantity of capital base, provide liquidity norms and leverage norms and uniquely coverage to mitigate systemic risk. However, Basel-III has also been criticized globally. No sooner than Basel-III Norms were released, there was a flurry of criticism such as "Basel-III is just too complex."; "Higher capital levels required by Basel-III will pose a problem for small banks"; "Basel-III will prove ineffective for controlling large bank risk." "The benefits of Basel-III's new CCCB are unproven." It will impose 'significant' costs on the industry, and its governance lacks transparency". The various planks of criticism have been discussed as under**:**John Kwaku Mensah Mawutor concludes that "It is a subject matter of debate whether higher capital ratios (as proposed in Basel-III) will safeguard a Bank's risk-taking

capabilities"[59]?; "The Basel-III regulations require significantly higher minimum capital levels for banks and bank holding companies. Although many applaud higher capital levels for large institutions, it is subject matter of debate that whether there are good economic reasons to apply these rules to small banks? Moreover, the complex rules are difficult and expensive to enforce. The new rules will place even greater burdens on the interpretation and judgment skills of front-line bank examiners. What is really important as regards the new capital requirements is not that they increase the equity cushion that allows an institution to cover its losses, but rather the effect that this increase in the capital ratio may have on the incentive to take on risk. The creation of larger cushions would be of little use if institutions just took on even greater risks that could equally lead them to insolvency in the event that the risk materialized. "It is firstly important to stress that if the measurement of risk by the regulatory authority were perfect, an increase in the capital ratio would not, by definition, entail greater risk, since as soon as it was detected by the regulator it would result in a higher capital requirement. Indeed, it is useful to break down the regulatory capital ratio, into its two individual components: equity in relation to total Assets (E/TA) and the risk weighted to total Assets (RWAs/TA) ratio, which measures the level of risk attached to the institution's total Assets. Under perfect regulatory conditions, an increase in risk uptake, i.e. an increase in (RWAs/TA), should be matched by an increase in the non-weighted capital ratio (E/TA), or a decrease in leverage (TA/E), as shown arithmetically under:

i.e., CRAR = E/RWAs = E/TA X TA/RWAs.

Where E=Equity (capital), TA= Total Assets

In other words, to increase Capital Ratio (CRAR) a bank may decrease leverage and increase the risk uptake (=RWAs). So despite higher capital ratio a bank may undertake higher risks.

Does higher capital mean lower risk? Haldane[60]pointed out that the actual risk borne by institutions was far from properly reflected in the way that the regulators calculated RWAs. The problem is even more serious for institutions that use the Basel-II advanced method to calculate capital requirements. This method, based on models developed by the banks themselves and supervised by the regulator, has led to marked disparities in RWAs between banks with similar business models, thus underlining the potential for divergence between the risk actually taken on and the risk reported under the regulations.

Having made this important caveat, it now remains to examine the relationship between the risk-weighted capital ratio and the assumption of risk. In other words, are there reasons to believe, from a theoretical point of view, that a greater proportion of equity in an institution's

[59]**John Kwaku Mensah Mawutor; "**Critical analysis of Basel-IIIand Risk Managementin Banking" **(2014)** –European Journal of Business and Management, ISSN No. 2222-1905, Vol. 6, No. 6.

[60]**Halden, Andrew G. (2011)**: "Capital Discipline", Lecture at the meeting of the American Economic Association, Denever, January 9,2011 (also available at the Bank of England's Website

financing structure will bring a lower assumption of risk? In principle it would seem intuitive that in proportionally bringing more equity into play, the risk assumed would tend to fall. However, this is a theoretical view that is only valid under certain quite restrictive circumstances. There are several reasons why, at a theoretical level, an increase in the capital ratio will not necessarily result in less risk:

First, it is possible that banks will attempt to offset the increased cost of equity resulting from greater solvency requirements by assuming greater risk in order to maintain the return on their equity. The theoretical arguments that lead to this position are many:

i) Jordi Gual[61] finds that the inverse relationship between the capital ratio and the assumption of risk is valid if there is no limited liability and, furthermore, there is perfect regulation of capital ratios, in the sense that the weighting applied to capital requirements coincides exactly with the beta parameters that define the individual risk involved in each of the different assets in the portfolio. If these conditions are not met, it could easily happen that an increase in capital ratios will result in the assumption of greater risk by financial institutions (Koehn and Santomero -1980)[62]; The logic is simple: given an increase in ratios, institutions will attempt to increase their returns on equity in order to take advantage of their limited liability in the face of adverse events, and they can do so to the extent that, as already mentioned, the regulatory ratio does not truly reflect the risk actually taken on by an institution.

ii) Flannery (1989)[63] also shows how financial institutions minimize the individual risk to their assets in order to satisfy capital restrictions, while at the same time maximizing risk to the portfolio as a whole, with the aim of taking maximum advantage of the value of the financial option afforded to banks by the existence of deposit insurance.

iii) Blum (1999)[64]and Hellman, Murdock and Stiglitz[65] (2000) stress that despite the fact that capital requirements reduce the incentive to take on risk as they bring more equity into play, this effect can be more than counteracted if one considers the dynamic impact of regulations. First, in reducing the expected return to the banking business, one reduces the cost of taking on additional risk. Secondly, capital regulations increase the value of future equity. If access to the capital markets is excessively costly (which will very probably happen in the short term,) the banks will have an incentive to generate capital internally by increasing current risk.

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[61]**Jordi Gual** –IMF study on Spanish banks - "la Caixa" Economic paper No. 07 , December-2011.

[62]**Koehn, M. and A. Santomero (1980),** "Regulation of bank capital and portfolio risk" ,*Journalof Finance*, 15, 1235-44.

[63]**Flannery, Mark (1989**), "Capital Regulation and Insured Banks' Choice of Individual LoanDefault Risks", *Journal of Monetary Economics*, 24(2), 235-258.

[64]**Blum, Jürg (1999),** "Do Capital Adequacy Requirements Reduce Risks in Banking?",*Journalof Banking and Finance*, 23(5), 755,771.

[65]**Hellmann, Thomas F., Kevin C. Murdock,** and **Joseph E. Stiglitz (2000),** "Liberalization,Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?", *American Economic Review*, 90, No. 1, 147-165.

One finds a further theoretical argument if one dispenses with the usual assumption that risk is distributed normally. To be specific**,** Perotti, Ratnovski and Vlahu[66](2011) showed that with limited liability and fat-tailed risk distribution, there is no reason why the imposition of additional capital requirements should change the uptake of risk, since incremental changes to capital cushions will not alter incentives, given that the magnitude of any of losses in the event of bankruptcy will be such that it will be almost impossible for them to be covered whatever the regulatory capital requirements. Indeed, they demonstrate that in the presence of tail risk, the imposition of higher capital ratios changes the levels of risk.

Finally, given that it dilutes the shareholders and reduces the franchise value, an increase in capitalization could reduce any incentive to engage in the proper level of risk monitoring, and the quality of assets could therefore fall (Boot &Greenbaum[67]).

This quick overview of the academic literature demonstrates that the analytical bases for anticipating that an increase in capital requirements will result in reduced risk are, at the very least, debatable.

One can first approach this problem using the aggregate time series data and examine whether, during periods of lower capital ratios, greater risk has been taken on, and to what extent any potential correlation is due to a causal relationship between the two variables.

The long-term evidence provided by Berger et al. (1995) and Kashyap[68] et al. (2010) for the USA shows that capital ratios at banking institutions fell up to the years 1940s as systems were developed that explicitly and implicitly were guaranteeing the liabilities of banks. Since1940, capital ratios have varied within a range of 5 to 12%, with a specific period of continuous growth precisely between 1990 and 2009. In other words, an increase in capital ratios preceded the greatest financial crisis since the Great Depression. To put it another way, the increases in ratios that resulted from regulatory pressure did not prevent the assumption of greater risks, risks that were frequently off balance sheet or not detected by regulatory controls.

In short, Jordi Gual concludes that it is not clear, either from a theoretical or an empirical point of view, that an increase in the regulatory capital ratio will reduce the level of risk assumed by the financial sector. This is not surprising, given that Basel-III continues the philosophy of Basel-II (especially as regards the calculation and the role played by RWAs),

[66]**Perotti, Enrico C., Lev Ratnovski and RazvanVlahu (2011),** "Capital Regulation and TailRisk", *CEPR Discussion Paper*, No. 8526.

[67]**Boot, A. and S. Greenbaum (1993**) "Bank regulation, reputation, and rents: Theory and policyimplications", *Capital markets and financial intermediation*, ed. C. Mayer and X. Vives.Cambridge University Press.

[68]**Kashyap, Anil K., Jeremy C. Stein and Samuel Hanson(2010),** "An Analysis of the Impact of "Substantially Heightened" Capital Requirements on Large Financial Institutions", *Mimeo*, May.

and **"**not only did Basel-II fail to prevent the financial crisis of 2007 to 2011, it could also be argued to have contributed to it"[69]

Are increased capital ratios going to mean greater financing costs for the banks?

The Basel Committee's answer to this question is "no", at least in the long term, and "not much" in the short term. The theoretical basis for such a categorical response is one of the most famous theorems in economics and finance, the Modigliani-Miller theorem, which states that, under certain circumstances, the cost of financing a company is independent of its financing structure In terms of capital and debt.[70] Jordi Gual however opposes this proposition from the Modigliani-Miller theorem, for two basic reasons : First, because for the theorem to apply, at a higher capital ratio it should be perceived by those supplying the finance that a lower level of risk is borne, something which does not necessarily happen, either from a theoretical or from an empirical point of view. And secondly, because in addition to this first point, some of the theorem's other key assumptions are not met in practice, particularly where banking is concerned.

Based on a review of the evidence and economic theory and it is probable implications etc., Jordi Gual concludes that : "following an increase in capital requirements, the cost of financing institutions will raise moderately over the long term, though this rise will be more substantial in the short term or during an accelerated transition period".

Is it doubtful whether Basel-III can bring about prudent risk management in banking? The provisions of Basel-III have been criticized by many authors as allegedly they 'have not fully addressed the factors that were responsible for the current financial crisis and the fundamental problems identified with Basel-I and Basel-II" [71] (Amediku, 2011). Undertaking risks is considered to be a common strategy for the banks when they aim to maximize returns. Basel-III attempted to capture those risks in prudent manner but the developments in the financial system created new set of risks which the current framework might not encounter. Particularly, "the modifications in the overall RWAs framework are criticized that could deal with more concentration issues"(Wignall and Atkinson, 2010)**[72].** The risk management challenges required of Basel-III's rules, to provide support and engagement of multiple competencies across the organization so as to address impacts on people, process and technology. However, as Adamson (2012) refers, the laws and regulations being written

[69]**Gual, Jordi (2009),** "El carácterprocíclico del sistema fi nanciero", *in EstabilidadFinanciera*, (May 2009), Published by Bank of Spain (Banco de España.)

Rochet Jean-Charles (2010) "The future of banking regulation" in Dewatripont, M., Tirole,J. and J.C. Rochet*Balancing the Banks. Global lessons from the financial crisis*, PrincetonUniversity Press.

[70]Financing cost is understood to mean the average weighted cost of capital. In other words, the weighted average between equity costs and borrowing costs.

[71]**Amediku, S. (2011):** "Was Basel-III Necessary and Will it Bring About Prudent Risk Management inBanking? Bank of Ghana Working Paper No. 2011/01. Available at SSRN:http://ssrn.com/abstract=1769822

[72]**Blundell-Wignall, A.& Atkinson P. (2010**). Thinking beyond Basel- III: Necessary Solutions for Capital andLiquidity. *OECD Journal: Financial Market Trends*, *2010*(1), 9-33.

to implement Basel-III did not mention anything about size, structure, risk profile, complexity, or economic significance of a banking organization. To develop, maintain and improve the appropriate risk management framework that serves an organization, all of these factors must be taken into consideration.

In addition, the regulations of Basel-III did not alter the risk weighting regime and thus, banks would continue to search for common equity against their RWAs (Amediku, 2011). The contribution of the risk weighting regime and the liquidity proposal resulted in the bank's preference for government debt paper and to the financial damage of the small and medium enterprises of the private sector.

Apart from the direct deficiencies in providing prudent risk management, there were also major shortcomings in ethical issues such as accounting manipulation, external auditors, and regulators. According to Amediku**,** 2011 Basel-III has not addressed any of these issues so as to create a stabilized risk management regulatory architecture. Wignall and Atkins (2010) further criticizes that Basel-III does not include provisions about the Shadow banking system determining whether it should be incorporated into the regulatory framework and, if so, how?

Although Basel-III paid close attention in addressing many of the 'significant' risk management weaknesses, there are several developments that emerged during the last few years which, still, are not incorporated into Basel-III regulations. For example, "there should be regulations that obligate central banks to increase focus on effective crisis management, recovery and resolution measures so as to reduce both the probability and impact of a bank failure" (Byres, 2012[73]). Expanding that, they should, also, apply a more micro-prudential supervision to the banks, identifying and analyzing proactively the systemic risk. Both actions might have prevented panic situations that came from the financial crisis.

Generally, the implementation of Basel-III may well represent the most 'significant' series of steps and challenges in managing risk. However, many elements of the agreement remain unfinished and many factors that are responsible for Basel-II failure have also jeopardized the recent efforts to raise international capital requirements in the form of 'Basel-III' (Lall, 2009). Given the fact that Basel-III did not alter the risk weighting regime and still, for example, allows banks searching for common equity against their RWAs (Amediku, 2011), BCBS needs to monitor financial system development and risk, on a more regular basis. The complexity and demands of the banking world requires a flexible management solution that delivers speed, accuracy, and performance. Moreover, BCBS needs to examine shadow banking risks, to review whether external rating agencies implement the regulations and standards and to punish regulatory arbitrage. Dimitrios V Siskos concludes that Basel-III

[73]**Byres, W.** (2012). Basel-III: Necessary, but not sufficient. *6th Biennial Conference on Risk Management and Supervision.*

cannot be relied upon to deliver stability on its own, but banks should push on with the reform agenda to deliver full, timely and consistent implementation. As Adamson (2012) refers, the road to achieve a mature risk-management model is a long and complex one and each bank should individually implement well-defined risk management strategies that increase the likelihood of a well-structured implementation of a Basel-Program. “Basel-III rules are far too complex to be effectively implemented and will prove in-effective as it has overlooked some risks”; it has been often criticized from many sections that the new Basel-III rules are very complex. The next generation of capital regulation should be targeted to improve transparency, reduce complexity, and recognize practical limits to verification. Basel-III Norms span almost 1,000 pages, not including 219 pages of new market risk rules issued in July 2012 or 40 pages of leverage ratio rules for the largest institutions. Regulators argue that the complexity of bank capital regulations is necessary to counteract bank strategies that reduce regulatory capital requirements and increase leverage. Despite the length and complexity of these new regulations, they still give an incomplete accounting of some important sources of bank risk. For example, credit concentration risk-a risk the official Basel-II, 2006 document calls “arguably the single most important cause of major problems in banks” are not addressed in Basel-III. Concentration risk has been closely linked with the recent wave of bank failures. In a period of ultra-low interest rates (which are bound to rise), Basel-III does not include capital requirements for interest rate risk. Basel-III also still allows national regulators to treat their sovereign bonds as if they are riskless-which is at odds with the recent experience for Greek and Cypriot banks and for Argentine banks a dozen years earlier. Even if internationally active banks fully comply with the provisions of Basel-III and operate with the same Basel-III capital ratios, their true risk potential will still differ markedly depending on the credit risk of their home country sovereign’s bonds, individual bank credit risk concentrations, and the interest rate risk of their overall positions. The standard response to recognizing these omissions is that national regulators always have the right to require capital for these additional risks, should they choose to do so (the so-called Basel-Pillar 2). Although technically true, there is little evidence that this systematically happens among the countries that have adopted the Basel- Accords.

“Basel-III introduced unproven macro prudential bank regulations”

The frame work has also been criticized on the ground that it introduced un-proven un-tested concept of Macro-Prudential regulations, “Basel-III will prove ineffective for controlling large bank risk” “The benefits of Basel-III’s new countercyclical capital buffer are unproven. It will impose ‘significant’ costs on the industry, and its governance lacks transparency”.

The Basel-III regulations require significantly higher minimum capital levels for banks and bank holding companies. Although many applaud higher capital levels for large institutions, it is unclear that there are good economic reasons to apply these rules to small banks. Beyond

the well-known capital increase, Basel-III contains new unproven macro-prudential capital buffers that will impose costs on large banks with uncertain stability benefits. The complexity of the new Basel-III rules gives rise to a host of concerns. Complex rules are difficult and expensive to enforce. The new rules will place even greater burdens on the interpretation and judgment skills of front-line bank examiners, and evidence already exists that this will be problematic. Moreover, history shows that when bank supervisors are preoccupied with writing and interpreting complex capital regulations, they often miss emerging financial-sector imbalances. Future bank regulations should be developed with a greater appreciation for the practical limits on verification. They should be less complex and more transparently enforced.

Conclusion: Although the various set of criticism of Basel-III as above may have limited element of validity in their criticism yet, taking the holistic view the Basel-III Norms (as combination of Capital ratio; liquidity provisions , two buffers (CCB and CCCB),leverage provision and the macroscopic provisions to contain systemic-risks by managing inter-connectivity as well as pro-cyclicity etc.) do have the adequate provisions to bring about resilience in banks to tide over financial turmoil and would certainly bring about long term stability and prosperity of banks.

1.5: Significance of the Study:

The contribution of study is to examine in detail likely impact of Basel-III Norms on strengthening the banking system in India and its likely change in the structure so that banks would be better equipped to withstand the economic turn-down and even sectorial crisis, if any arises. A systematic attempt has been made in this study to examine the current capital structure of banks and ascertain the capital adequacy so as to become Basel-III compliant by RBI mandated time line of March-end 2019. Study attempts to record and interpret the migration strategies adopted by banks in India, using Annual Reports of banks as primary source of data information to strengthen the required capital base during the years of 2009-2014 (March end). Based on the empirical experience gained during the preparatory years of 2009-2014, study aims to propose 4 alternate scenarios to augment more realistic required quantum of capital base of banks during the years 2015-2019. Study concludes that all existing 27 PSU Banks are highly capital deficient in all the 4 proposed scenarios whereas, each sample bank belonging to new generation private sector banks Group is found to be capital surplus in all the 4 scenarios. Thus, it is heartening to note that these private sector banks as group are expected to be Basel-III compliant by March 2019. However, all PSU Banks need heavy capital infusion, so as to be Basel-III adequate by March-end, 2019.

To achieve the requisite capital, an attempt is made by developing appropriate parameters of mergers so as to reap the benefits of different synergies of merger of existing all PSU banks into probable five Big Banks as on 1-4-2018 so that these banks would have good

financial strength as well as to qualify for (in due course) to be reckoned as D-SIBs as envisioned in Basel-III. Since PSBs in India have majority shareholding by GOI, the deficiency in capital adequacy study suggests that the same be contributed by GOI during the year 2018- 2019 on the novel idea of “Repatriation” basis.

The novel proposal of deficit capital Infusion into these proposed 5 Big Banks to be reckoned as D-SIBs by RBI on repatriation basis have been calculated based upon uniform average growth rate of RWAs, Profit growth and Profit plough back. Thus, the implications and potential challenges for banks in India in migrating to Basel-III compliance have been examined in depth, primarily for all PSU banks in India. And,

Finally, the study also proposes that after the five years period of implementation of Basel-III Norms and gaining financial strength by March-end 2024, the study envisioned D-SIBs would start repaying in the equal amount the same injected capital to GOI in next ten years from April 2024 to March-end 2034.

1.5.1 The important contributions of the study are summarized as under:

1. Explains complex concepts in simple language: The complex provisions on Basel-III have been explained in simple words which would help the practicing bankers/Bank economist and bank management equally as well as the research scholars in academic institutions.
2. Evaluates systemic risk provisions and its efficacy: The risk management provisions including pro-cyclicity etc. have been explained in simple and lucid manner and its efficacy examined and presented.
3. Traces out migration strategies adopted by banks in India (2008-2014): Perhaps for the first time an attempt has been made to study systematically the migration strategies adopted by banks in India to boost the capital and capital adequacy ratio during the preparatory years (2008-2014) in efforts to migrate to Basel-III
4. Examines the resultant dynamics of changes: The study examines the changes in growth of bank assets, RWAs, riskiness of assets etc. from the period of April 2008-2014 March-end and ventures to outline the likely implications on banks by March end 2019.
5. Examines possible challenges in raising requisite capital by banks as well as infusion by GOI to conform to the capital adequacy as envisioned in Basel-III provisions.
6. Estimates the likely deficit amount of bank capital to conform to the Basel Norms by March-end 2019. To achieve this, study under takes the task by pragmatically developing the feasible as many as four possible varied scenarios so as to roadmap and determine the requirements.
7. Another important contribution of the study consists in identifying and evaluating the various challenges in mopping up the requisite capital by various means and options

including by the merger of existing all PSU Banks into 5 Big Banks so as to make them akin to D-SIBs as envisioned in Basel-III provisions.

8. Also proposes another unique concept of capital infusion by GOI into these newly set up Big banks on "Repatriation" basis.
9. Finds that Basel-III Norms including capital adequacy ratios shall be achieved by all newly formed 5 Big Banks with help of GOI infusion. Initially grave concerns were expressed that banks in India may face an uphill task of attaining the capital ratio of 11.5% by 2019. But deliberate proactive attempts taken by all the banks and despite contamination of assets in recent years (2015-16) across all banks, all 27 PSU Banks amalgamated based on the concept of 'Merge All' and thus newly formed 5 Big Banks are expected to achieve capital ratio but only through capital injected by GOI.
10. Thus, the study concludes that Basel–III shall have in general, positive impact on banks in India but the monitoring of systemic risks and effective forecast for the triggers for CCCB etc. shall be quite challenging for both the Regulatory and equally for Monetary Authority in India.

1.6: Data Source and Research Methodology:

Basel-III Norms were formally published in December 2010 yet, the salient provisions were in public domain for discussion and suggestions from 2008-09 itself. So, the year 2008-09 was ideally suited to be taken as base year for the study of the preparedness of banks in India for migrating to Basel-III Norms. Further, as said earlier Basel-II proposals were effective worldwide in 2004 and India Implemented in 2009. The New Capital Adequacy Framework (NCAF) for complying with the first pillar[74](capital adequacy based on Credit-risks, Operational risks and Market risks) and Supervisory Review Process (SRP) & Internal Capital Adequacy Assessment Process (ICAAP), which together form the second pillar of the Basel-II capital adequacy framework[75] (Both pertain to quantifying capital requirement and putting in place sound risk assessment and management systems) were mandated by RBI to be implemented from 1st of April-2008. And, Year 2008-2009 is the immediate aftermath of GFC year so it was worthwhile to know how banks are shaping afresh. We therefore, collected Annual Reports of all banks in India from the year April 2008-2009 to study the preparedness of banks in capital adequacy/identifying the migration strategies adopted by banks in India. Further, every bank under the RBI guidelines effective March-end 2009, was required to make mandatory disclosers in various Basel Disclosure Formats (DF-1 to DF-13) as part of balance-sheet in their Annual Report. The same has been used in this study as the basis of our source of each of the bank data information. This study therefore,

[74] RBI Circular number: DBOD.No.BP.BC.90/20.06.001/2006-07 dated April 27, 2007 on the 'Guidelines on the implementation of NCAF and Market Discipline'.

75 RBI Circular number; DBOD.No.BP.BC.66/21.06.001/2007-08 dated March 26, 2008, on 'Guidelines for Pillar 2 - Supervisory Review Process.

relies mainly on secondary source of data information drawn from the published Annual Reports of Banks.

Since our study is exploratory research in nature, its imperative therefore, that this study traces and evaluates the concrete steps taken by banks to strengthen their capital base in India. From the published Annual Reports of banks in India, an attempt was made to undertake an analysis of migration strategies adopted/preparedness of banks from the DF-1 to DF-13 between April 2008 to 2014 March end. We found that the relevant Basel Disclosure data information details were available for all the years of study period only for the following 25[76]banks consisting of A) 12 nationalized banks, of which 8 were nationalized in July 1969 and other 4 were nationalized in April 1980) and B) IDBI Bank Limited; **(**Accordingly, data of these13 Banks out of 20 have been used in the statistical analysis. This bank group shall be called as "Other PSBs Banks Group"**),** C) all 6 banks of State Bank Group and D) another 6 new generation private sector banks (called New Generation Pvt. Banks Group), established mainly in the post reform period of the last decade of bygone century. It's heartening to note that these 12 nationalized banks for which necessary Basel Disclosure data information details were available and one IDBI Bank Limited together comprised the 78 percent of market share of all 20 (19 nationalized and one IDBI Bank Limited) banks in terms of business (Total Deposits plus Outstanding Advances) as on March-end 2009. Similarly, for the same period, these 6 new generation private sector banks be treated as true representative as these together comprise the 78.5[77] percent of the market share as on 31-3-2014 among all (New and Old together) private sector banks.

As noted earlier, RBI mandated all banks in India in 2013, to disclose in the Annual Report (various exposures) as per various Basel Disclosure Formats (DF-1 to DF-18) which has direct implications on the capital charge to determine the capital adequacy. The scope of our study aims to include all banks in India. Study covered all the existing 27 PSBs and have deliberately retained for the purpose of consistency the same 6 New Generation Private Sector Banks Group which we studied earlier in the period of preparedness from 2008 to 2014 period. Thus, in the study of determination of capital deficiency, to make banks in India as Basel–III compliant, we have covered all these 33 banks in the study. We call all these banks covered in the Study as sample banks.

[76]Basel disclosure data available on public domain were following 25 Banks: **A) Nationalized Banks (12)** viz., 1. Bank of Baroda, 2.Bank of India, 3. Canara Bank. 4. Indian overseas Bank, 5. Indian Bank, 6.Punjab National Bank, 7. Syndicate Bank, 8.Union Bank of India, 9. Andhra Bank, 10. Corporation Bank, 11. Oriental Bank of Commerce and 12.Vijaya Bank. **B) Other PSB:** IDBI Bank Ltd. **C) State Bank of India and its 5 Associate Banks, Viz.**:1. State Bank of Bikaner and Jaipur, 2.State Bank of Mysore, 3. State Bank of Hyderabad, 4. State Bank of Patiala and 5.State Bank of Travancore, and D) following **Six New Generation Private Sector Banks:** 1, HDFC Bank Ltd., 2. ICICI Bank Ltd., 3. Kotak Mahindra Bank Ltd., 4. Axis Bank Ltd, 5. IndusInd Bank Ltd and 6. Yes Bank Ltd.

[77] Banking at a Glance, **(2014),** Published by Indian Banks' Association, Mumbai.

To examine the likely capital deficiency in banks (sample banks) so as to be Basel-III compliant by March 2019 as mandated by RBI in India, we based the projections of required capital adequacy for each of 33 banks using the published Balance Sheet for the year 2014-2015 March-end and the same has been projected annually to get a reliable estimates, till end March 2018. The projections of resultant probable capital requirement/shortages in each of banks is arrived at by taking as many as 4 varied scenarios of combinations of percent growth in balance sheet figures of i) RWAs, ii) Profit, and iii) Profit Plough-Back and same is presented in the table below. All the four scenarios are based on the actual observation made in the analysis of banks preparedness towards capital adequacy during the period 2009-2014 so as to be reasonably justified to assess the likely requirements of capital.

The Projections of Capital Deficiency in four probable alternate scenarios is depicted in table below.

(In Percent)

Scenarios	Growth in RWAs	Growth in Profit	Profit Plough back
I	5	5	75
II	8	5	80
III	10	10	80
IV	15	10	80

In all the 4 varied scenarios in different combinations of parameters as stated above, we found that all 27 PSU Banks are highly capital deficient in all the 4 scenario of study whereas all the 6 New Generation Private Sector Banks Group are surplus in all the 4 different scenarios under study. Thus, it is heartening to note that these New Generation Private Sector Banks Group are expected to be Basel-III compliant by March 2019. However, all PSU Banks need heavy capital infusion, so as to be Basel-III adequate by March-end, 2019. This amount of deficiency in capital adequacy at the year-end 2018-2019, study suggests that the same be contributed by GOI on Repatriation basis.

The merger proposal as presented in Chapter 6, of existing all 27 PSU Banks is based on combination of following five parameters of A) almost equal geographical presence, B) almost equal business size, C) almost amount of equal capital, D) common technology platform, and also E) to form almost Equal Capital Ratios. All the 27 PSU Banks are planned to merge on 1-4-2018 to form 5 Big Banks known as D-SIBs and to emerge as Basel-III compliant by March-end 2019. The novel proposal of deficit capital Infusion into these five Big Banks D-SIBs by GOI on repatriation basis has been calculated based upon uniform average growth rate of RWAs, Profit growth and Profit plough back. The study finds that after such merger the new Big Bank A shall remain “big-brother” and shall be having almost double the capital, about1.5 times the Business and 1.5 times the branch network Pan India Presence than of other 4 new D-SIBs Big Banks B, C, D and E.

1.6.1: Statistical tools and analysis:

I) For study of dynamics of changes adopted by all the 3 Bank-Groups (2009 to 2014): statistical analysis has been done for A) across the years& B) across banks as under:

Part A: Analysis across the years: In this section analysis across the year has been performed under two parts:

a. Descriptive analysis: in this section of analysis mean, standard deviation, minimum, maximum and important three percentiles has been presented and interpreted.

b. Analysis of change across the year: To evaluate significant increase/decrease over the years, Regression analysis with dummy variables has been performed. ANOVA for Model fit, Model summary and coefficient tables are provided and interpreted.

Finally, the descriptive analysis and regression analysis has been done separately for all sample banks under all the three Banks Group's.

Part B: Analysis across the banks: In this section analysis across the year has been performed again under two parts:

a. Descriptive analysis: in this section of analysis mean, standard deviation, minimum, maximum and important three percentiles has been presented and interpreted.

b. Analysis of differences between the banks: to find out 'significant' difference between the banks ANOVA and post hoc analysis by Bonferroni test has been performed and interpreted.

II) For Study of estimated Capital Deficiency by March 31, 2018:

Statistical tool of extrapolation is used to estimate the likely capital deficiency taking 2014-2015 the actual Annual Reports data for all PSU Banks for the annual period end March 31,2018 by assuming a certain uniform linear growth rates in Profits (5 to15%); Profit plough-back (50% to 90%) as capital and RWAs growth (10% to 20%).

1.7: Chapter Outline:

In all, the study presents 7 chapters:

In Chapter 1 an attempt has been made to present the rationale of the study, objectives of the study, review of literature in global and in Indian context, significance of the study, data source and research methodology, chapter outline and finally, the limitations of study.

The study presents that RBI has made cautious efforts in the introduction and successful implementations of Basel-I and II Accords. It is also well-documented that the due to effectiveness of this Norms India could withstand the GFC which crippled many developed economies in the World. Salient features of Basel-I and II and Unique features of Basel-III covering better quality and higher quantity of capital, various risk management provisions including macro prudential elements containing systemic risks are presented in Chapter 2.

Chapter 3 of study presents the preparedness of banks in India for risk management and unique macro prudential measures as enunciated in Basel-III to counter and manage

systemic risk also. The RBI's guidelines to banks so as to be Basel-III compliant among others by means of Risk Based Supervision (RBS) and Supervisory Programme for Assessment of Risk and Capital (SPARC) on regular basis to take care of operational risks and market risks are covered.

In the Chapter 4 study presents the dynamics of changes adopted by banks globally in migrating to Basel-III Norms. In this context study also examines the results presented in the BIS Working Paper No-443 by BIS which presents the preparedness of sample of 94 banks located across the world, in boosting the capital ratios and resultant impact on cost of funds, lending rates, assets growth, profitability etc. In this chapter study makes an attempt to undertake an in-depth analysis of preparation of commercial banks in India by examining the appropriate strategies adopted by them during April 2008-2014 March-end to boost capital ratios so as to be Basel-III compliant by March end 2019 and resultant dynamics. The analysis is carried out using data information compiled from the Annual Reports of the Banks called as Sample Banks and DF1 to DF 13 as given there in. Accordingly, the study attempts to analyze and interpret the strategies adopted by sample banks grouped into the following three Bank Groups viz, Other PSBs Banks Group, State Bank Group banks and New Generation Private Sector Banks Group. The analysis covers the efforts made by these sample banks individually as well as in the respective Groups to boost the capital ratios during the preparatory years of April 2008-2014 March-end by ploughing-back of profit, boosting of tier-1 capital, attempting to reduce assets, and/or reducing the RWAs and/or cutting down of high risk assets etc. The study even statistically "tests" whether there is "significant" difference in these banks across the study period as well as across the bank-groups.

In chapter 5 study cover the potential challenges for banks in India in migrating to Basel-III compliance. Study examines the likely challenges that may be faced particularly by GOI in injecting the deficit capital by various means so as to make, in particular PSU Banks Basel-III compliant by March end, 2019.

In Chapter-6 study proposes merger of existing all 27 PSBs into 5 Big Banks on 1-4-2018 based on the following five parameters of A) almost equal geographical presence, B) almost equal business size, C) almost amount of equal capital, D) common technology platform, and also E) to form almost equal Capital Ratios so that these banks would have good financial strength to become Basel-III compliant by 2019 as well as to qualify for (in due course) to be reckoned as D-SIBs. It is also proposed that the GOI would inject total capital deficit into these 5 BIG Banks during the year 2018-2019 with a view to make them Basel-III compliant. GOI would infuse deficit capital on repatriation basis into these new 5 Big PSU Banks during the year 2018-19. It is also proposed that after the five years period of implementation of Basel-III Norms and gaining financial strength by March-end 2024, these

D-SIBs would start repaying in the equal amount the same injected capital to GOI in next ten years from April 2024 to March-end 2034. And,

Finally Chapter-7 presents Summary, Conclusions and Recommendations. The study finds that banking system in India is expected to be benefitted immensely with the full implementations of Basel-III. The provisions will certainly improve the quality of bank capital & put a robust risk-management system in place as envisioned by the BCBS/RBI and is expected to bring about a greater resilience in banks as well as in entire banking system in India to withstand the economic turn-down/crises-if any in future.

1.8: Limitations of the study:

1. The scope of our study aims to examine the implication of Basel-III Norms on all the major banks in India. Study is based on the published Annual Reports of banks in India. To study the preparedness of banks in consolidation of capital as envisaged in the Basel Norms in India, the relevant DF-1 to DF-11 as part of the Published Annual Reports were however, available continuously for each of the six years period from April 2008-2014 March-end, for 25 banks referred in the study as sample banks.
2. As said earlier, RBI mandated banks in India to implement Basel-III progressively from April, 2013 onwards so as to be fully compliant by March-end 2019. Study made an attempt to determine the amount of capital deficiency during the next 5 years period ending March-end 2019. To work out the road map in achieving the capital adequacy by March-end 2019 we included all the 27 PSU Banks and retained the same 6 New Generation Private Sector Banks for which the data information was available also for the years of preparation since post crisis period (GFC) of study. Thus, in the study of determination of capital deficiency to make banks in India as Basel–III compliant, we have covered only these 33 banks. And,
3. The study attempts to record and interpret the migration strategies adopted by each of 33 banks and grouping these banks into three Bank Groups viz, Other PSBs Banks Group, State Bank Group, and New Generation Private Sector Banks Group in India annually for the period between April 2014 to March end 2019, so as to be Basel-III compliant by the mandated RBI time line. It is heartening to note that study concludes that the New Generation Private Sector Banks Group are adequately capitalized whereas all PSBs Group banks (i.e. covering State Bank Group Banks and the other PSBs Group banks) are heavily capital deficient in all the four select varied scenarios, to conform to the Basel-III by March 2019. Since PSBs in India have majority shareholding by GOI, the deficiency in capital adequacy study suggests that the same be contributed by GOI during the year 2018- 2019.
4. Existing 27 PSU Banks merger proposal as on April 1, 2018 presented in chapter 6 is based on various parameters, into new five Big Banks so that these banks would have

good financial strength to become Basel-III compliant by March-end 2019 as well as to qualify for (in due course) to be reckoned as D-SIBs as envisioned in Basel-III. Thus, the implications and potential challenges for banks in India in migrating to Basel-III compliance have been studied primarily for all PSU Banks in India.