# DEREGULATION, PERFORMANCE OF BANKS AND RISK IN INDIA: AN EMPIRICAL EVALUATION

A THESIS

SUBMITTED FOR THE DEGREE OF

**DOCTOR OF PHILOSOPHY**

BY

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# CERTIFICATE

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This is to certify, that, the research embodied in the present thesis entitled "Deregulation, Performance Of Banks And Risk In India: An Empirical Evaluation" has been carried out by Mr. Suresh Naik V under my supervision for the full period prescribed under Ph.D ordinance of the University and no part of this thesis was earlier submitted for the award of any research degree of any University.

Signature of the Supervisor

# DECLARATION

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I hereby declare that, the work presented in the thesis entitled "Deregulation, Performance Of Banks And Risk In India: An Empirical Evaluation" has been carried out by me under the supervision of Prof. B. Kamaiah, Dean, School of Economics, University of Hyderabad and to the best of my knowledge no part of this thesis was earlier submitted for the award of any research degree of any University.

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# Chapter 1

# Background of the study

## *1.1 INTRODUCTION*

From the last couple of decades, countries have witnessed a revival of interest in the relationship between financial development and economic growth. Mckinnon (1973) and Shaw (1973) found the positive relationship between the financial development and growth. They produced considerable evidence that financial development correlates with growth.In contrast, liberalization of the economy is having higher tendency towards the market failure (Stiglitz, 1994; Anand Chandavakar, 1992). To ripe the fruit of liberalization the country should have strong financial institutions, proper regulator, and supervision to grow at the higher rate (Levin, 1997; Rajan et al., 1998; Diego-Valderana ,2003).

In the late 1970's, most of the countries of the world followed the path of financial liberalization. Prior to that, most of the countries followed rigid financial policies to preserve their political and economic autonomy. As a result of financial repression, the financial system, in particular, the banking sector suffered a setback. Henceforth, the financial reform was carried out in several countries of the world to overcome the financial repression drawbacks and enhance the economic growth through financial development. With this objective, countries started to deregulate the interest rates, easing of credit allocation, deregulation of entry norms, removal of capital control and even more generally changing the legal and supervisory structure of the financial industry. However, the phase of regulation changed from country to country. For some of the country, the process of liberalization was faster and some for country the process of liberalization was gradual. The countries which were followed in the path of rapid financial

liberalization were caught in financial crises after a couple of years of financial liberalization (Daniel et al, 2007).

Prior to 1991, India was also not an exception because Indian economy was also one of the rigid economies of the world. After the 1991 balance of payment crisis, the Government of India started the process of liberalization with caution. First and foremost step of Government of India was setting up of the Narasimham Committee to recommend the financial sector reforms. The committee gave a strong recommendation such as deregulation of interest rate, reduction in CRR and SLR, phasing out direct credit programs, structural reorganization of the banking sector, deregulation of entry norms and bank autonomy. Indian government adopted bits and pieces of the recommendation gradually.

After Liberalization, the Indian Banking structure has evolved with the times. The regulation has relaxed the entry norms for the private entities. The entry of new banks in the system has intensified competition among the banks. Today, bank competition has made banks to search for a new avenue to enhance revenue and survive in the competition. Traditionally, the main source of income of banks was interest income. Due to the competition, the banks are entering into non-interest income territories such as fee income, commission, exchange and brokerage and trading income. This entry into non-interest income is accompanied by higher risk and high return. Therefore, earlier banks were more prone to credit risk, operational risk, but now more towards the market risk, in particular, a mixture of all risk. Further the markets are integrated in terms of trade and finance. Recent years banks are not only prone to risk internally, but also externally. Thus, to keep a track on the bank performance the country required proper regulation and supervision.

Despite being cautious in the policy approach, the Indian economy was not able to prevent stock market volatility, exchange rate volatility and interest rate volatility. Further, the integration of the Indian economy with the rest of the world in trade and finance has further raised the fear of contagion. To keep a track on contagion, the Bank of International Settlements (BIS) as suggested the member countries follow Basel I, Basel II and now Basel III accord.  Thus after the liberalization of the banking sector, the banks are emerged as dynamic.

## 1.2 STATEMENT OF PROBLEM

The present study is an attempt to examine the impact of deregulation on banking sector on the performance of banks and risk. The present study made an effort to examine reform process on the performance of banks. India was followed rigid financial policies prior to 1991. After 1991, implementation of financial reform, in particularly, the banking sector reform, the structure ofIndia banking sector has changed with the time. The present study is an effort to understand how the policy changes have impacted the performance of banks during the pre and post liberalization. To investigate the changes in the banking sector the present study havealso incorporated bank specific,industry specific and macroeconomic characteristics on the determinants of bank performances. Secondly, by the deregulation of entry norms the competition is installed into the system, as a result,the competition has changed the functioning of the banks. Due to the impact of competition, the conventional source of income (interest income) is shifting towardsthe unconventional source of income (non-interest income). Therefore the study is intended to examine how diversification affects the performance of banks and what are the determinants of diversification in the deregulation period by using the dynamic panel data analysis.

## *1.3 OBJECTIVE*

The objective of the present study is

- To review the changes in the domestic policy during pre and post liberalization period and its impact on the Indian banking sector

- To analyze determinants of bank performance in the post liberalization period.

- To analyze the impact of revenue diversification on the banks' performance in post liberalization period

## *1.4 Hypothesis:*

The following hypothesis is constructed based on objective

- Whether the change in policy has positive impact on the Indian banking sector.

- Whether ownership is an important determinant of a bank's performance.

- Whether the revenue diversification has positive impact on the performance Indian banking sector.

## 1.5 JUSTIFICATION OF THE STUDY

The present study is important in the present Indian banking sector context for the following reason. First, fairly large number of literature discussed the impact of deregulation on the performance of banks and impact of revenue diversification on the performance banks in the pre as well post liberalization period. In the framework of Data Envelop Analysis, Stochastic Frontier analysis and simple panel data analysis but not using dynamic panel data with the large data set according to bank group-wise. Second, the time period for the analysis is the latest in the

series of literature in the Indian context. Thirdly, we have not only incorporated bank-specific characteristics, but also industry-specific and macroeconomic factors in the analysis. Fourthly, the banks' variables are dynamic in nature, therefore dynamic panel data of generalized method of moment is latest measurement technique to analyse in the bank performance. Finally, the present study has analysed the impact of reform during two sub-periods of reforms in Indian banking sector. Thus the present study made a decent effort from the above point of view to analyse the impact of reform on the bank performance.

## *1.6DATA*

In India, the banking structure is divided into Scheduled Commercial Banks and Scheduled Co-operative Banks. The Scheduled Commercial Banks further divided into Public Sector Banks (26), Private Sector (27), Foreign Banks (43) and Regional Rural Banks (78). Within Public Sector banks, banks are divided into State Bank of India and its associated banks (6) and other Nationalization Banks (20). Further the private sector banks are classified into old private banks (13) and new private banks (7). In the present study, we have taken SBI and Its Associates, Nationalized Banks, Private Banks (old and new private banks) and Foreign Banks. The study excluded Regional Rural Banks (RRBs) from our analysis on the fact that their business is basically concentrated on agro sector and exposure is mainly risk arises from credit default then the market risk. The present study is intended to study at the aggregate level (Bank Group-Wise)

Our sample is an unbalanced panel data set of group-wise banks comprising of state bank of India and its associates, nationalized Banks, private Banks and foreign Banks for the period 1992 and 2015. Our data consists of 95 observations. All the bank specific related data were

drawn from Reserve Bank of India publication "Statistical Table Relating to Banks in India" and macroeconomic such as Gross Domestic Product at Factor cost, interest rate, SLR and CRR, Fiscal and revenue deficit data of state and centre are taken form "Handbook of Statistics on Indian Economy" Inflation data are extracted from Ministry of Statistics and Programme Implementation.

## 1.7 METHODOLOGY

In the first stage, the study has used the graphical representation to see the trend of the policy variables of banking sector during the pre and post liberalization period. After that, in the preliminary analysis we have used simple growth rate analysis to assess how the sbi and its associates, nationalized, private banks and performed in the bank specific characteristics

In the second stage we have used the dynamic panel data approach, suggested by Arellano and Bover (1995) and Blundell and Bond (2000). Importance of dynamic panel Generalized Method of Moment (GMM) techniques is that it takes care of endogeneity problem, hetroscedasticity and autocorrelation problems. Further, we have followed system GMM estimator using xtbond2 of Roodman's (2009) estimator, which is better than the Stata's in built commandxtbond.This command gives additional features such as windmeijer correction and orthogonal deviation. Therefore we have used xtbond2 command to construct dynamic panel generalized method of moment to assess the determinants of bank performance for India banks over the period 1992-2015. Further, too see the mean difference among the ownership performance we have use two group mean comparison with unequal variance t- test.

Further, the study period was further divided into two sub-periods i.e., 1992-2005 and 2006-2015. During the first sub-period the reform process was initiated from 1991 onwards and

again in 1998 second generation reform was undertaken. During the second sub-period the reform process was very much completed. Thus the study tries to understand how the on-going reform process hasinfluenced on the performance of banks according to bank group-wise. The second sub-period would endeavour to evaluate the advanced reform process on the performance of the banks.

The present study tried to examine determinants of revenue diversification on Indian banking sector according to ownership patter. This study is very important for Indian banking sector because on one side SBI and its associates and nationalised banks are facing intensive competition from the private and foreign banks and on the other side RBI is suggesting public sector banks to actively take part in generating more revenue from the non-interest income and reduce the operational cost.. Thus, the present study is examining the impact of revenue diversification on the performance of banks for the period 1992-2015 according to bank group-wise. The study period is further divided into two sub-periods i.e., 1992-2005 and 2006-2015 to analyse the impact of revenue diversification on the performance of banksby using the dynamic panel data analysis (Generalized Method of Moment).

### 1.8 SCOPE AND LIMITATION

The present study is based on the bank group-wise analysis, whereas dis-aggregated level study i.e, individual banks, gives us the better result. Second, the study is intra-country analysis, so study was not able construct the reform index, which has done in the case of inter-country analysis. To measure how the reforms has affected the individual ownership. The Indian banks more or less are the representative of a particular region. So, taking into regional concentration into the analysis the result on the performance might be better. Therefore, by incorporating dis-

aggregate level data, inter-country reform index and inclusion of regional concentration might help us to understand better the performance of banks.

## 1.9 CHAPTER SCHEME

The thesis is organised into six chapters.

Chapter 1:Background of the study, objective, hypothesise and justification of the study.

Chapter 2: Review of literature with regard bank risk and performance

Chapter 3: Evolution of Banks Policy in the Post and Pre-Liberalization Period.

Chapter 4:Evaluated determinants of bank performance in the post liberalization period usingthe dynamic panel generalized method of moment (GMM).

Chapter 5: Analyze the impact of revenue diversification on the performance of banks according to ownership by usingthe dynamic panel generalized method of moment (GMM).

Chapter 6: The final chapter summarizes the findings, contributions of the study and suggestions for future research.

## Chapter 2

## Review of Literature

**Introduction**

The banking sectors believed as a life line of the economy with its finest character of intermediary role of mobilising the deposit and lending credit to the different sectors of the economy. The development of economy of any country basically depends on the efficiency of the financial development. This issue had extensively studied in the late 60's and 70's by Goldsmith (1969), Mckinnon (1973), Shaw (1973). In nineties by King and Levine (1993), Rajan and Zingales (1998) produced considerable evidence that financial development correlate with growth. With this positive perception most of the countries in the late 1970's followed the path of financial liberalization (Kaminsky and Reinhart, 1999). The financial deregulation which started in eighties in developed countries confronted drastic change in structure of competition and functioning of banks (Lepetit et al., 2008). In India also, the banking sector has evolved significantly over the period of time. Today Indian banking sector is playing a very vital role in economic development of a country[1].

The experience of liberalization was differed from countries to countries. In Latin American and East Asian Countries the phase of liberalization was faster as a result of that the countries were in the financial trap. Asian countries such as Indonesia,Thailand, Malaysia, and South Korea experienced high economic growth in the post-reform period (Ahmed and Sardar et al, 2010). From the experience of the rest of world, India also started the financial sector reform in a phased manner rather than one time opening up of economy. Accordingly, today Indian banking sector is recognized as a more risk resistance compared to the rest of the world. **A**fter

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[1]Nationalized banks played an important role in enhancing the 9 per cent growth during UPA regime. "Finance Minister P Chidambarm, Oct 9, 2007"

the deregulation of banking sector, in particular, relaxation of entry norms has led to the entry of new banks in India. This new banks (private and foreign banks) are emerging has a tough competitor for the nationalised and SBI and its associates banks. Today Indian banks' are more competitive then prior to nineties (Prasad and Ghosh, 2005). In this competitive environment the banks are innovating new and wide varieties of financial instrument to attract the new customers and to enhance the profit level of banks. During the regulated period the main source of income was interest income (through lending activities), but after the deregulation the banks are not only active in interest income but also in the non-interest income. As a result, the banks' are more prone to risk than the earlier because new innovative and market oriented activities such as cash instruments, derivatives, forward contracts, and option (Crouhy et al, 2000). To overcome the volatility and risk in banking sector the regulators' and practitioners' introduce new regulation and new models to identify the risk and overcome the risk in banking sector.

To overcome the complex financial operation in the banks' the regulators started to introduce the risk management tools to analyze the banks' day to day risk. In short period the risk management has received considerable attention from practitioners, academics and, more particularly, from the central bankers. The central bank of India (RBI) has issued guidelines for the management of credit, market and operational risks and also specific suggestions for asset/liability management system. The reason for rapid development of risk management was because of its reliability and accuracy in measuring the day to day risk. The frequent management reporting, sound operational systems, and comprehensive audit and control procedures that could effectively deal with some of the day to day emerging risk. Further, banks are operating in a highly unstable economic environment. Today banks are not only doing business with in the country but also across the countries. As a result of this, the countries are

interlinked with each other in the name of trade and development (Best example is recent US crises. Not only US economy collapsed but also it took other economy down). Hence, if one country is in a crisis means that there are others to follow in line to break down. To overcome aforementioned drawbacks banks started setup the department to deal with risk management and or asset/liability management approaches to protect from the external as well as internal crises.

The emerging country like India has also witnessed instability during the reform period. The Indian economy has witnessed stock market volatility (Pathak, 2009), exchange rate volatility, (Dua and Partha Sen, 2006) and interest rate volatility (Patnaik and Shah, 2004). Further, frequent change in capital adequacy norms, regulatory and supervision aspect by the international regulatory body such as Bank of International settlements (BIS)[2] has made mess in the banking structure (Nitusre, 2005)[3]. Further, it is also found in the empirical research that adoption of elaborate and cumbersome regulation such as Basel II may adversely affect the risk appetite of banks in developing countries and attainment of 'sound banking' could be at the cost of growth (Griffith et al, 2004).

The recent global financial crisis has highlighted major loopholes of previous Basel II norms. The Basel II norms failed the check about liquidity buffers, short comings in risk management, corporate governance, market transparency and quality of supervision. To overcome the above drawbacks the Basel III is designed to improve the quantity and quality of capital of banks, with strong supervision, risk management and disclosure standards. Basel III has created the shield to protect the banks from further crisis and perform efficiently (Roy,

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[2]The main motive of Basel Committee is to bring common understanding among the bankers' of the world in terms of regulation and supervision. Basel committee on bank supervision and regulation guides the following principles of capital adequacy norms, measurement tools and effective bank supervision.

[3] Study have identified that Basel II is likely to exacerbate cyclical fluctuations

2013). However,rather than the solving the problem it has further created havoc for Indian banks'. Roy (2013) has pointed out that Basel III requires higher capital requirement, as a result some of the public sector banks may fall short in fulfilling the revised capital accord and therefore thebanks may depend upon the government help to fill the revised core capital accord. As per the RBI projected estimation the banks may require an additional capital of 5 trillion of which 3.25 trillon is non-equity capital and 1.75 of equity capital (Subbarao, 2012). As a result, if the government fulfils the target required by the banks then it will huge burden on fiscal deficit (Roy 2013). Thus the real question emerges is whether the Basel Norms are really meant for the developing countries or it is really made for developed countries banks, which has cross all lines to gain the advantage in regulatory gaps and regulatory looseness (Subbarao, 2012).

Whereas, in Indian case the literatures are mainly focused on to analyze pros and cons of reform on the Indian banking sector. Further, large part of the studies are focused onexamining the performance (productivity and efficiency) of public and private banks in the post reform period (Bhattacharyya (1997), Bhaumik (1998),Kumbhakar and Sarkar (2003), Das et al., (2005), Sensarma (2006), Das and Ghosh (2006), Das and Ghosh (2009), Sanyal and Shankar (2011), Sidharth Sinha (2012)). Few other studies are focused on analysing interrelationship between reforms and prevailing competitive environment between public, private and foreign banks (Prasad et al, 2005). Further, in recent year BIS as requested it members' countries to implement the Basel regulatory norms. From then onwards some of the studies started have analyze the positive and negative impact of Basel accord on Indian banking sector (Nachane et al., 2003, 2006).

The remainder of the chapter is organized as follows. Section 2 present a brief overview of literature on Indian banking sector, with special emphasis on productivity and efficiency of public, private and foreign sector banks in pre and post reform period.

**2.1 Indian banking Sector –An overview**

In the footsteps of the rest of the countries of the world India also followed the path of liberalization with cautious approach. The deregulation process started in India from late 1980's onward only, but it is only after 1991 the pace of deregulation was amplified. The banking sector reform in India can be categorized into two period i.e., pre 1991 i.e., 1969-1990 and post 1991 (to the data). During the pre-1991 period the government of India nationalised 14 banks in 1969 and subsequently 6 more banks were nationalised in 1980. The two main objectives of nationalization were a rapid branch expansion and providing concessional credit to priority sector and weaker section of the population. From late 1980's onwards the government of India started a partial deregulation of the economy. Some of the major initiative of the 80's were New industrial Policy of 1980 and 1990, modification in MRTP act, several deregulatory measures were introduced in commercial banking, promotion of privatization and policy decision to encourage the inflow of foreign capital and technology (Bhattacharyya et al., 1997). Prior to 1991 the banking sector was very much regulated by Reserve Bank of India and Government of India[4]. The public sector banks were under the government control, and entry of private sector banks and foreign sectors banks were very much limited and, further, stringently regulated. During the pre-liberalization the banks were under the direct control of government as a result the financial development was lacking and lower growth of percapita income and productivity

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[4] Nationalized banks were very much under government control and SBI and It associates were under the RBI control.

(Porta et al., 2002. These characteristics hindered the development of financial system into an efficient conduit for channelizing and allocating resources (Aluwalia M.S, 2002).

However, the scenario has changed after the 1991 balance of payment crises.To meet the challenges of this new age, the Government of India appointed a committee, i.e., the Narasimham Committee (1991), to examine all aspect relating to structure, organization, and functioning of the Indian banking system. In the subsequent years, the government of Indian implemented some of the recommendation of committee report. Accordingly, the banks' are allowed fix their own lending rates, from last one decade there has been progressive reduction in pre-emptive reserves (Statutory Liquid Ratio (SLR) and Cash Reserve Ratio (CRR)), deregulation of the entry norms. With the relaxation of entry norms in the post reform period the private and foreign banks are started their banking business in India. The private sector banks and foreign sector banks took an initiative to expand their business through the branch expansion, introduction new type of technology and appointing high skilled labours with the vision of fulfilling the long terms goals (enhancing the market share in banking sector). To compete with evolving private sector banks and foreign sector banks the public sectors banks ought to overcome some of the drawbacks which have inherited from the regulated period. Some of the major drawbacks for the public sector banks were (a) surplus labour resulted in cumbersome cost on banks, (b) public sectors banks were running with lack of technology (c) the dearth of high skilled labours (d) loaded with bad assets. These factors were hurdle for the development, growth and efficiency of the public sector banks in India.

To overcome above mentioned problems Government of India set up the Narasimham Committee II (1998) to recommend regarding the restructuring and bringing financial stability in the banking sector. In subsequent year some of the recommendations of Narasimham Committee

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II were implemented by the government i.e., downsizing the employees through Voluntary Retirement Schemes (VRS). However, the task of getting rid of excess employ without legitimate reason was not an easy task for the government because they were supported by the trade unions or the industrial dispute act. Therefore, Government of India introduced incentive based Voluntary Retirement Scheme (VRS) to cut down the surplus labours of public sector banks.

On the other hand private banks and foreign banks are considered has a technologically intensive banks compared to the public sector banks. With the increasing competition, the public sector banks are also started to adopt the new technology[5]. Further, banks in India are also started to introduce new products such as e-banking and e-payment. Electronic banking and internet banking enabled banks to provide efficient services at lower cost and expand their geographical reach. Therefore, in the post reform policies has given the boast to Indian banking sector. In the form of reduction in the Gross non-performing assets to gross advanced during 1996-2015 for scheduled commercial banks of India. (Table 1, Appendix).Further, as per the new Basel III capital norms, the banks are required to maintain 8 per cent of core capital(tier-1) and total capital adequacy ratio of 11.5 per cent. As onMarch 31st 2015 majority of the scheduled commercial banks fulfils the norms (Table 2,Appendix). Hence, Indian banking sector has emerged competent and efficient in the post reform period (Rakesh Mohan, 2005).

## 2.2 Performance Commercial Banks in India

Prior to reform,the state owned banks are dominant sector, which accounted for over 95% of total commercial banking assets, 88 percent of paid-up capital and around 85% of bank branches (Aluwalia M.S, 2002). As on 31st March 2015, the share of public sector banks in total

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[5]On November 1998 the CVC (Central vigilance Commission) suggested the banks to computerize before January 2001.

asset of the banking sector has decreased from 88.56 per cent to 72.12 per cent, whereas the share of total asset of private banks has increased from 4.18 per cent to 21.61 per cent and share of total asset of foreign banks has decrease from 7.26 to 6.27.Therefore, in the post-liberalization period the private banks are able gain from the deregulation compared to public sector bank and foreign banks. The big looser among the scheduled commercial banks is SBI and Its associates because over the period of 1992 to 2015 the share of total asset has drastically decreased from 34 per cent to 22 per cent. (Table 2,Appendix). Indeed there is a change, but the larger picture of banking sector remains the same; still government and RBI is major stake holder in the public sector banks (Table 4Appendix).The major board decision making still lies with the government such as appointment of chairman and board members (Ahluwalia, 2006). As a result of excessive interference from the government side has tightened them to open the wings to fly.

In the post reform period banks has increased investment in government securities and has decreased the growth rate of bank credits to various deprived sectors. This was mainly due to persistently large budget deficits run by the central and state government. Further, the amalgamation of various sectors in the priority sectors period has neglected the objective of social goals of the government[6] (Bhattacharya et al., 2001). In the post reform period there has been increased financial fragility such as irrational boom in India's stock market epitomizes and deflationary macroeconomics stance, which has adversely affects public capital formation and the objective of promoting employment and reducing poverty (Chandrasekhar et al., 2006). In total the Indian economy is going through up and down in the post reform period. In the next section, we have reviewed the literature accordingly

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[6]From the last couple of year the slab has increase in priority sector lending and extensive diversion of credit towards small scale industries and business community. Hence the rate of lending to agriculture has come down.

## 2.2.1 Deregulation and Productivity

In the late 1970's and late 1980's majority of countries of the world started to deregulate the financial institutions. The experience of deregulation varies from country to country. For some countries the deregulation was beneficial and for some other it was havoc. In the case of US airline there was positive relationship between deregulation and growth. They found that during deregulation period US airline industry was able to increase their productivity and efficiency levels (Borenstein, 1992). Similar findings were also reported in a variety of other industries in the Eastern and Central European Economies (Thorne, 1993; McKinnon, 1991; Brissimis et al., 2008). In case of emerging country like china, studies have observed that after the deregulation the economy has grown faster than the financial repression period (Chen, X et al., 2005). However, in the case of Latin American and East-Asian countries the case was different, they grown faster in the initial period of deregulation and fallen down more faster than the growth period (Furman and Stiglitz, 1998).

In this league, India is also not exception from the rest of world. The India experience with deregulation is quite different from the rest of the world. In the sense that India is yet to liberalise fully the financial sector, in particular, the banking sector. Still the RBI and Government of India have majority stake over the Indian banking sector, in particular, on public sector banks[7]. De-regulation was mainly meant to reduce the government control and create level playing field irrespective of ownership. Deregulation infuses the competition into the system and the best will survive. But in India deregulation works in a democratic manner. One side it is protecting the public sector banks, which is major stake holder and side by side it is also allowing the private and foreign sector participation. In this dimension it is interesting to know

[7]The appointment of board member and chairman is still remains with the Reserve Bank of India (RBI) and Government of India.

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how India banking sector has performed in pre-deregulation and post de-regulation period keeping government presence in the competition.

There are only few studies evaluating the performance of bank in pre and post reform period. In that, the study by Bhattacharya et al., (1997), evaluated whether the change inbank regulations in India had helped to enhance the long-run productivity growth for the period from 1970 to 1992. Study found that initial phase of nationalization during both the period i.e., 1969 and 1980, productivity of bank decreased because of change in management and delay in adopting to the new environment. After the couple of year of nationalization of banks the overall productivity index of banks showed an upward trend. Further, the study evaluated the productivity level among the public sector bank i.e., SBI, SBI subsidiaries, the 14 banks nationalization in 1969 and the 6 banks nationalization in 1980. They found that SBI performed better in enhancing the productivity levels compared to other nationalized banks. Thus public sector banks experienced a 56 percent of overall productivity growth during the entire study period. However the above study was suffering from some of the lacuna. The study period taken into analysis i.e., 1986-1992 may not give the full picture of performance of public sector banks in post-deregulation period because 1986-1992 is either period of full phase liberalization or it has experienced the full phase of liberalization for the long period after the reform. Secondly, the study evaluated the performance of State Bank of India (SBI) and nationalised banks neglecting the presence of private and foreign banks. Thus this may not give fuller picture of productivity growth of Indian banking sector.

Aforementioned lacuna was partially fulfilled by Kumbhakar and Sarkar, (2003), study, they estimated Total Factor Productivity (TFP) growth and its components using generalized shadow cost function approach for public and private banks from 1985 to 1996. They found that

public sector banks registered a 32 per cent growth in TFP and private sector banks registered a 37 percent growth over the entire study period. Further, the most important component of productivity is return to scale. In the pre-deregulation period there was no much difference between public sector banks and private sector banks in return to scale. However in the post-deregulation period the public sector banks experienced decreasing return to scale and private sector banks experienced increasing return to scale. The private sector banks grown at the rate of 48 per cent and public sector banks are grown at the rate of 31 per cent. Thus private sector banks performed better than the public sector banks in both the components (TFP growth and return to scale).

Sensaram (2006) asserted that the present study is different from the previous studies. On the basis of that earlier studies either focused on productivity or efficiency level but the present study evaluated both efficiency and productivity using Stochastic Frontier Analysis (SFA) for the larger period of data (viz.1985 to 2000). The study period was divided into two stage one prior to 1996 and post 1996. Since, to incorporate the new private sector banks which were materialize after the 1996. The study reconstructed all the indices with the value of 1996 as 100 then they incorporated comparable values of all groups with the new private banks for the period 1996-2000. The study used two models one without group dummies and with group dummies to analysis the technical change component, scale effects components, efficiency components and total factor productivity. The study found that in the technical change component the private sector banks performed better than the public and foreign banks. In the scale component the public sector banks turn out to more cost efficiency than the private and foreign banks. In the efficiency components the foreign banks turned out to more efficiency than the public and private banks. In TFP analysis private sector bank performed better than the public and foreign

banks. Overall, during the deregulation period the private and foreign banks were less cost efficient because during the regulation period the entry of private sector banks and foreign banks were limited. So in the post reform period after the entry norms were relaxed the private sector banks started to expand the market through opening up of new branches, large scale computerization, setting up of Advance Ledger Posting Machine (ALPM), setting up high quality training programme for employees, and upgradation of technology. These changes have helped long term benefits for private and foreign banks to the operating cost.

Zaho et al., (2010) examined how the financial sector reform has changed the structure of banking sector with regard to cost minimization, ownership pattern and dynamics of competition. They employed stochastic frontier analysis to estimate above factors over the period of 1992-2004 for Indian commercial banks. The study found that cost structure was rigid up to 1996 period due to pass through from the pre-liberalization period. And thereafter cost efficiency of commercial banks increased by decrease in cost of operation. Further, the deregulation has improved the performance of bank and competition has intensified the lending activity. Whereas, the transformation from labour oriented to technology oriented structure has not gain much efficiency among the banks.

Sanyal and Shankar, (2011) study has used the Stochastic Frontier estimates to measure the productivity level of banks across different ownership for the post deregulation period 1992 to 2004. The study undertook different stage of analysis, in the first stage; the study measured the productivity growth for entire study period. They found that in the post deregulation period the productivity growth of private bank was 1.4% higher than the public sector banks and foreign banks. In the second stage they divided the study period into two periods from 1991 to 1998 and 1998-2004 to see whether subsequent reform have any impact on productivity growth. In the first

period, they found that when competition is not factored, then all private banks have much higher productivity growth compared public and foreign banks. In the post 1998 period when competition was factored then the public bank productivity growth is unaffected whereas the Indian private sector banks had a very large negative impact. With a 1 per cent increase in competition productivity growth was hampered by 26 per cent. In the case of foreign bank competition has increased productivity growth by 67 per cent with 1 per cent increases in competition. In the case of return to scale the private bank enhanced their return to scale in post deregulation period compared to public and foreign banks. Further literature hasanalysed the comparative performance of public, newprivate and foreign banks and found that in the post 1998 the new private sector banks are driving force to increase the overall productivity growth of banking sector in India.

### 2.2.2 Deregulation and Efficiency

Earlier literatures with regard to bank efficiency were basically focused in case of developed countries (McKinnon, 1991; Borenstein, 1992; Thorne, 1993; Berger and Humphery, 1997; Elyasiani and Mehdian, 1995; Brissimis et al., 2008). In recent years the lacuna in the literature regarding the measurement of bank efficiency in developing countries is also materialized. The results are mixed in both developed and developing countries. For some countries de-regulation enhanced the efficiency level of banks for some other countries de-regulation deteriorated the banks efficiency level. The efficiency level is a basically a comparative analysis between the different ownership for different components (cost, profit) for different countries. In the India context there are few studies undertaken to analyze the bank efficiency levels under different components for different ownership (Bhattacharyya et al., (1997); Sathye (2003); Rammohan

and Ray (2004); Shanmugam and Das (2004); Sensaram (2005); Das and Ghosh (2006); Das and Ghosh (2009). In Indian, the literature mainly focused on the following issues.

1. Impact of liberalization on efficiency of commercial banks in the pre and post reform.

2. Comparing the efficiency level by using different factors (technical, ownership, cost and profit)

3. Comparing the efficiency level through different methodology (Parametric and Non-Parametric methods or some time measuring efficiency using both the methods)

## *2.3Bank Efficiency during pre and post reform period*

The India banking structure was somewhat oligopolistic type of market. Where a few banks own the entire banking industry and the government put barrier to other banks to enter the market. Thus, the banking sector is totally controlled by Government and RBI. The competition was restrained from other banks to protect the government owned banks and government owned goals through the regulation. Therefore, excess protection to the public sector banks lead to the deficiency in the operational efficiency, inefficiency in allocation of credit, regulated interest rate, lack of investment in technology and piled up Non Performing Loan etc.

After the 1991, the face of Indian banking sector started to evolve accordingly to the foot step of the West and East Asian countries. Indian policy makers had a clear knowledge of East-Asian crises and Latin American crises with regard to rapid liberalization policy. These countries were in trauma after the couple of years of liberalization and disturbed the world economy. With all these background information, the government appointed the Narasimham committee in 1991 to look into the financial sector reforms. In a subsequent year the Narasimham committee reports were implemented phase by phase. One of the recommendations of committee the government

decide to relax entry norms and to create equal platform for private and foreign banks on par with the public sectors banks. With the entry of private and foreign banks the government infused the competition into the system. Therefore, the emergence of private banks and foreign banks in the system was the new challenge to the public sector banks to survive in the competition. Keeping above facts the government started the various reforms phase by phase with the cautious approach to enhance the efficiency level, productivity level and profitability of public sector banks.

The concept of efficiency (technically efficiency) is basically an engineering concept, concerned at the basic stage with measuring the value of (a single) output for a given level of output.If 'A' bank is performing efficiently means the bank is using given level of inputs to produce the maximum output. Further, in micro economics jargon Koopmans (1951) provided a formal definition of technical efficiency that is an increase output requires an addition reduction in at least one other output or an increase in at least one input and *vice versa.* In the present circumstance the private sector banks might not fit into the above mentioned micro-economic jargon of technical efficiency either prior to liberalization or in the post liberalization period. Because, prior to liberalization the banking sector was overloaded with excess staff, lack of technology was lead to X-inefficiency[8]. After the liberalization the Indian banking sector started to expand their business to absorb the availability of large market. The private and foreign banks started to increase the bank branches apart from metropolitan cities to urban and semi-urban cities, increased talented work forces, invested in new technology etc,. Thus, theoretically the

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[8]Without competitive pressure a monopolist's costs may increase, due to the overstaffing or a failure to invest in new technology. The effect of this X-inefficiency is to make the MC and AC curves higher than they would be otherwise.

neither private nor foreign banks decreased the work force nor decrease the technology. Whereas in the case of public sector banks the technical efficiency theory holds because prior to liberalisation the banks were overload with the large work force and lack of technology. But, after the liberalisation the public sector banks started to cut down the excess work forces and started to invest in technology. Therefore one side the public sector banks are started to reduce the pay check cost and invest in new technology to enhance the productivity level. On the other hand the private and foreign sector banks started to open its wing to exploit the available market through increase in branches, quality workforce and investment in new technology. These two side of same coin in contradictory with the theory. Therefore it is interesting to know how well the Indian banks are increased their efficiency in the post deregulation period compare to pre deregulation period. There are few studies in the Indian context have analysed the performance of banks during pre and post reform periodusing data envelop analysis and stochastic frontier analyses.. Further, few others studies have also analysed the impact of reform on the banking sector in the post reform period.

The study by Bhattacharyya et al., (1997), evaluated the efficiency of Indian commercial banks for the study period 1986 to 1992. This was period the country initiate reform process from the period of regulation. The study used two approaches to measure the efficiency of commercial banks i.e., Data envelopment analysis (DEA) and Stochastic Frontier analysis (SFA). DEA analysis was used to measure the technical efficiency and SFA analysis was used to explain the variation in calculated efficiencies. They found that during 1986 to 1990 the public sector banks achieved average efficiency and the smallest average variation in efficiency than the foreign owned banks and privately owned banks. But in the last two years of the study period i.e. 1991-92, foreign banks performance improved considerably. The study further analysed the

variation in the efficiency level by the SFA. They found average efficien was higher in the foreign owned banks (6.77 per cent) and private owned banks (0.07 per cent), whereas in public owned banks average efficient experienced decline by a 2.69 per cent. Thus public sector bank failed to adopt the new environment compare to private and foreign owned banks. Therefore, we are moving towards the path of western countries where the foreign banks are taking advantage of deregulation system and exploiting the available market with it's quality workforce and technologically robust. Consequently, it will early to presume domination of foreign banks in deregulation period because this is revival period for the Indian banking sector.

After the liberalization the policy makers clearly recognised that inefficiency is one of the important factors contributing to the high cost of banking services in India. To overcome inefficiency the Narasimham committee recommended to increase the operational efficiency, adequate capital adequacy level and income recognition and asset classification of the banking sector. In this regard the study by Saha and Ravisankar (2000) used DEA approach to analyse the impact of post reform on public sector banks at the dis-aggregate level for the period 1991-92 to 1994-95. Study found that majority of public sector banks are able to improve the efficiency level in given period of analysis with few exception banks. However, this paper will not give much larger picture because the paper is solely analysed by taking only public sector banks neglecting the private and foreign banks. Following the above result the study by Sathye (2003) measured the productivity efficiency of banks in India for the period 1997-98 using Data Envelopment Analysis. The study constructed the two models to show how the efficiency level changed with change in inputs and outputs ofpublic sector, private sector and foreign banks. The study found that mean efficiency scores of Indian banks was lower than the world mean

efficiency score. In the both the model the study found that foreign banks are more efficient than the public and private sectors banks.

Earlier studies focused on the productive efficiency and overall efficiency of banks in India. However, the study by Mohan and Ray (2004) compared the performance of public sector, private and foreign sector banks by incorporating the revenue maximisation as a factor to measure the efficiency. The study used Data Envelopment Analysis (DEA) for measuring the revenue maximization efficiency for the study period 1992-2000. In the revenue maximisation efficiency the study found that the public sector banks outperformed the private sector banks but not much different from foreign banks. The reason for better performance of public sector banks was the higher technical efficiency than the allocative efficiency, whereas foreign banks emerged much more efficient in allocation of given resources.

In the previous studies the paper tried to analyse the technical and revenue maximization efficiency through the DEA analysis. The study by Shanmugam and Das (2004) took one step further to evaluate the technical efficiency of Indian commercial using stochastic frontier analysis for the period 1992-1999**.** They used the mode to assess whether technical efficiency varies with time or not. To measure technical efficiency the study incorporated four factors such as interest margin, non-interest income, investment and credit. They found SBI (48.7-51.4) average technical efficiency was increasing with increasing in non-interest income followed by foreign (38.7-41.3) banks, nationalized banks (23-26) and private banks (19.8-24.2).In the case of raising investment nationalized banks and private banksare most efficient than the SBI group and the foreign banks. In term of the average TE value of raising credit was more in the case of , SBI and its associates followed by the nationalised, private and foreign banks. Therefore, state banks and foreign banks performed better than the nationalized and private banks.

Das et al., (2005), empirically estimated and analysed various efficiency measures (cost-efficiency, revenue efficiency and profit efficiency) for Indian banks during 1997-2003 by using data envelopment analysis (DEA). The study found that the differences in technical and cost efficiency scores are not perceptibly large, so they restricted analysis to revenue efficiency and profit efficiency scores. Further, they tried to link profit efficiency relationship with the size class of banks. They found that profit efficiency score have improved considerably for all size classes, but more significantly for the largest size class. In terms of average profit efficiency scores for the study period the SBI groups tops the list with 0.74, followed by foreign banks with 0.64, Indian private banks with 0.47 and Nationalised banks with 0.45. In the post reform period the SBI and Foreign banks were able to increase their profit efficiency score whereas the new private banks and Nationalised banks are at lower score in the study period.

Das and Ghosh (2006) used nonparametric Data Envelopment Analysis and univariate cross-tabulation approach to analyse the performance of commercial banks in India for the period 1992-2002. To measure technical efficiency study used three different approaches such as intermediation, value-added and operating approach to analyse technical efficiency with regard to inputs and outputs. They found that among the three different approaches the value added approach was much higher under the technical efficiency. Among the banks the public sector banks are more efficient than the private and foreign banks. Within public sector banks state bank of India and its associate banks are more technical efficient than the nationalised banks. Further the study considered size of the banks with regard to efficiency and they found that medium sized banks experienced much higher efficiency than the small and large size banks. Thus, the banks with lower bad assets and better capital adequacy can enhance the technical

efficiency of banks. Lastly, they pointed out that the performance of public sector banks are converging with the private sector banks.

Das and Ghosh (2009) study evaluated the impact of financial deregulation on cost and profit efficiency of Indian commercial banks using Data Envelopment Analysis during the post reform period 1992-2004. The study found that most of Indian banks lies in the higher level of average cost efficiency scores whereas in the case of profit efficiency most of the banks lays in the lower level of average profit efficiency score. Study further examined how the cost and profit efficiency varies across ownership and size class. They found that there was not much difference in the case of cost efficiency scores among different ownership. In the case of profit efficiency scores state bank and it associate scored much higher than private and foreign banks in terms of profit efficiency.

### 2.4.Deregulation and Performance

The performance of banks not only depends up on bank specific factor but also on the internal as well as external policy, industry specific and macroeconomic condition of the country. Further, the countries are inter-related in term of trade and finance. Thus, the performance of banks is not an isolated factor but it is an integrated factor. According to conventional hypothesis the public enterprises perform less than the private enterprises.(Alchian, 1965; Boardman and Vining, 1989). This hypothesis was bases on ownership pattern, the majority shareholder are able to do better decision than the disperse shareholder (Jensen and Meckling, 1976). In other words, the government owned banks perform less than the privately owned banks (Micco et al, 2007). Further, the motive of privately owned bank is profit maximization, whereas, the government owned not only profit maximization but also social obligation. However, there are also studies

proved that in a competitive regime the government ownership better performer than the private owned (Kay and Thompson,1986;Demsetz & Villalonga, 2001; Pasiouras & Kosmidou, 2007).

In recent year the general phobia among the policy makers is that size of banks plays positve role in enhancing the performance of banks (Demirguc-Kunt, and Huizinga, 1999).However, the experience of many countries show that the relationship between bank size and profitability across the different ownership types is inconclusive(Hughes and Mester, 1998, Trujillo-Ponce, 2013)

Some of the studies have found the positive relationship between revenue diversification and risk reduction (Boyd and Graham, 198); Radecki, 1999; Stiroh, (2004);Elsas et al. 2010;Berger et al. 2010; Pennathur et al. 2012). On the other hand study found that the negative relationship between revenue diversification and risk reduction (Stiroh and Rumble, 2006; Kunt et al., 2010;Kohler, 2014; Lee et al. 2014).Alternative explanation was put forwarded that revenue diversification through the fee based income might enhances the revenue and reduces the risk (Lepetit et al., 2008; DeYoung et al., 2013).Thus the performance of banks in an open economy depends upon not only internal factor but also external factor. The macroeconomic environment plays a crucial role in determining the performance of banks (Kunt & Detragiache, 1998 ;Pasiouras & Kosmidou, 2007)

## 2.5 Conclusion

From the above of review of literature,it shows that Indian banking structure has changed dramatically after the liberalization period. The performance of the banks has also varied from time to time. The previous studies have analysed the bank performance in the purview of data envelop analysis, stochastic frontier analysis and panel data taking few variables to measure the

performance of banks. In recent years dynamic panel data generalized method of moment is being used to measure the performance of banks in developed and developing countries. But a very few studies are in the case of India, which have assessed from bank specific, industry specific and macroeconomic variables into one framework. Therefore, we have followed the generalized method of moment taking into consideration of profitability variables (ROA and ROE), Stability variables (ZSCORE) and Credit risk variable (NPLTL). Further, to assess the revenue diversification our variable base is increased and added new variable to assess the determinants of revenue diversification over the period of time for state bank of India and its associates, nationalised banks, private banks and foreign banks.

**Appendix**

| Table1: Bank Group-Wise Gross NPA to Gross Advances | | | | |
|---|---|---|---|---|
| **YEAR** | **SBI and Its Associates** | **Nationalized Bank** | **Private Banks** | **Foreign Banks** |
| 1996 | 14.9 | 18.85 | 8.2 | 3.96 |
| 1997 | 15.81 | 19.05 | 8.49 | 4.29 |
| 1998 | 14.57 | 16.88 | 8.67 | 6.38 |
| 1999 | 15.67 | 16.02 | 10.81 | 7.59 |
| 2000 | 14.08 | 13.99 | 8.47 | 6.99 |
| 2001 | 12.73 | 12.16 | 8.37 | 6.84 |
| 2002 | 11.23 | 11.01 | 9.64 | 5.38 |
| 2003 | 8.68 | 9.72 | 8.07 | 5.25 |
| 2004 | 6.98 | 8.21 | 5.84 | 4.62 |
| 2005 | 5.32 | 5.84 | 4.44 | 2.85 |
| 2006 | 3.3 | 3.8 | 2.5 | 2 |
| 2007 | 2.6 | 2.7 | 2.2 | 1.8 |
| 2008 | 2.6 | 2.1 | 2.5 | 1.8 |
| 2009 | 2.5 | 1.8 | 2.9 | 4 |
| 2010 | 2.82 | 2.03 | 2.99 | 4.3 |
| 2011 | 3.12 | 1.97 | 2.45 | 2.5 |
| 2012 | 4.36 | 2.67 | 2.09 | 2.7 |
| 2013 | 4.42 | 3.24 | 1.77 | 3 |
| 2014 | 4.96 | 4.09 | 1.78 | 3.04 |
| 2015 | 4.28 | 5.26 | 2.1 | 3.2 |

**Source: Statistical Tables Relating to Banks in India, RBI , as on March 2015.**

| Table 2: Bank Group-wise Capital Adequacy Ratio (CRAR) of Scheduled Commercial Banks | | | |
|---|---|---|---|
| Banks | Basel-III | | |
| | Tier-I | Tier-II | Total |
| SBI AND ITS ASSOCIATES | 5.77 | 7.06 | 11.53 |
| NATIONALISED BANKS | 17.14 | 2.74 | 19.88 |
| PRIVATE SECTOR BANKS | 12.42 | 1.5 | 13.92 |
| FOREIGN BANKS | 59.97 | 1.78 | 61.75 |
| Source: Author Calculation | | | |

| Table 3: Share of Total Assets of Scheduled Commercial Banks | | | | |
|---|---|---|---|---|
| YEAR | SBI | NB | PVT | FB |
| 1992 | 33.83 | 54.72 | 4.18 | 7.26 |
| 1993 | 32.33 | 54.95 | 4.62 | 8.09 |
| 1994 | 32.41 | 54.67 | 5.24 | 7.68 |
| 1995 | 30.35 | 54.86 | 7.44 | 7.35 |
| 1996 | 31.17 | 53.25 | 7.62 | 7.96 |
| 1997 | 30.38 | 52.31 | 9.00 | 8.31 |
| 1998 | 29.26 | 52.35 | 10.19 | 8.21 |
| 1999 | 30.08 | 50.96 | 10.90 | 8.06 |
| 2000 | 30.29 | 49.95 | 12.30 | 7.46 |
| 2001 | 31.11 | 48.41 | 12.62 | 7.86 |
| 2002 | 29.27 | 45.99 | 17.43 | 7.30 |
| 2003 | 29.11 | 46.64 | 17.39 | 6.86 |
| 2004 | 27.81 | 46.69 | 18.60 | 6.90 |
| 2005 | 26.62 | 48.69 | 18.17 | 6.52 |
| 2006 | 24.83 | 47.49 | 20.52 | 7.16 |
| 2007 | 23.29 | 47.24 | 21.54 | 7.93 |
| 2008 | 23.37 | 46.48 | 21.73 | 8.42 |
| 2009 | 24.43 | 47.45 | 19.62 | 8.50 |
| 2010 | 23.43 | 50.25 | 19.09 | 7.22 |
| 2011 | 22.22 | 51.40 | 19.44 | 6.93 |
| 2012 | 21.33 | 51.39 | 20.21 | 7.06 |
| 2013 | 21.54 | 51.06 | 20.75 | 6.65 |
| 2014 | 21.12 | 51.47 | 20.58 | 6.82 |
| 2015 | 21.66 | 50.46 | 21.61 | 6.27 |
| Note: Author Calculation | | | | |

| | | Total Government & RBI - Resident | Financial Institutions - Resident | Financial Institutions- Non Resident | Other Corporates - Resident | Other Corporates - Non Resident | Total Individual - Resident | Total Individual - Non Resident | Total - Resident | Total - Non Resident |
|---|---|---|---|---|---|---|---|---|---|---|
| Sr.No. | Name of the Bank | | | | | | | | | |
| | **Nationalised Banks** | | | | | | | | | |
| 1 | Allahabad Bank | 60.8 | 18.7 | 7.4 | 1.4 | 0.0 | 11.6 | 0.2 | 92.5 | 7.5 |
| 2 | Andhra Bank | 61.0 | 15.7 | 7.8 | 1.9 | 0.0 | 13.3 | 0.3 | 91.9 | 8.1 |
| 3 | Bank of Baroda | 57.5 | 17.8 | 16.5 | 2.7 | 0.0 | 5.1 | 0.4 | 83.1 | 17.0 |
| 4 | Bank of India | 64.4 | 18.4 | 8.3 | 2.0 | 0.0 | 6.4 | 0.4 | 91.3 | 8.7 |
| 5 | Bank of Maharashtra | 79.8 | 14.2 | 0.0 | 0.5 | 0.5 | 4.9 | 0.2 | 99.4 | 0.6 |
| 6 | Bharatiya Mahila Bank Ltd. | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| 7 | Canara Bank | 69.9 | 13.2 | 10.6 | 0.9 | 0.0 | 5.2 | 0.1 | 89.3 | 10.7 |
| 8 | Central Bank of India | 81.5 | 13.9 | 0.3 | 1.7 | 0.0 | 2.6 | 0.1 | 99.6 | 0.4 |
| 9 | Corporation Bank | 63.3 | 26.7 | 2.5 | 1.5 | 0.0 | 5.7 | 0.3 | 97.2 | 2.8 |
| 10 | Dena Bank | 59.8 | 15.6 | 0.0 | 2.3 | 0.0 | 14.6 | 7.7 | 92.3 | 7.7 |
| 11 | IDBI Bank Ltd. | 76.5 | 10.8 | 3.3 | 1.3 | 0.0 | 7.7 | 0.3 | 96.3 | 3.7 |
| 12 | Indian Bank | 82.1 | 8.5 | 5.6 | 1.1 | 0.0 | 2.7 | 0.1 | 94.3 | 5.7 |
| 13 | Indian Overseas Bank | 73.8 | 15.4 | 1.5 | 0.9 | 0.0 | 8.0 | 0.4 | 98.1 | 1.9 |
| 14 | Oriental Bank of Commerce | 59.1 | 21.4 | 12.0 | 2.5 | 0.0 | 4.9 | 0.1 | 87.9 | 12.1 |
| 15 | Punjab & Sind Bank | 79.6 | 10.8 | 1.7 | 1.3 | 0.0 | 6.4 | 0.2 | 98.0 | 2.0 |
| 16 | Punjab National Bank | 59.9 | 18.4 | 16.2 | 0.9 | 0.0 | 4.6 | 0.0 | 83.8 | 16.3 |
| 17 | Syndicate Bank | 69.2 | 10.2 | 8.5 | 1.9 | 0.0 | 10.2 | 0.0 | 91.5 | 8.5 |
| 18 | UCO Bank | 72.8 | 14.8 | 3.8 | 1.3 | 0.0 | 7.1 | 0.2 | 96.0 | 4.0 |
| 19 | Union Bank of India | 60.5 | 18.3 | 8.6 | 3.7 | 0.0 | 8.9 | 0.1 | 91.3 | 8.7 |
| 20 | United Bank of India | 82.0 | 13.5 | 0.0 | 1.2 | 0.0 | 3.3 | 0.0 | 100.0 | 0.0 |
| 21 | Vijaya Bank | 74.1 | 8.1 | 3.0 | 1.6 | 0.0 | 12.9 | 0.4 | 96.6 | 3.4 |
| | **State Bank Group** | | | | | | | | | |
| 22 | State Bank of Bikaner & Jaipur | 0.0 | 81.9 | 0.0 | 4.4 | 1.3 | 12.2 | 0.2 | 98.5 | 1.6 |
| 23 | State Bank of Hyderabad | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| 24 | State Bank of India | 58.6 | 18.4 | 14.0 | 3.0 | 0.0 | 5.8 | 0.2 | 85.8 | 14.2 |
| 25 | State Bank of Mysore | 0.0 | 93.2 | 0.0 | 0.6 | 0.0 | 6.1 | 0.1 | 99.9 | 0.1 |
| 26 | State Bank of Patiala | 0.0 | 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 0.0 |
| 27 | State Bank of Travancore | 0.9 | 80.8 | 0.0 | 2.1 | 2.5 | 11.2 | 2.5 | 95.0 | 5.0 |
| | **Private Sector Banks** | | | | | | | | | |
| 28 | Catholic Syrian Bank Ltd. | 0.0 | 4.6 | 0.0 | 27.2 | 10.4 | 39.2 | 18.7 | 71.0 | 29.0 |
| 29 | City Union Bank Ltd. | 0.0 | 10.2 | 34.6 | 10.6 | 0.0 | 42.6 | 2.0 | 63.4 | 36.6 |

**Table 4: Shareholding pattern of scheduled commercial banks**

(Per cent)

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| 30 | Dhanlaxmi Bank Ltd. | 0.0 | 0.2 | 20.7 | 15.9 | 0.0 | 50.0 | 13.2 | 66.1 | 34.0 |
| 31 | Federal Bank Ltd. | 0.0 | 29.2 | 35.4 | 6.7 | 4.6 | 19.6 | 4.6 | 55.4 | 44.6 |
| 32 | ING Vysya Bank Ltd. | 0.0 | 10.5 | 27.7 | 5.8 | 42.4 | 11.7 | 2.0 | 27.9 | 72.1 |
| 33 | Jammu & Kashmir Bank Ltd. | 53.2 | 7.7 | 24.5 | 2.3 | 0.0 | 11.7 | 0.6 | 74.8 | 25.2 |
| 34 | Karnataka Bank Ltd. | 0.0 | 8.9 | 22.2 | 13.6 | 0.0 | 54.3 | 0.9 | 76.9 | 23.1 |
| 35 | Karur Vysya Bank Ltd. | 0.0 | 20.1 | 26.3 | 5.2 | 0.0 | 47.5 | 0.9 | 72.8 | 27.2 |
| 36 | Lakshmi Vilas Bank Ltd. | 0.0 | 5.2 | 0.0 | 34.6 | 12.2 | 47.4 | 0.6 | 87.2 | 12.8 |
| 37 | Nainital Bank Ltd. | 0.0 | 98.6 | 0.0 | 0.0 | 0.0 | 1.4 | 0.0 | 100.0 | 0.0 |
| 38 | Ratnakar Bank Ltd. | 0.0 | 0.0 | 0.3 | 17.1 | 45.7 | 35.0 | 1.9 | 52.1 | 47.9 |
| 39 | South Indian Bank Ltd. | 0.0 | 13.4 | 27.9 | 5.7 | 11.8 | 35.3 | 5.9 | 54.4 | 45.6 |
| 40 | Tamilnad Mercantile Bank Ltd. | 0.0 | 0.0 | 0.0 | 13.7 | 16.5 | 68.9 | 0.9 | 82.6 | 17.4 |
| 41 | Axis Bank Ltd. | 0.0 | 34.6 | 50.4 | 7.6 | 0.0 | 7.3 | 0.2 | 49.4 | 50.6 |
| 42 | DCB Bank Ltd | 0.0 | 19.5 | 0.0 | 14.7 | 33.7 | 29.4 | 2.7 | 63.6 | 36.4 |
| 43 | HDFC Bank Ltd. | 0.1 | 9.7 | 0.0 | 8.6 | 73.1 | 8.2 | 0.3 | 26.6 | 73.4 |
| 44 | ICICI Bank Ltd. | 0.1 | 18.2 | 70.2 | 5.8 | 0.0 | 5.6 | 0.2 | 29.6 | 70.4 |
| 45 | IndusInd Bank Ltd. | 0.0 | 9.1 | 51.9 | 12.2 | 18.7 | 7.1 | 0.9 | 28.4 | 71.6 |
| 46 | Kotak Mahindra Bank Ltd. | 0.0 | 1.8 | 43.3 | 3.6 | 0.6 | 50.4 | 0.4 | 55.8 | 44.2 |
| 47 | Yes Bank Ltd. | 0.0 | 20.7 | 0.0 | 11.7 | 45.1 | 22.0 | 0.6 | 54.4 | 45.6 |
| Source: Reserve Bank of India | | | | | | | | | | |

## Chapter 3
## Evolution of bank policy:
## Pre and Post-Liberalization Period

*Introduction*

According to the Central Banking Enquiry Committee (1931), money lending activity in India could be traced back to the Vedic period, *i.e*., 2000 to 1400 BC. The existence of professional banking in India could be traced to the 500 BC. *Kautilya's Arthashastra*, dating back to 400 BC contained references to creditors, lenders and lending rates. The tradition of banking was exiting in India from the Vedic period onwards only (2000 to 1400 BC). However, the modern banking emerged in India between the eighteenth and the beginning of the nineteenth centuries. In 1683, the first bank was set up in Madras by the officers of the East India Company. Between 1770 and 1850, agency houses established the Bank of Hindustan, the Commercial Bank, the Calcutta Bank, the Bank of Calcutta and the Bank of Bombay. Further, the commercial Bank and the Calcutta Bank merged to form the Union Bank. Three presidency banks, i.e., the Bank of Bombay, the Bank of Madras, and the Bank of Bengal, which were set up between 1809 and 1843, were amalgamated into the Imperial Bank of India in 1921. The Imperial Bank of India eventually became the State Bank of India in 1935 (Pathak, 2010).

The early period of independence, i.e. 1947 to 1967 was the period of great challenge for the Indian economy and also for the Indian banking sector. The major problem faced by the government was that the nexus between the banks and Industry. This relationship neglected the agriculture sector in providing the credit. The banks were mainly concentrated in the urban and metropolitan areas. As a result, the credit available for the agriculture sector, small and medium scale industry were depending on the wishes of the private entity. As a result the fear was

building up that the few business houses can take over the total banking sector. Therefore, this can go against the larger interest of the population

Due to the above factor, the policy makers felt that the excessive control of private business entity on the commercial banks neglected the weaker section of the economy, small and medium industry and agriculture. Even after the constraints imposed by central planning boards, the private banks were still neglecting the agriculture and small scale industry. In order to correct partial practise of lending activity of private banks, Government of India nationalized the 14 largest public banks bywhich the share of public sector banks' (PSB) deposits increase from 31% to 86%. The two main objectives of the nationalization of banks were rapid branch expansion and the channelling of credit in line with the priorities of the five-year plans. To achieve these goals, the newly nationalized banks received quantitative targets to expand their branch network and priority sectors lending. (Kumbhakar and Sarkar, 2003). Further, six more banks were nationalized in 1980, which raised the share of public sector's banks deposits to 92 per cent. The second stage of nationalization wastaken up with the object of larger social goal.Initially, 33 per cent was the priority sector lending target for the banks after second nationalization, the priority sector lending of banks was raised to 40% (Arun and Turner, 2002 and Kumbhakar and Sarkar, 2003).

Prior to 1991, banks were merely tools in the hands of the government. Banks functioned in a regulated environment with administrated interest rate, quantitative restriction on credit flows and significant portion pre-emptive reserves are used for lending to the priority sector and to fill government deficit. These resulted in lack of credit to private sector, low levels of investment led todecline in the profitability of the banks' (Pathak, 2009). After the balance of payment crises of 1991, India started to change its conservative approach to market-oriented

approach. India has undertaken various reforms to upgrade the operating standard and financial soundness of banks to internationally accepted levels. The main objective of reform was to give greater freedom in the functioning of banks, rates are market determined, deregulation of entry norm and thereby to enhance the efficiency and profitability of public sector banks (Roland, 2008).In the post liberalization period due to change in policy, relaxation in entry norms, reduction in pre-emptive reserves, deregulation of interest rates has changed the face of Indian banking sector. With these reforms the competition has injected into the system, In this competitive regime, one will survive one who will evolve with the changes and emerge as a successor.

### 3.1 Liberating the Banks from the Clutches of Private Entity

In the initial stage of development, the role of the fiscal and monetary policy was very crucial for the upliftment of the economy. Prior to independence, the country was in the trauma of extremely low level of per capita income, low standard of living and the vast majority of the population was living in a state of appalling poverty. After the Indian independence, the Indian government had greater challenges ahead to overcome drawback and set the economy on the path of development. In this circumstance, India policy makers were to focus on overall development of the economy, i.e., agriculture, industry and service sector to build a strong nation.

The path of development was different for different countries and followed the different economic models, which were suited according to domestic condition and paly as an important instrument to enhance the growth and development of the economy. During these periods

different economic thinking was existed such as Classical model[9], neoclassical model[10], and Growth models. Prior to the Great depression of the1930s, the classical model was a bible for the development of the economy.  However, after the great depression of the 1930s, the classical *lazier fair* assumption failed to solve the great depression problem in the United States and Great Britain. These countries were in a great enigma about the great depression and were in search of a saviour to overcome ongoing crises. During the same time the Keynesian model emerged has a rescuer for the United States and the United Kingdom from the great depression[11]. The Keynesian theory proved that high unemployment in Great Britain and United States was the result of a deficiency in aggregate demand. To boost the aggregate demand in the economy, Keynessuggested fiscal policy measure primarily government spending on public works projects.In latter period the new Keynesian theory propounded using monetary and fiscal policies to regulate aggregate demand. The majority of countries in the world started to follow the Keynesian ideology. In India too followed different economic models during the different plan period, according to the domestic requirement to enhance the growth and development of the economy[12]. Apart from that, Keynesian Ideas, such as, deficit financing, and government spending on public works project has been applied over a decade in India, but, with a trim (Jha, 1987).

After the Indian independence, India followed the socialist approach. To realize the social goal of the government, it needed to have a strong financial institution, in particular, the banking sector. The financial sector act has a lifeline of the economy. However, in India prior to 1969, most of the banks in India were largely controlled by the private entity. The banks were mainly

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[9]Keynes used the term classical to refer to virtually all economists who had written on macro economics questions before 1936.

[10]Neo-classical periods dominated by the work of  Alfred Marshall (Principle of Economics, 8th ed., 1920) and  A.C Pigou ( The theory of Unemployment, 1933)

[11]Classical economist failed to provide remedy for massive unemployment situation in the early 1930s.

[12]See Dag (1987) and Eckaus.S. Richard (MIT)

concentrated in the urban and metropolitan areas. The excessive control of industrial house on banking sector delinked some of the sectors from the banks, which resulted in the lack of credit availability for the agriculture sector, small and medium scale industry. The availability of credit to these sectors (agriculture, small and medium scale industry) was very much depended on the wishes of the private entity (Ketkar et al., 1992). During the pre-liberalization due excessive control on the lending activity from bureaucratic and politician, low capital base and inter-related lending lead to the failure of many banks. Further, inducting trading in bank activity was one more reason for the failure of banks (Report on Trend and Progress of Banking in India, 2007)

### 3.1.2. Compelling Goal of Social Obligation on Banks (1967-1990)

During the 1960s the concept of direct allocation of bank loans on preferential terms was considered as an important instrument of development policy in both developed and developing countries. In India, on the eve independence, the banking sector was managed and largely controlled by the private entity. The nexus between the banks and private entity resulted in the partial credit allocation. As a result, some sections of society could not obtain credit and was not able to afford market rates of interest. To overcome above defaults the Government of India introduced the concept of social control in December 1967 and came into force on February 1, 1969. Thiswas introduced in the Indian banking sector to use the scarce resources of the banking system for the developmental purposes. However, excess control of private entity on bank functioning was the hurdle for achieving higher economic growth with the social objective. Therefore, the only alternative left in front of Government of India was to nationalise major portion banking system (Saez, 2004).

In 1972, the government of India introduced differential rate of interest to allocate the credit at a lower rate of interest to the lower section of society for their upliftment. Initially the banks were given the quantitative target of one per cent of its total loan and advances. Further, it was increase to one-third of the outstanding credit in March 1974. For private banks were also advised to maintain one third of their total advances by March 1980. During 1980's the larger proportion of banks fund went to larger section of the population and little was left with the smaller population. According to scheduled commercial banks 81 per cent of total borrowing amount was up Rs, 10,000, which constituted less than 4 per cent of total bank credit. In order overcome above problem the government of India suggested the banks to keep 10 per cent of their lending to weaker section of the society for their upliftment. Further, to overcome the fear of default risk the Government of India establish Credit Guarantee Corporation of India Ltd in 1971. Above polices encouraged the banks to lend to weaker section of the society to their upliftment. Through these policies the Government of India not only intended to achieve the social goal but also to tackle the lack of credit problem and incidence of poverty for the development of economy.

During 1960s and early 1980s the period was characterised by excess control on banks' activity over lending, determining the interest rate, regulation of entry barriers, excessive pre-emptive reserves hindered the development of the banking system for the efficient allocation of resources (Pathak, 2010). To overcome above drawback the Government of India started to take small steps towards the opening up of the economy in the mid-1980s. In this direction the first move was to remove restrictive clauses in the Monopolies and Restrictive Trade Practices

(MRTP) act 1969[13], introduction of Treasury Bills, the creation of money markets, and the partial deregulation of interest rates (Bhide et al, 2001). In 1986, a 182-day Treasury bills were introduced through auction systems. Discount and Financial House of India was established in March 1988 by the Reserve Bank of India jointly with public sector banks and all India Financial Institutions to develop the money market and to provide liquidity to money market. In 1988 the process of partial deregulation was with an effort simply the interest rate categories, simplifying the lending rates and introduced new minimum lending rates for all bank (Shirai, 2002; Roland, 2008).

### 3.1.3 Result of financial repression on Indian economy

### 3.1.3.1 Fiscal and Revenue Deficit

The reforms of the early 1990s were intended to make financial sector as an instrument for efficient allocation of credit for the deprived section of society. The government was instrument to fulfil the goal of direct credit programme. However, during 1970s and the 1980s due to substantial expansionary plan the government budget was increased drastically and to fill the gap in government budget, the banking sector was used to finance the fiscal deficits[14].

Gross fiscal deficit (GFD) of central government as a percentage GDP increased gradually from 3 per cent in 1970-71 to 5.6 per cent in 1980-81 and further it has increased to 7.6 per cent in 1990-91. One more important indicator to measure the deficit is the revenue deficit[15].

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[13]The important of this act was to control the concentration of power in the hand few, to dislocate the monopolistic structure restrictive trade practices.

[14] According to Chelliah (2006) three deficit variables, such "fiscal deficit", "revenue deficit" and "monetized deficit" are important variable and policy target. If the deficit variable can't be checked in a right time then it can have adverse impact on the economy.

[15]The difference between revenue expenditure (i.e broadly government expenditure not leading to capital formation) and current revenues. The Revenue deficit arises if the revenue expenditure exceeds current revenues.

In the case of Revenue deficit up to 1980 the trend on the current revenues of the central government was exceeded current expenditure.



Figure 1: Deficit of Central Government as a percentage of GDP (1970-71 to 1990-91)
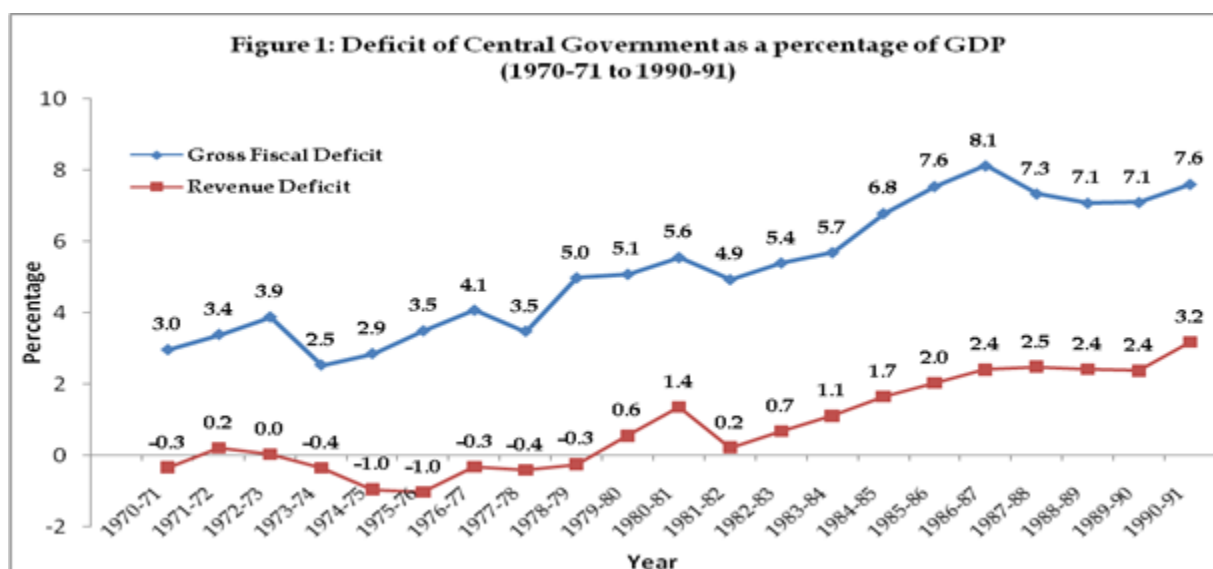
So that there was a surplus available to finance in part the deficit on capital account. However, after the 1980 the excess budget expansionary of government turned current revenue surplus into deficits (i.e –0.3 in 1778-79 to 0.6 in 1979-80). Then onwards the trend on revenue expenditure is showing upward because of the central government a large proportion (about 48 per cent) of the government's net borrowing, is now used to finance the revenue deficit (Srinivasan, 2002). Therefore, if the revenue deficit is not reduced, the reduction in the fiscal deficit can only come about through a cut in government's capital formation which would be injurious to growth (Chelliah, 2006).

In the state also there is gradual increase in the GFD as a percentage of GDP from 2 per cent of GDP in 1970-71 to 2.6 in 1980-81 and further to 3.2 in 1990-1991. In the case of revenue deficit 0.0 per cent of GDP in 1970-71 to -1.3 in 1980-81 and further it has increased to 0.9 in 1990-91. In State also we can observe there is a steady increase in the GFD and RD over a period of time.



Figure 2: Deficit of the State Government as a Percentage of GDP (1970-71 to 1990-91)
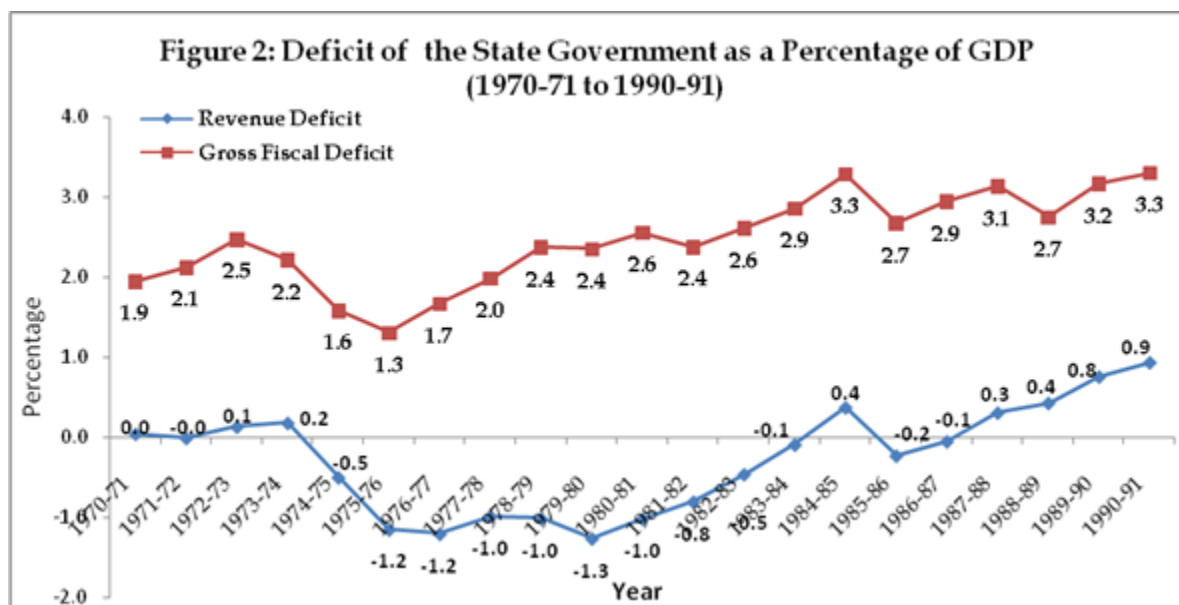
At the end of 80s the economic fundamentals were in good shape; the real sector was doing well. The only dark cloud on the horizon was a persistent sizeable fiscal deficit. The combined Gross Fiscal deficit of the Centre and State started to jump from 6.0 per cent in 1981-82 to 9.2 per cent in 1990-91. The combined revenue defect also started jumping from 0.2 per cent in 1982-83 to 4.1 per cent in 1990-91. These were the stage where the government started borrowing to fill the gap of revenue deficit. Therefore the persistent rise in Gross Fiscal Deficit and Revenue Deficit was the major cause of economic crises during 1990-91 (Sau, 1992, Joshi and Little, 1996, Roland, 2008).

**Figure 3: Combined Deficits Of The Central And State Governments in the Pre-Liberalization Period (As percentage to GDP)**
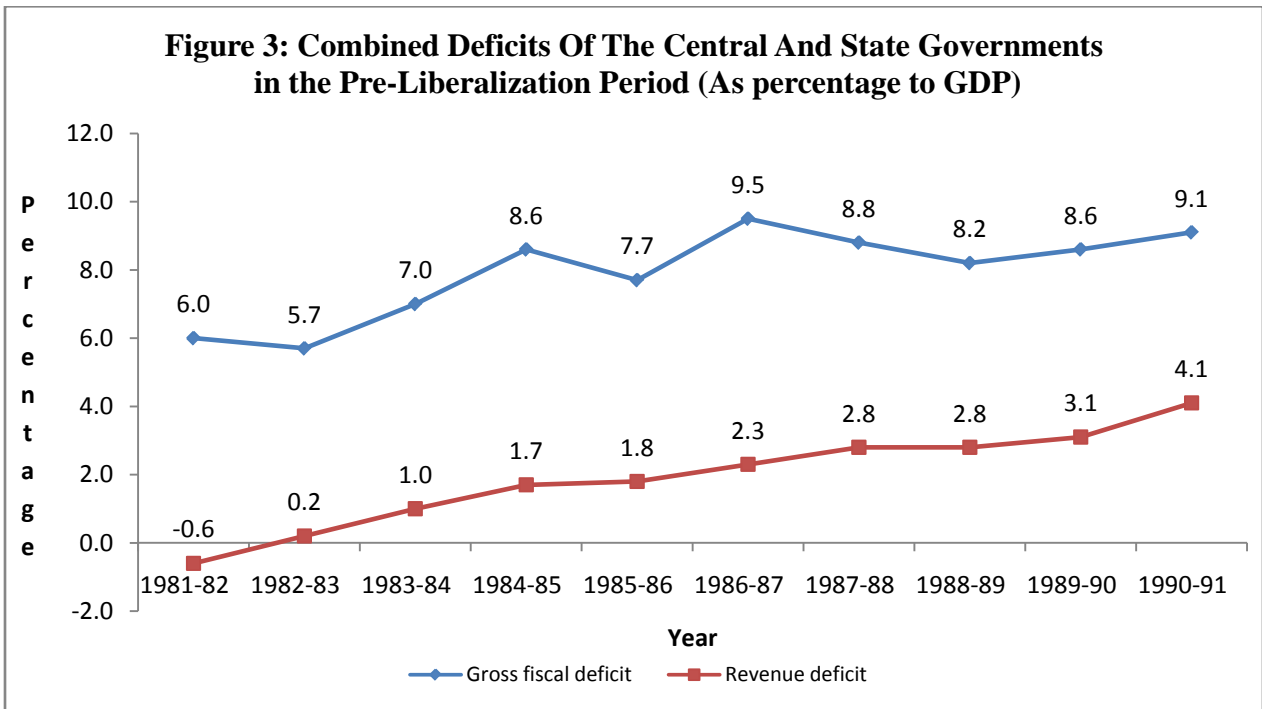


### 3.1.3.2 *Pre-emptive reserves (CRR and SLR)*

According to Reserve Bank of India, the Indian banking sector was required to satisfy two reserve ratios (cash reserve ratio (CRR) and a statutory liquid ratio (SLR). According statutory liquid ratio banks are required to maintain liquid assets in the form of cash, gold and debt free securities equal to not less than 25 per cent of total demand and time deposit liabilities. RBI was given power to change the ratio. RBI raised SLR from 20 per cent in September 1962 to 38.5 in October 1991. SLR was introduced in 1949 has a prudential requirement, butlatter it was used as an instrument to fill the gap in the government deficit. As a result higher SLR forced commercial banks to maintain larger securities, such as government guaranteed securities. Therefore, the capacity of commercial banks to grant loans has been reduced.

Figure 4 : Cash Reserve Ratio And Satatuory Liquitity Ratio Prior To 1991
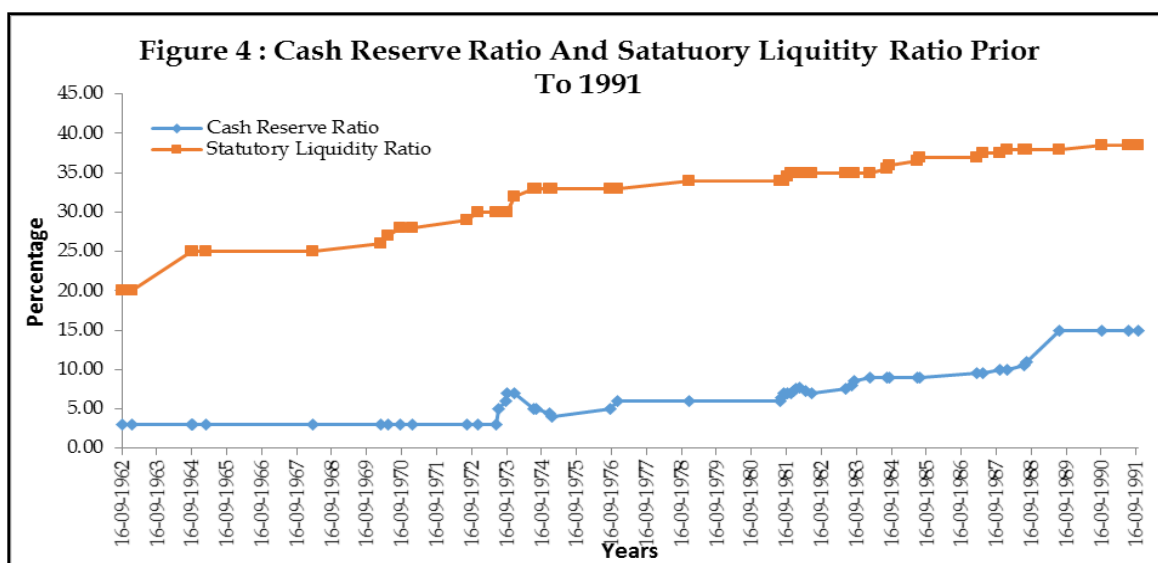
According to RBI Act of 1934, every scheduled commercial bank's has to keep a certain percentage of cash reserve with the RBI.Initially the requirement was 5 per cent of demand deposits and 2 per cent of time deposits. By an amendment of 1962, RBI was empowered to vary the cash reserve ratio between 3 per cent to 15 per cent of the total demand and time deposits. The CRR was increased from 5.0 per cent in June 1973 to 15.0 per cent by July 1989 (Fig. 4). Thus, by 1991, 53.5 per cent total bank resources was under the category of pre-emptive reserves (SLR and CRR).

Frequent increase in CRR and SLR left the banks with bare hand because banks had very little to lend, as a result the performance of the banks was reduced drastically and led to high interest spread (Joshi and little, 1996; Roloand, 2008). Further, banks used to earn less interest rate on the CRR deposit and yield on the government securities was below the saving deposit interest rates. Therefore, the policy of government was led to crowding out the private institution from access to credit from the banks by controlling credit availability (Roloand, 2008). Besides, above restriction the government also had control over fixing the interest rate on savings and loans. Therefore, these policy reforms were basically meant to fill the gap of the central government

deficit as a result the role of private sector in development was limited. Hence, the persistence of large deficit over a period of time was the root cause of the 1990 crises, apart from the global factors (Roland, 2008).

### 3.1.3.3 *Credit- Deposit-Ratio (CD Ratio)*

The Credit-Deposit ratio shows that how much of the advances lent by banks are done through deposits. It is the proportion of loan-assets created by banks from the deposits received. The higher the ratio, the higher the loan-assets created from the deposit. At the same, higher growth in credit-deposit ratio indicates that the increase in credit growth,whichmight lead to excessive risks on the balance sheet of the banks. And also the excessive lending can also increase in NPAs of banks' asset during the recession. It is important to analyse how the increase in SLR and CRR has affected the Credit Deposit ratio during the pre-liberalisation period. Whether increase SLR and CRR have been dynamic enough to substantially decrease the credit-deposit ratio of commercial banks in the pre liberalization period? In general, the reduction in SLR and CRR is meant to increase Credit deposit ratio of banks. However, during pre-liberalisation period SLR and CRR were 53.5 per cent of the total banks' resources. Which was controlled by the government apart from the reserves (CRR and SLR) the banks were also given guidelines to lend 40 per cent to priority sectors. Hence, the banks are more interested in investing in government securities rather than the lending because investing in government securities was the safe heaven. Accordingly, on an average during 1979 to 1991 the SBI and its Associated invested around 61 per cent in government securities, 31 per cent in other approved securities and 8 per cent in other investment. For nationalised banks on an average 71 per cent was in government securities, 23 per cent in other approved securities and 6 per cent in other investment. For private banks on an average 71 per cent was in government securities, 22 per cent in other approved securities and 7

per cent in other investment. For foreign banks on an average 85 per cent was in government securities, 8 per cent in other approved securities and 7 per cent in other investment. Thus, during the pre-liberalisation period most appropriate investment for the commercial banks was an investment in the Government securities than the lending activities. Since, the investment in Government securities was yielding good returns with the less risk/no risk. Therefore, investing in government securities were considered has safe heaven than the lending.



Figure 5: Credit Deposit Ratio Of Scheduled Commerical Banks During Pre-liberaliszation Period
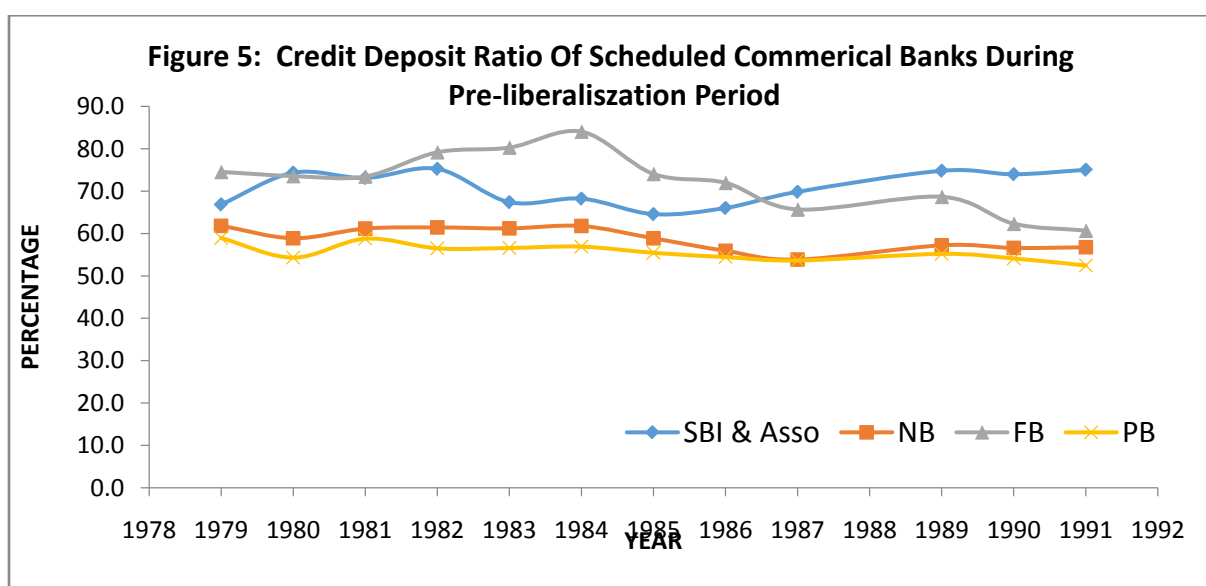
Impact of investment in government securities can be seen in Credit deposit ratio. Average Credit-Deposit ratio was 71 per cent for the SBI and Its associates, 59 per cent was for nationalized banks, 72 per cent was for private banks and 55 per cent was for foreign banks. Form this it is clearly indicated that the banks invested more in government securities has a lesser CD ratio than the banks which invested other sources. Therefore, the bank resources were absorbed in the name of investment in government securities and priority sector lending.

### 3.1.3.4 *Investment-Deposit Ratio*

Investment-Deposit Ratio explains thehow much of the banks deposit is being invested in government securities. The investment deposit was higher because the government required

liquidity to run day to day government activity. This requirement of government is fulfil by selling the government securities to banks. Hence, the ratio of investment deposit ratio will be higher than the SLR (A Handbook on RBI's Weekly Statistical Supplement, 2014).

**Figure 6: Investment-Deposit Ratio in the Pre-Libealization**
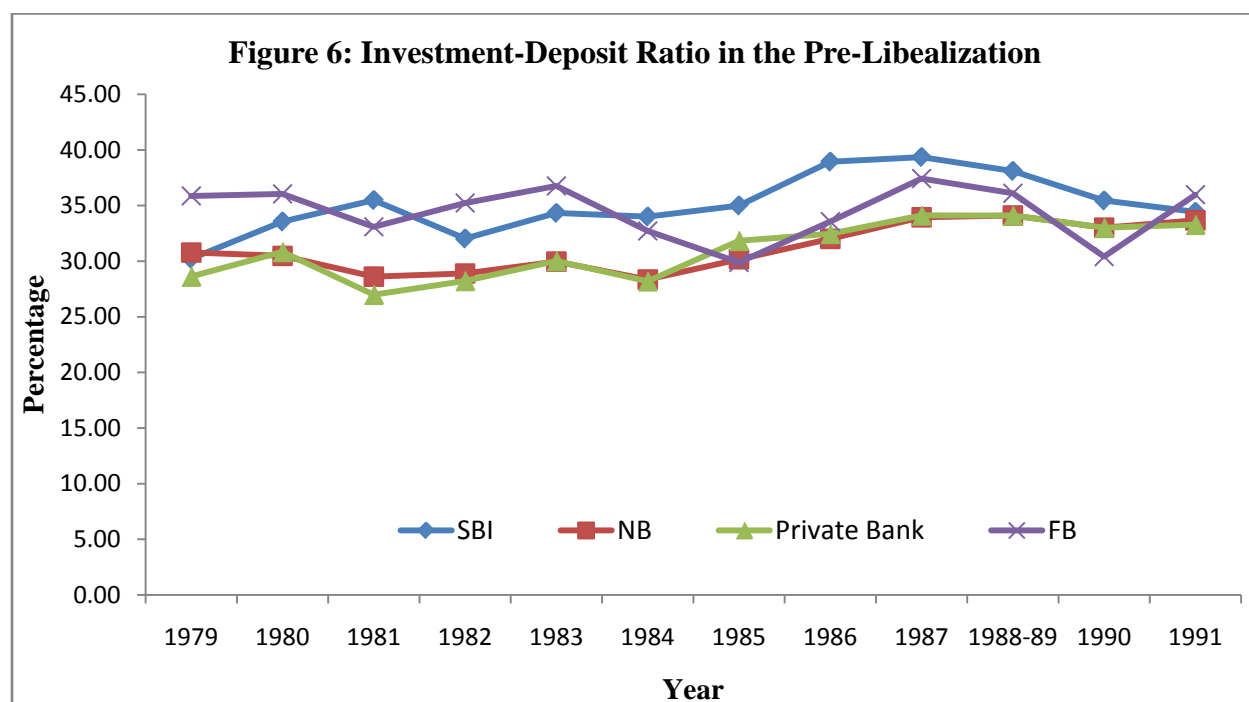


Figure 6 depicts investment deposit ratio in the pre-liberalization period. In this period average investment deposit ratio over the period of 1979 to 1991 for SBI and its Associates was 35.07, Nationalised Banks was 31.16, Private Banks 30.97 and Foreign banks 34.43. Nationalized and private bank are more or less at the same level.Therefore, SBI and Its associate's banks and foreign Banks are more invested in government securities out of its deposit.

### 3.1.3.5 *Interest Rates*

In 1967, Government of India introduced social control over banks with a view to securing a better alignment of the banking system to the needs of economic policy. In 1969, the 14 banks were nationalised with deposits of over Rs.50 crores. The two main objectives of the first wave

of nationalization were rapid branch expansion and channelling of credit in line with the priorities of the five-year plans. Further, to mobilise the large deposit the government of India introduce the Lead Bank Scheme in 1969. Additionally, the banks were advised to allocate a certain percentage of credit to weaker section, small farmers and small scale industries under the roof of priority sector lending.The Differential Rate of Interest (DRI) Scheme was initiated in 1972 to cater the need of the weaker sections of the society and for their upliftment. Although initially there was no specific targets in priority sector lending. However, in November 1974 public sector banks were given guidelines that lending to priority should not reach less than one-third of the outstanding credit by March 1979 and again it was revised to one-third of their total advances by March 1980. Subsequently, the target was enhanced to 40 per cent of aggregate advances. In order to achieve above mentioned objective, the newly nationalized bank received quantitative targets for the expansion of their branch networking. From 1975 onwards the SBI and the nationalization bank were required to set up and sponsor regional rural banks. Above mentioned reform was undertaken with the motive to facilitate credit rural population and backward community.

In the second half of the 1980's, the government introduced treasury bills, created the money market instruments, started the partial deregulation. As a result of partial deregulation the government started the simplification of interest rate categories, lending rates and unified the minimum rates in 1988 and introduced a new minimum lending rate in 1989. Figure 7 depict interest rate of call/Notice money rates, deposit rates and lending rates. The trend clearly notifies that the government excess control on functioning of the bank is clearlyfigured out with higher rate of lending rate and lower deposit rates. At the end of 90's the deposit and lending rate are in the verge of merging.

**Figure 7 : Rates During Pre-Liberalization**
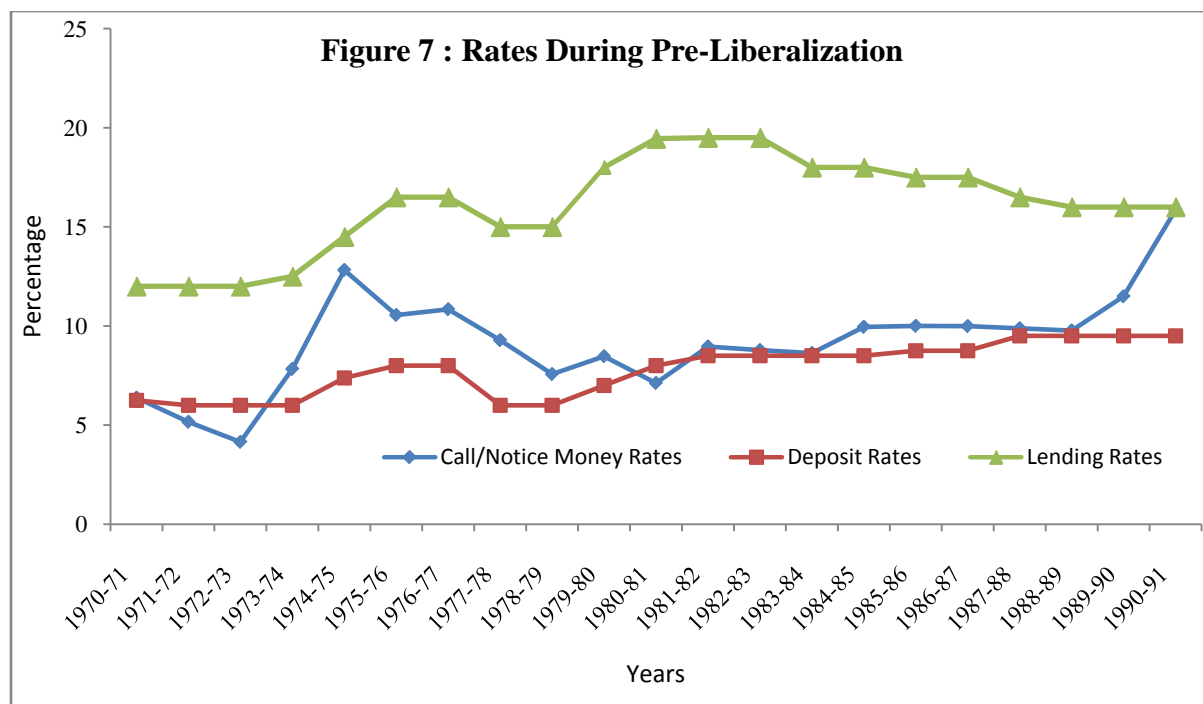
### 3.1.3.6 *Accumulation of Surplus Labour*

Prior to liberalization of the banks are on the verge of expansion mode To run day to day to business banks started to recruit a large labour force. One more reason for employing large labour force was because of lack of technology and the day to day work was handled manual. As a result accumulation of huge labour force was required to run the banks. However it was considered has one of the drawbacks for the performance of public sector banks (Rakesh Mohan, 2005). Whereas the private sector banks and foreign banks data are not available prior to 1990 and available after 1990. During 1990 the Share of Payments to and Provisions for Employees in Total Operating Expenses was higher than the SBI and Its Associates, Nationalised Banks and Foreign Banks.

| Table 2 : Share Of Payments To And Provisions For Employees in Total Operating Expenses During Pre Liberalization Period | | | | |
|---|---|---|---|---|
| Year | SBI and Its Associates | Nationalized Banks | Private Banks | Foreign Banks |
| 1979 | 76.3 | 72.9 | NA | NA |
| 1980 | 74.2 | 72.1 | NA | NA |
| 1981 | 72.7 | 71.5 | NA | NA |
| 1982 | 71.4 | 70.2 | NA | NA |
| 1983 | 70.7 | 69.6 | NA | NA |
| 1984 | 72.1 | 71.8 | NA | NA |
| 1985 | 72.5 | 71.3 | NA | NA |
| 1986 | 70.4 | 69.8 | NA | NA |
| 1987 | 68.7 | 66.9 | NA | NA |
| 1988-89 | 70.4 | 69.4 | NA | NA |
| 1990 | 67.8 | 68.9 | 73.5 | 25.9 |
| **Average** | **71.6** | **70.4** | **73.5** | **25.9** |
| **Source: Reserve Bank Of India** | | | | |

During the pre-liberalisation period the share of payment to employees was highest in the total Operating expenses. During 1979 SBI and its associate's share of payment to employees in total operating expenses was 76.3 per cent and decline to 68 per cent.For nationalized banks the share of payment to and provision for employees in total operating expenses was 73 per cent and declined to 69 per cent . For private sectors and foreign banks the data are available from 1990 onwards. During 1990 the share of payment to employee was 73.5 per cent and 25.9 per cent respectively. Therefore the average share of payment to employees for SBI and Its Associates 71.6, nationalized bank 70.4, private sector bank was 73.5. In the case of foreign banks, the data shows only 25.9 per cent because it started during this period only. Thus the major chunk of income was flown in terms of payment of salaries to the employees.

### 3.2 Reversal of Financial Repression (1991 onwards)

During the financial repression the performance of banks' deteriorated drastically due to excessive control from the government on functioning, regulation on interest rate, regulation on lending and deposit rates. Due to the financial repression the financial system was contracted or remained small and inefficient, as a result, growth and macroeconomic stability were impaired (Fry, 1997). McKinnon (1973) proved theoretical and with the empirical evidence that a more effective strategy for economic growth would proceed through a liberalization of financial markets and then lift of restraints on foreign trade. The rise of noninterventionist was the fall of interventionist (Keynesian ideology). who advocated state action for employment generation and social welfare was started to collapse with floating of the US dollar during 1971-73 and oil crises of the 1970s led to the development of euro currencies (Euro Dollars) (Joshi et al., 2009).

During the same time the rise of supply-side economist Goldsmith (1969);McKinnon (1973) and Shaw (1974) brought out the considerable evidence that financial development correlate with growth and quoted in support of their arguments in the cases of Brazil, Korea, Taiwan, etc. They also highlighted the disadvantages of the policies of 'repression'. They pointed out that a country without efficient financial and profitable financial markets suffers from various disadvantages in aintegrated world. It loses investment, suffers worst real interest rates in an attempt to attract capital and the possibility of even losing its capital base. The real momentum arrived for the supply-side economist when Ronald Reagan and Margaret Thatcher preached *free market ideology* in the United States and the United Kingdom. These two countries started to advocate the policy of globalization with the help of the twin institutions (International Monetary Fund (IMF) and World Bank (WB)). These twin institutions played a role of the missionary to spread the idea of the free market economy (Stiglitz, 2002).

India also started to followthe preaching of missionary institution and converted to the idea of open economy. In June 1990 on the eve of second IMF loan, the IMF issued its blueprint for the process of bank privatization, which, till today, each successive government has been following the policies of the twin missionary institution (Srinivasan, 2004). One of the policies of financial liberalization was opening of banking sector. In this direction, the Government of Indiaconstituted the committee under the Narasimham (1991)to fulfil the obligation of Washington consensus[16].The committeeexamined all aspects relating to the structure, organisation, functions and procedure of the financial system. The purpose of the committee was to make Indian banking sector competitive, efficient and profitable. During 1998-99 the number of steps has taken to make banking sector more vibrant with the motive of efficient allocation of resources.Therefore the second generation reform was considered asa stage of higher level of reforms in the India economy. During this period number of other committee were set up to look into reforms in banking and allied sector.Reserve bank of India constituted the working group under the chairmanship of Khan, for exploring the possibilities of harmonising the role and development of financial institutions and the introduction of universal banking in India. Another committee was constituted under the chairmanship of Vasudevan in July 1999to look into Technology Up gradation in the Banking sector. Further, M.S Vermaommittee was appointedin October 1999 look into the restructuring of the weak public sector banks. Among the aforementioned committee, the committee headed by Narasimham was widely recognized and implemented.

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[16]The term **Washington Consensus** was put forwarded by English economist John Williamson in 1989 to describe a set of 10 relatively specific economic policy prescriptions for crises prone developing countriesby Washington, D.C.

The second stage of reform was started from 1997-98 onwards, which was very much influenced by the East Asian crises. The road map of reform was different prior to East-Asian Crises. The government was in the process of further opening of the economy through Fuller Capital Account convertibility. In that direction, the RBI appointed the committee under the chairmanship of Shri S.S Tarapore, i.e., Tarapore I. The committee was formed for outlining a road map for moving towards Fuller Capital Account Convertibility. The committee submitted its report on May 30, 1997, with the recommendation of a sequenced withdrawal of controls in moving towards Fuller Capital Account Convertibility for the period of three years starting in 1997-98 and ending in 1999-2000. However, East-Asian crises changed the idea of implementation of Fuller-Capital Account Convertibility and followed a cautious stand.Therefore the Tarapore I committee report was kept on hold. As the world was shaken by the East-Asian crises, the policy makers and academician were investigating the reason for the East-Asian crises. Some of the major studies found that the fast phase of liberalization without proper regulation and supervision was one of the major cause of East-Asia crises (Krugman,1998 ). Further, this crisis also suggested that weak fundamentals can pose a threat to the banking system.

### 3.2.1 Fiscal and Revenue Deficit

In the pre-liberalization period the deficit of central government as a percentage of GDP increased drastically due to excess expenditure. During 1980 there was a excess of consumption and expenditure over revenue resulting in heavy government borrowing. Latter, this resulted in the crisis at the beginning of 1991-92. Raising share of expenditure in GDP throughout the late 1990 and early 2000s without commensurate increase in revenue share of GDP reduced the overall quality of the government finance.  The introduction of Fifth Pay commission (FPC) was

further increase the Gross Fiscal Deficit and Revenue deficit. The impact of FPC was spread over the period from 1997-98 to 2000-01 (Mohan, 2008). Therefore, the fiscal deficit of central Government as a percentage of GDP was decreased during 1993-94 (6.8) to 1997-98 (4.7) and again the deficit increase later 1997-98 to 1999-2000. The same pattern was followed in the case of revenue deficit (Figure 8). On the other hand once the centre announced the fifth Central Pay Commission the state were also followed the pay revision. The gross fiscal deficit of state started to increase from 2.7 to 4.6 during 1996-97 to 1999-2000. The revenue deficit also increased from 1.2 to 2.8 per cent during 1996-97 to 1999-2000. The combined deficit of central and state with respect fiscal deficit increase from 6.1 to 9.6 per cent 1996-97 to 1999-2000 and revenue deficit 3.4 to 6.8 per cent during the same period. Therefore, 1996-97 to 1999-2000 known as a 'shock-years' for the combined liability of state government (Ray, 2015).



Figure 8: Deficit of Central Government As a Percentage of GDP in the Post Liberalization Period
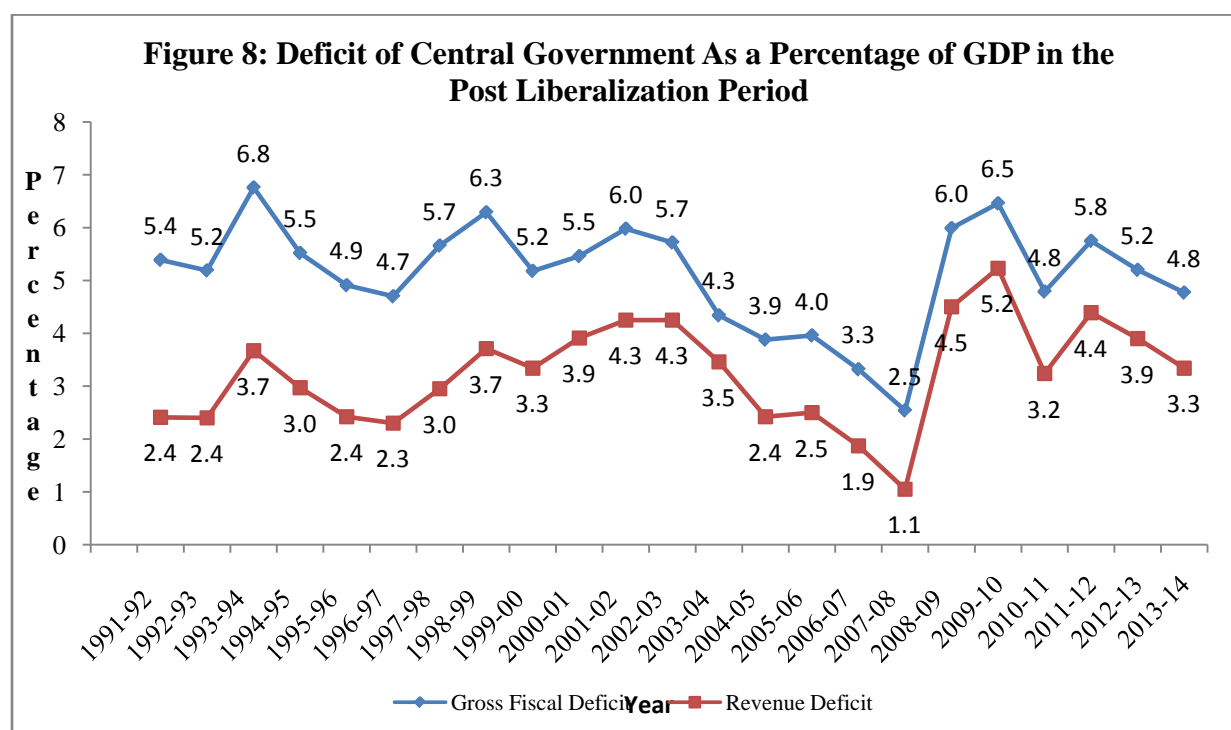
Given the serious concern expressed on the fiscal position in the country. The government passed the fiscal responsibility management Act (FRBM) in May, 2003 and by the Rajya Sabha

in August, 2003. The purpose of FRBM act was introduced to achieve sound fiscal management through elimination of revenue deficit, reduction in fiscal deficit and a phased decline in Centre's borrowings from the RBI (Singh, 2013). After the introduction of FRBM act the Gross Fiscal Deficit and Revenue deficit started to decline up to 2007-08. After the 2007-08 the situation was worse because the growth rate of tax revenue was 21.2 per cent in 2007-08, it started to decline thereafter to 5.6 per cent in 2008-09 and slight increase 6.3 in 2009-10 (Table, 3). As a result the trend of gross fiscal deficit and revenue also started to increase. The impact of Sixth pay commission was streamlined with continued tax buoyancy and appropriate expenditure management the government was able to reach zero per cent of GDP in respect to revenue deficit for both state and centre (Figure 10).



Figure 9: Deficit of The State Government as a Percentage of GDP

**Figure 10: Combined Deficits Of The Central And State Governments (As percentage to GDP) in the Post Liberalization**
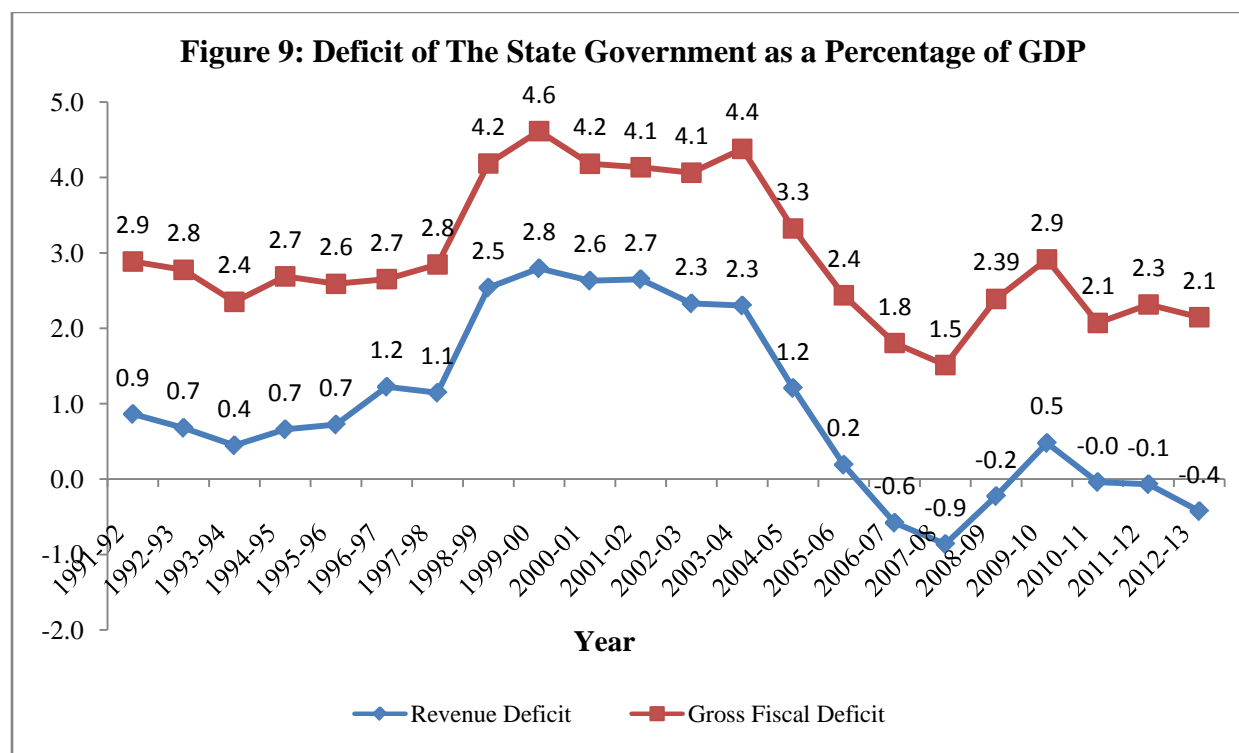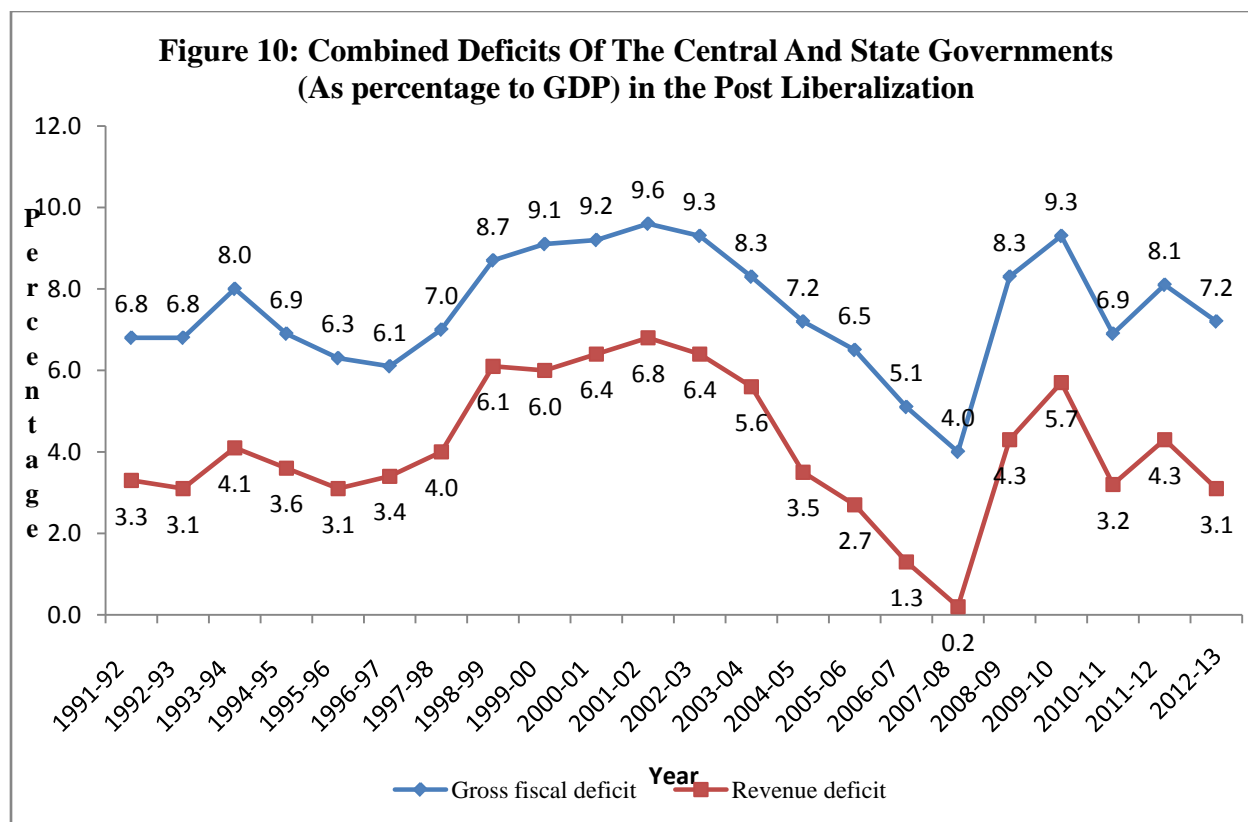
As a result of US financial crises the growth and development of economy was slow down. To overcome the downfall, the Union government as well the State government adopted the fiscal stimulus packages. Since then there have been some interruption in the progress on fiscal consolidation at state as well state level. On the other hand the impact of sixth central pay commission was diluted with increase in tax buoyancy and slowing down in revenue and capital expenditure was overcome deficit in the latter period.

### 3.2.2 Deregulation of Interest Rate

The deregulation of interest rates was one of the important recommendations of Narasimham I committee. Due to administrated interest rates the direct lending distorted efficient allocation of resources and thereby causing the economic growth and development (Glower, 1994). During the administrated interest rates regime banks had very little operational flexibility, as a result, the

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performance of bank deteriorated drastically. The profit level of banks dried up. The banks' resources were used to finance the government sponsored schemes. Therefore, to disseminate the banks from the stage of distress to content the deregulation of interest rate was considered as an optimal solution.

In post liberalization period the banks were given greater freedom to charge the interest other than the concessional lending rates to the borrowers, reduced ceiling on all lending interest rates. Still interest rates on saving deposit account, non-resident India (NRI) deposit and small loans upto 2 lakh wereunder the regulation (Report on Trends and Progress of Banking InIndia, 2007-08). However, in post liberalization reform the only saving deposit interest rate was regulated. To deregulate the saving deposit interest rate theRBI invited the ideas regarding deregulation of interest rate. After considering the opinionRBI decided to deregulate the savings bank deposit rate. Therefore, by deregulation of saving bank deposit interest rates the deregulation of interest rate was largely completed by 2011. During the post reform process the change in base rate was not effectively transferred to customer, there used be lag in transformation. To overcome this problem the RBI in April, 2016 replaced base rate with Marginal Cost Lending Rate (MCLR). The main motive to introduce MCLR was that the change in policy variable(repo rate) by RBI was not been effectively transmitted by banks to the customers. Therefore, this new policy effort to make effective transmission of policy rate cut to the borrowers.

### 3.2.3 Lending Rates

The deregulation of interest rate was started in the early 1990s and was largely completed by April 2016. In April, 1992 RBI changed the interest rate slabs on loans from six slabs to four slabs on loans according to the size of the credit .Further in April, 1993, interest rate slabs on loans reduced from four to three slabs to rationalise the lending on loans. In October, 1994 the

RBI relaxed the interest rate on lending of commercial banks for credit limit above Rs.2 lakhs and in October 1995banks' were given freedom to decided the interest rate of advanced against the term deposit of Rs. 2.lakh and above for both domestic and NRE deposits.

In April, 2003 RBI discontinued tenor linked prime lending rates (PLR) and introduced benchmark prime lending rate (BPLR) to bring transparency in banks' lending rate and to remove the complexity involved in pricing of loans. The pricing of advances was based on the following factors, the cost of operating expenses, cost of funds and minimum margin to cover regulatory requirement. Further, to provide reasonable loans to small borrowers RBI decided to link interest rate ceiling on small loans upto Rs. 2 lakh to BPLR (Monetary and credit policy of 2004-05). Additionally, banks' were given freedom to charge interest rate below the BPLR for their credit worthy customers. As a result of this RBI was facing difficulty to assess the transmission of policy rates to lending rates.To surmount above problem RBI constituted a working committee to review the present Benchmark Prime Lending Rates under the Deepak Mohanty.The working committee submitted in its report on October 2009. After going throughthe report RBI placed on its website for comments and suggestion. After receiving the comment and suggestion from public and policy makers RBI decided to switch over to Base rate system from July 1, 2010.

However, the earlier base rate system was unable to pass the change in policy rate to customer. The rate of transmission of monetary policy (repo rate) to customer was slow and banks were rather changing the base rate occasionally or they were waiting for large repo cut to reduce the base rate. Therefore, the speed of transmission of monetary policy to customer was delaying. To make faster transmission of policy variables to customer RBI replaced base rate with Marginal

**Figure 11: Lending Rates During Post Liberalization**
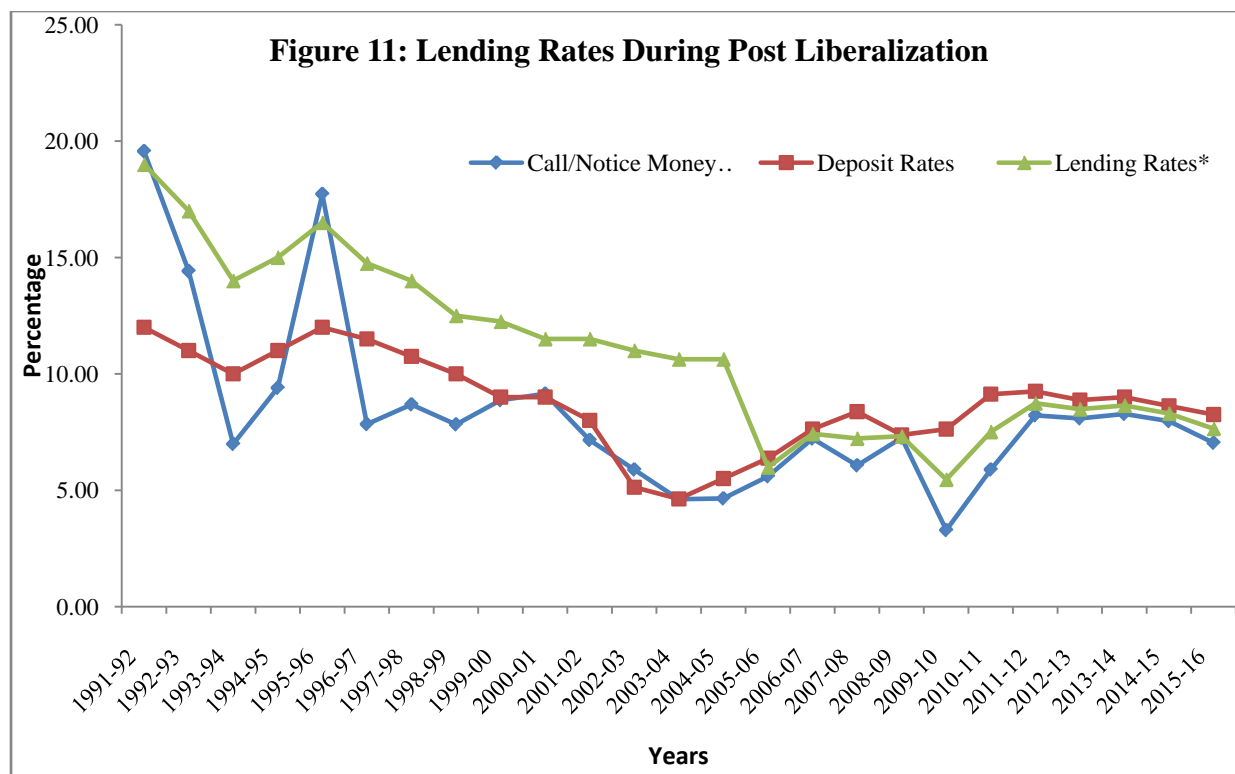


Cost of Funds Based Lending Rate in April, 2016. According to MCLR the banks' have to fix their lending rates to customer on the basis of their riskiness. Second, banks should consider the repo rate while calculating MCLR and finally, now the banks are obliged to reduce lending rates whenever there is change in Repo Rate. Thus, with this reform the RBI is not only deregulating the interest on lending but also trying to bring efficiency in monetary transmission.

### 3.2.4 Deposit Rate

In the post liberalization period the banks' were given freedom to fix their own deposit and lending rates. Prior to liberalization, the structure of interest was more complicated with different lending slabs and different lending rate to priority sector lending. To get through the complexity of interest rate structure, RBI rationalized the interest rate and then deregulated, unchanging few rates on the deposits and lending keeping customer point of view. In October 1,1997, banks were given freedom to fix their own interest rate on domestic term deposit rate of various interest

with the approval of their Board of Directors. In April, 1998, the RBI gave freedom to fix the interest rates on all domestic term deposit, premature withdrawal and banks were given freedom of fix interest rate on deposit of RS 15 lakh irrespective of size of deposit. On deposit side, the only interest rate that continued to be regulated was the savings deposit interest rate. In 2010-11 Quarterly review of monetary policy announced the road map to deregulate the saving deposit interest rate. RBI placed on its website to get feedback regarding deregulation of saving deposit interest rate. After receiving the feedback RBI decided to deregulate the saving bank deposit rate on October 25, 2011.Therefore, by deregulating the saving deposit interest rate the process of deregulate on completed.

### 3.2.5 Progressive Reduction in Pre-emptive Reserves (CRR and SLR)

In the post liberalisation period one of the important tasks in front of government and policy makers was to give greater freedom to banks in their day to day business activity. Prior to liberalization banks used to keep huge reserves with RBI in the form of CRR and SLR, as a result, the bank had very less resources to lend. Even international agencies such as IMF and the World Bank severely criticized the IndianGovernment for high level of CRR and SLR, due to which banks' had to facethe adverse impact on the profitability of banks' (Bhole, 1997).

The Narasimham Committee (1991) clearly explained that the cause for deteriorating profitability of public sector banks. First factor was decline in interest income for banks on the one hand and on the other hand increasing cost of operation.The decline in interest income was the result of a high proportion of the total deposits being seized in CRR and SLR, which was yielding less than the market rate of interest. Further, a high proportion of banks deposits had to be allocated to priority sectors under social banking scheme and the rate of interest earned on this

lending were quite low. Further, a high level of SLR forced the commercial banks to maintain a larger proportion of their funds in government securities and government guaranteed securities. Hence, the performance of commercial bank deteriorated drastically due to excess reserve in the form of CRR and SLR and priority sector lending restrained the commercial banks to grant loans and advances to business and industry. Therefore, the Narasimham Committee (1991) argued that the high level SLR adversely affected the profitability of the banks because the rate of interest received by banks on government securities was less than the market related rates of interest.

Narasimham Committee (1991) recommended the government to reduce the SLR from the present 38.5 per cent of the net demand and time liabilities of banks to 25 per cent over the next five years. CRR should be progressively reduced from the present high level of 15 per cent to 3 to 5 per cent. RBI should pay interest rate on the deposit kept under the pre-emptive reserves at the rate of interest, which is equal to one year deposit. On the recommendation of the committeein October 1997, RBI started to reduce SLR gradually from 38.5 per cent to 25 per cent net demand and time liabilities and CRR was gradually reduced from 15 per cent of to 5 per of cent net demand and time liabilities in June 2002. Figure 6 depicts there is decline in the trend of SLR and CRR.

**Figure 12: Cash Reserve Ratio and Statuatory Liquid Ratio In the Post LIberalization Period.**
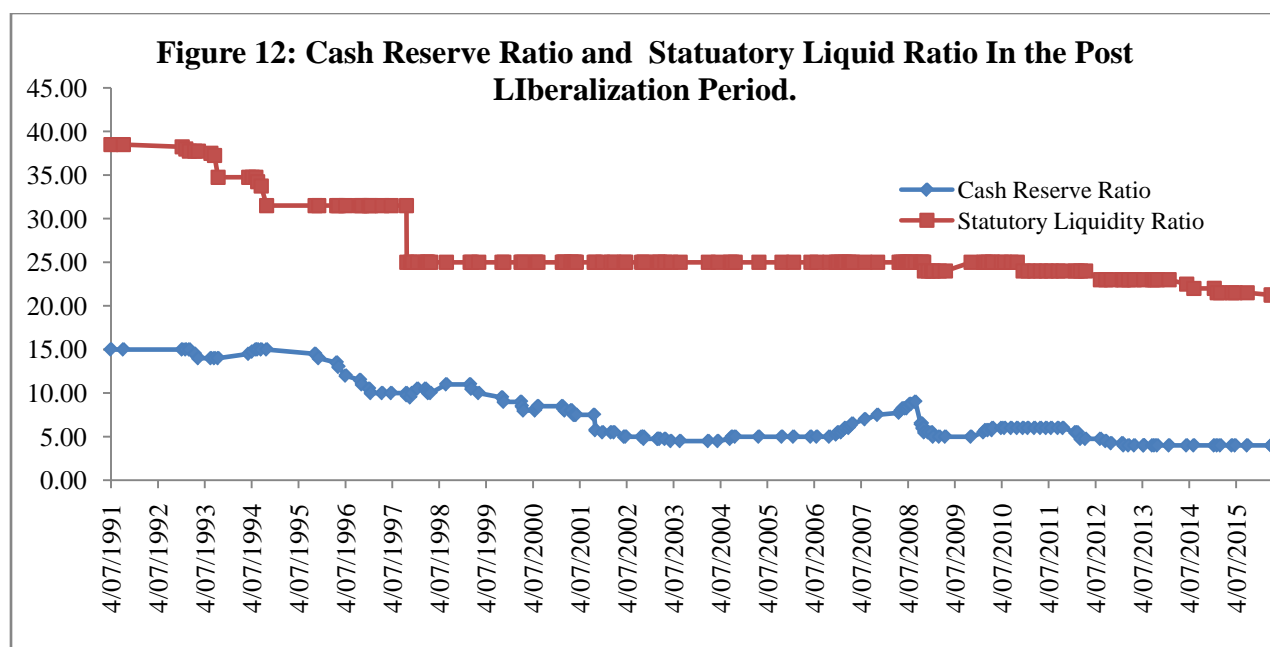


### 3.2.6 Credit-Deposit Ratio

As we discussed in the earlier section that the higher pre-emptive reserves will barren the resources of the banks. This we can see with the help of Credit-Deposit Ratio. The Credit-Deposit Ratio gives the indication of the health of a bank. It indicates how much bank lends out of the deposits it has accomplished. It shows that how much of deposit is used for lending activity.. A higher ratio specifies more dependence on deposit for lending. A very low ratio suggests that banks are not making full use of their resources. In the Figure 7 it is clearly depicted that in the post liberalization period the Credit deposit ratio is increased over a period of time. From 1991 to 2005 the average Credit Deposit Ratio of SBI was 55.35, Nationalized Banks was 49.99 per cent, Other Schedule commercial Banks was 56.69 per cent, Foreign Bank was 66.93 and finally, All Schedule Commercial Bank CD ratio was 53.34 per cent. However, after the 2005 there is a steep increase in the CD ratios. From 2006 to 2012 the average CD ratio of SBI was 76.29 per cent, Nationalized Banks was 71.29 per cent, Other Schedule commercial

Banks was 77.40 per cent, Foreign Bank was 80.81 and finally, All Schedule Commercial Bank CD ratio was 74.40 per cent.



Figure 13: Credit- Deposit Ratio In The Post Liberalization Period
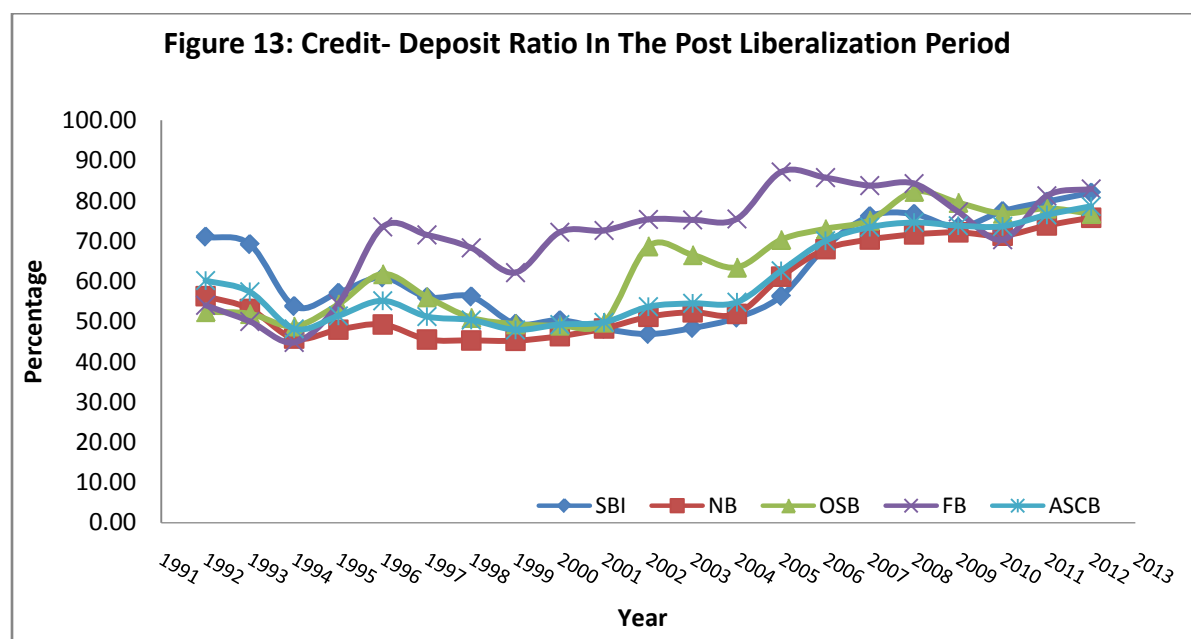
Thus there is concern is raising among the policy makers regarding the rise in the CD ratios because banks are indulging in excess market borrowing to lend rather than from lower-cost deposit to lend for project and working capital. For every Rs 100 of deposits, banks are lending as much as RS 78.63 in 2012. If the reserved requirements such as the statutory liquid ratio of 23 per cent and Cash Reserve Ratio of 4.25 per cent are factored in, the credit ratio should not cross 72.75 per cent. However, for SBI it was 112 per cent, Nationalized Banks was 106 per cent, Other Schedule commercial Banks was 107 per cent, Foreign Bank was 113 per cent and finally for the all the Scheduled commercial banks it is 108.6 per cent (Appendix). Thus, it shows that to full fill excess demand of loan the banks are indulging in excess market borrowing. Moreover, the balance sheet would be unhealthy with asset-liability mismatches.

### 3.2.7 Investment-Deposit Ratio



Figure 14 : Investmen Deposit Ratio in the post Liberalisation
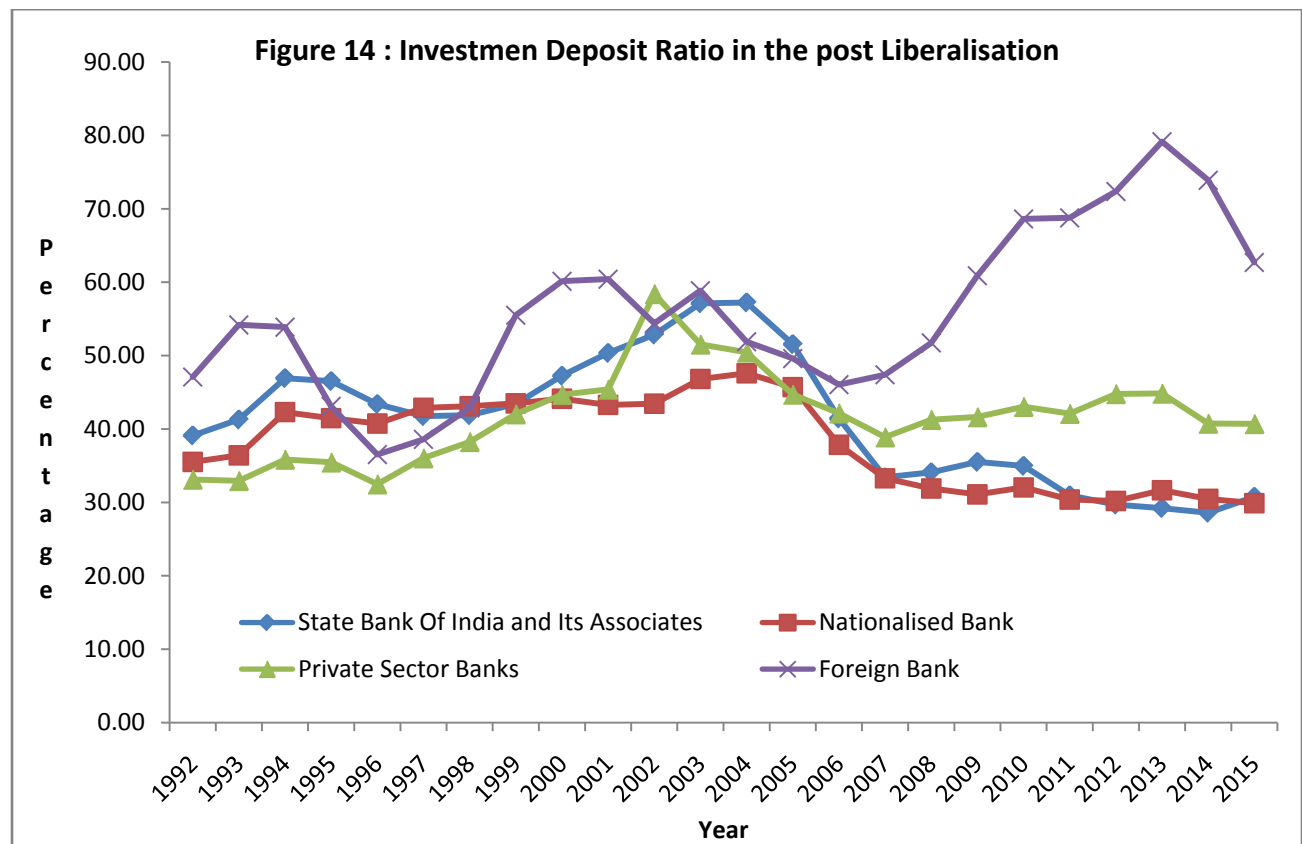
 In the initial period of reform the pre-emptive reserves are high for foreign banks compared to private sector, nationalised and SBI and Its Associates banks. This shows that foreign banks are using its deposit to investment in government securities. Investment in government securities is considered as safe heaven.

### 3.2.8 Non Performing Assets (NPAs)

Non-Performing assets is considered has one of the important variables to determine the asset quality of banks, efficiency and profitability of banks. During the pre-liberalisation period the poor performance of the public sector banks was becoming an important worry. The significant increase in NPA asset of the bank was alarming signal for the stability of the financial

system(Chakrabarti, 2005). An important parameter to analysis the financial performance of banks was the level of nonperforming assets. The non-performing asset gives signal to market how efficient banks in controlling NPAs and increasing the profitability of banks. This explains how credible banks are in converting lending into profit (Report On Trend And Progress Bank Of India, 1998-99).To get rid of dead assets the Narasimham II committee recommended banks to reduce NPA to three per cent and net NPAs to zero per cent by 2002. The banks were burdened with credit allocation to priority sector so the committee recommended reducing the priority sector lending from 40 per cent to 10 per cent. However, the government did not accept the Narasimham committee-I recommendation that advances to priority sector should be brought down from 40 per cent to 10 per cent. The Banks continued to be directed to lend a minimum of 18 per cent of total banks credit to agriculture sector.



Figure 15 : Bank Group-Wise Net Non Performing Asset as percentage of Net Advances
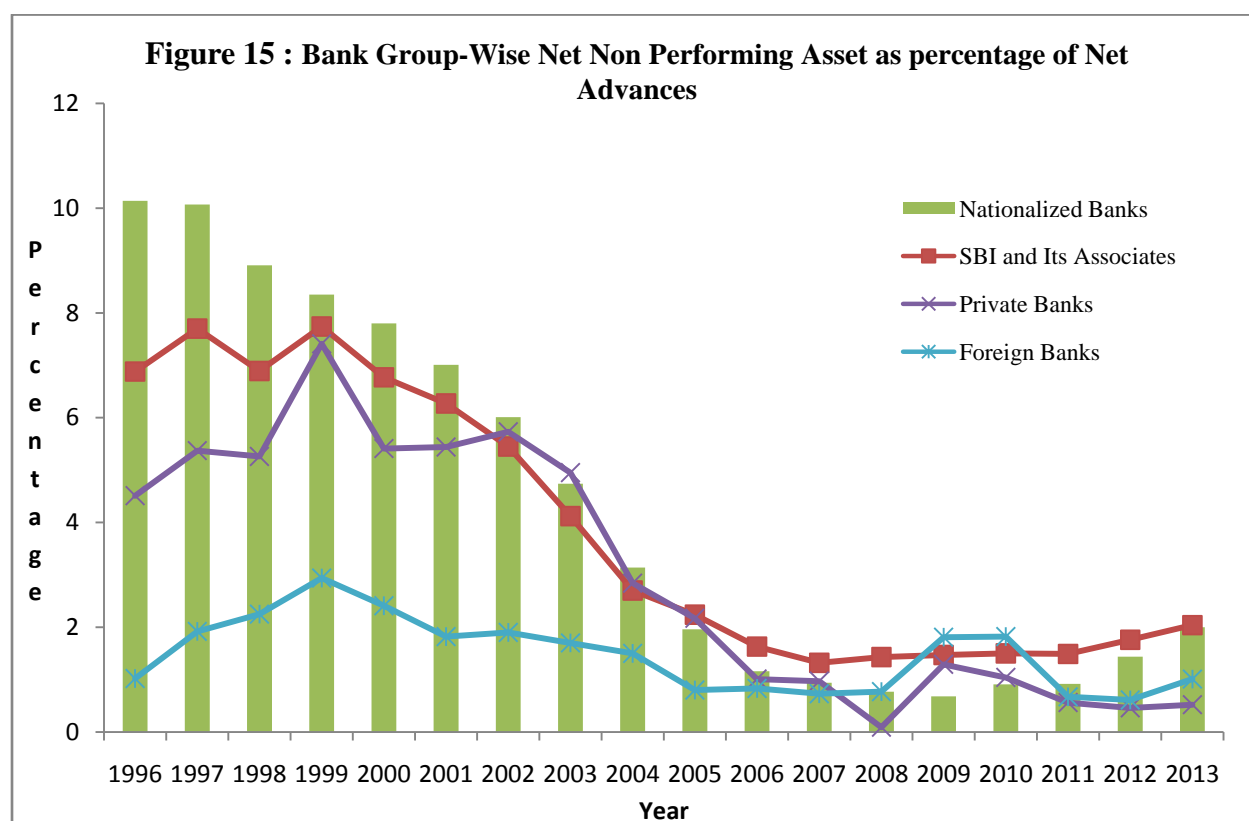
The Net NPA to loans (advances) ratio is used to measure of the overall quality of bank's loan book. An NPA are those assets for which interest is overdue for more than 90 days (or 3 months). The above Figure 15 gives the detail Net NPA Ratio from 1996-97 to 2013-14, in the figure among all banks the public sector banks(SBI and Its Associates and Nationalized Banks) is having high Net NPA comparatively to other banks. The public sector banks (PSBs) suffered heavy losses in 2015-16 due to a sharp rise in bad loans have seen their capital erode. The result shows that the cumulative gross NPAs of 24 listed public sector banks, including SBI and its associates, stood at Rs 3,93,035 crore as on December 31,2015. Whereas in the case private banks the gross NPA of 16 listed private sector lenders stood ar Rs 46,271 crore as on December 30, 2015[17].

### 2.5.1 Capital Adequacy Ratio

In April 1992, the Reserve Bank of India decided to introduce a risk asset ratio system for banks in India as a capital adequacy measure in line with the capital adequacy norms prescribed by Basel committee[18]. The purpose of Capital Adequacy is that bank should have sufficient capital as a reserve to absorb any losses arising from internal as well as external risk. In this regard, Narasimham Committee II recommended banks to increase the capital adequacy ratio from 8 per cent to 10 per cent. As per the recommendation of the committee, it was decided in October 1998 to raise capital to risk-weighted asset ratio (CRAR) of schedule commercial banks by 8 per cent 9 per cent by March 31, 2000 (Report On Trend and Progress of Banking in India, 1999-2000).

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[17]Business standard, Feb 21, 2016

[18] Master Circular on Prudential Norms on Capital Adequacy - Basel I Framework. Dated on RBI/2013-14/71 DBOD.No.BP.BC.21/21.01.002/2013-14

**Figure 16: Bank Group-Wise Capital Adequacy Ratio**
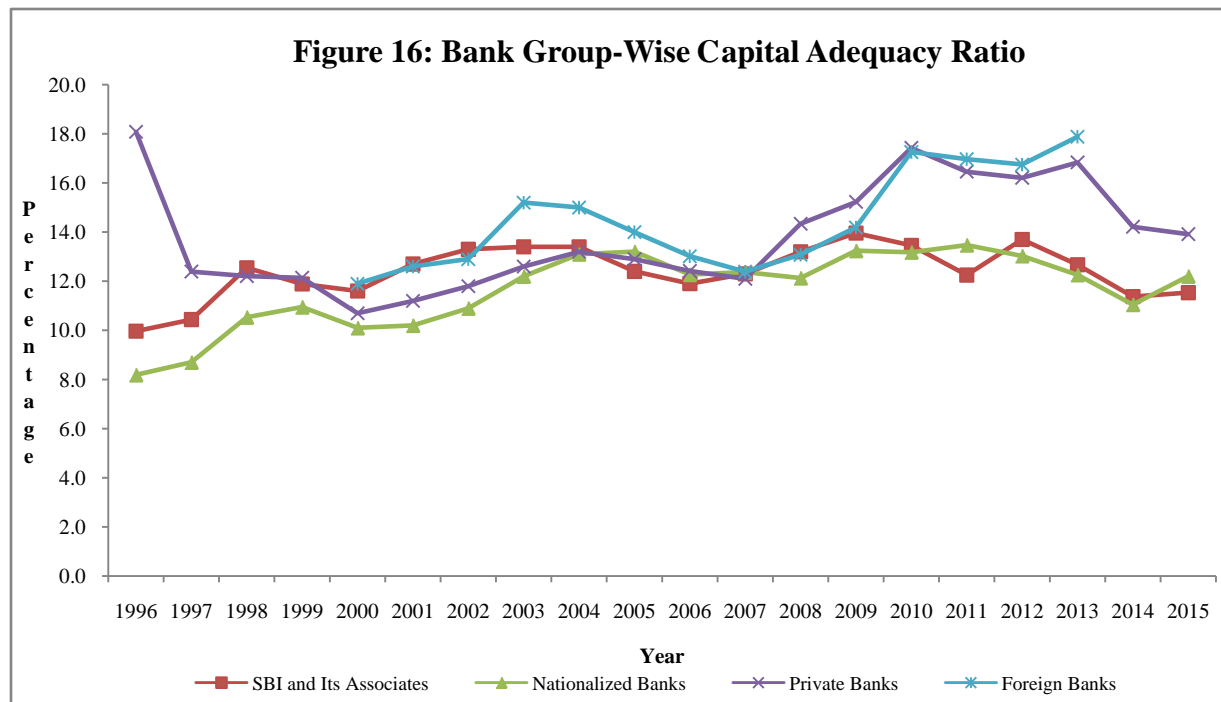


A capital Adequacy norm has evolved over time with every new norm (Basel I, Basel II and Basel III) and has prescribed higher capital requirement for banks. To full fill above requirement the banks should either go to market or government should infuse the capital into banks to maintain the capital. The private banks are in better position because of their higher capital ratio and strong profitability. However, some public sector banks (PSBs) suffered heavy losses in 2015-16 due to a sharp rise in bad loans have seen their capital erode. Total cumulative gross NPA of 24 listed public sector banks stood at Rs 3,93,035 crore as on December 31,2015 whereas, the private sector banks had cumulative gross NPAs of 16 listed banks at Rs.46,271 crores as December 30, 2015.[19] To raise fresh capital from market is a great challenge to the public sector banks due to accumulated bad loans. Capital is required for the business growth and also to meet requirement of the Basel III framework by 2019. In August 2015 the Government

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[19]http://economictimes.indiatimes.com/articleshow/51078318.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

said that it would infuse Rs 70,000 crore capital over a four years in Public Sector Banks from 2015-16. The first two year the government will infuse 25,000 crore and last two year the government will infuse 10,000 crore. Figure 16 shows the private banks and foreign are way head of SBI and its associates and foreign banks in maintaining the capital adequacy norms.

### 3.2.10. Surplus Labour



**Figure 17 :Group-Wise Employees of Scheduled Commercial Banks During Post Liberalization Period**
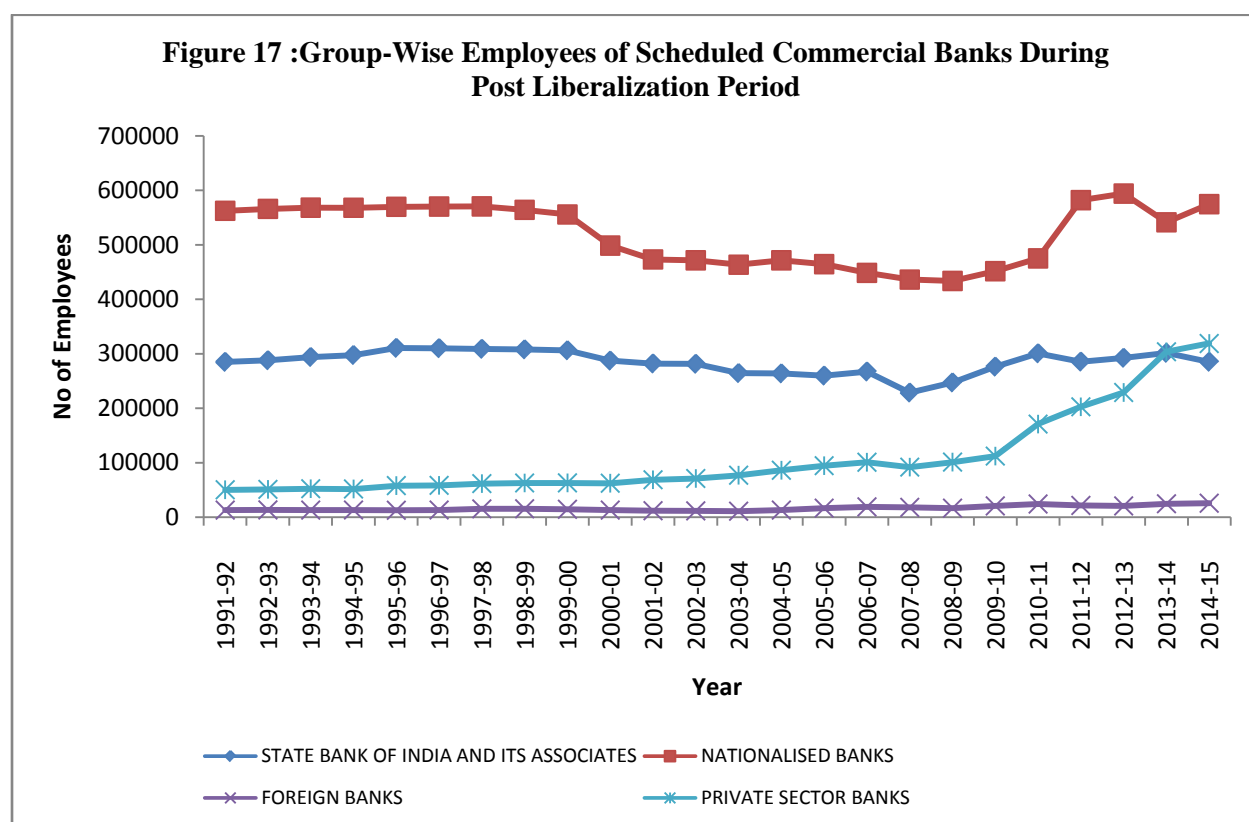
Figure 17 describes accumulation of labour supply among the scheduled commercial banks. In the post liberalization period the trend line of nationalized banks was declining and sbi and its associates banks was stagnate for a couple of years. Whereas the private sector banks started with less employ and increased in the latter stage and foregin banks are stagnant over the period of time. The nationalized banks and sbi and its associates banks had a huge labour force for functioning of banks day to day work. This was basically due to lack of technology to replace human labor force. But in the post liberalization period the nationalized banks started to bring

surplus labour through voluntary retirement schemes (VRS). During the same period the private banks started the show the presence in the Indian banking sector. To expand the market the private sector bank required labour force. Therefore, the trend line of private sector banks is increasing at a higher rate than the other banks. The foreign banks started at lower labour work force in the post liberalization but it was unable to expand the market through labour force.

### 3.3 Impact of Reforms on banks performance

The financial sector reform, in particular, the banking reform was implemented to make banks more market oriented. In the post liberalization period the government deregulated lending and deposit interest rate, entry norms were relaxed and pre-emptive reserves were decreased. Further, the government introduced fiscal responsibility act to bring down the fiscal and revenue deficit of both canter and state. All these efforts from the government were taken up to make banksefficient and profitable for development and growth of the economy.

In the pre liberalization period, SBI and its associates and nationalized banks dominated in all segments. In the post liberalization period because of reforms and relaxation of entry norms the private sector started to emerge as a competitor for other banks. As a result the competition increased among the banks in the post liberalization period. The growth of average total asset of private banks increased from 9.61 in pre to 27.66 in the post liberalization period.

| Table: Impact of Reforms in the Post Liberalization Period | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BANK GROUPS | Pre-Liberalization | | | | Post liberalisation | | | |
| | SBI | NB | FB | PB | SBI | NB | FB | PB |
| No of Employees | 4.59 | 5.06 | 33.46 | 11.14 | -0.19 | -0.86 | 4.64 | 7.23 |
| Total Asset | 19.85 | 18.46 | 23.90 | 9.61 | 14.43 | 17.11 | 17.57 | 27.66 |
| Investments | 19.76 | 20.58 | 24.54 | 11.13 | 16.05 | 16.15 | 22.09 | 28.65 |
| Investment in Government Securities | 16.00 | 20.71 | 21.19 | 12.43 | 18.08 | 15.28 | 20.74 | 25.70 |
| Advances | 19.49 | 18.22 | 21.79 | 9.33 | 16.59 | 18.99 | 18.61 | 29.67 |
| Total Deposits | 18.20 | 19.14 | 24.05 | 9.97 | 16.27 | 17.02 | 16.80 | 26.58 |
| Demand Deposit | 17.72 | 19.31 | 23.04 | 12.14 | 11.70 | 13.20 | 19.77 | 26.59 |
| Saving Deposit | 18.75 | 17.79 | 13.37 | 9.39 | 18.41 | 16.68 | 20.87 | 26.27 |
| Term Deposit | 18.79 | 20.03 | 28.02 | 10.04 | 17.04 | 17.94 | 15.59 | 27.22 |
| Interest Income | 22.48 | 23.39 | 3.96 | 1.61 | 15.14 | 14.95 | 16.09 | 27.15 |
| Other Income | 17.96 | 24.09 | 2.15 | 2.13 | 18.05 | 16.18 | 27.85 | 33.73 |
| Total Income | 21.82 | 23.41 | 3.65 | 1.66 | 15.39 | 14.93 | 17.17 | 27.75 |
| Interest Expended | 22.79 | 23.33 | 4.14 | 1.64 | 13.91 | 14.59 | 13.74 | 26.96 |
| Operating Expenses | 19.91 | 19.97 | 3.64 | 1.37 | 13.36 | 13.54 | 17.16 | 24.65 |
| Total Expenditure | 21.82 | 23.41 | 3.65 | 1.66 | 14.90 | 14.17 | 15.92 | 26.71 |
| Note: SBI- State Bank of India and Its Associates, NB-Nationalized Banks, FB-Foreign banks and PB –Private Banks. Pre-liberalization period taken form 1971-1991and post-liberalization period is taken from 1991 to 2012-13. | | | | | | | | |

The average investment growth in the pre-reform period of public sector banks was dominant and in the post-reform period the private sector banks increased drastically. Irrespective of reform the banks are still investing more in government securities because the investment in government securities considered as a safe heaven. In the pre-liberalization period, the loans and

advance were higher for SBI and its associates and nationalized banks than the private and foreign banks. The trend has changed after the reform period where the private sector banks are having the higher average growth rate of advances (29.67) compared to SBI and its associates (16.59), nationalized banks (18.99) and foreign banks (18.66). Interest income is one of the important sources of revenue for the banks. In the pre-liberalization period, SBI and its associates (22.48) had a higher growth of average interest income compared to nationalized banks (23.39), Private Banks (1.61) and foreign banks (3.96). In the post liberalization period, private banks increased average growth of interest income compare to sbi and its associates, nationalized banks, and foreign banks. One more income source is non-interest income (other income) the same pattern is followed in this case also where the government owned banks non-interest income is higher than the foreign and private banks in pre liberalization period. In the post-liberalization period the private banks are more active in non-interest income compared to foreign banks, sbi and its associates and nationalized banks. In the pre-liberalization period, the operating expenses of government owned banks were more compared to private and foreign banks. Whereas, in the post liberalization period the operating expenses of private banks is having more compared to foreign banks, sbi and its associates and foreign banks. The reason for the increase in operating expenses of private banks was due to expansion plans. Therefore, in the post liberalization the private banks are performing better than the foreign banks, SBI and its associates and Nationalized Banks.

**Conclusion**

From the last two decade the Indian banking sector has transformed from highly rigid economy to liberal economy. The transformation was based on empirical finding that financial liberalization helps the economy to grow at the faster rate than therigid economy. The Indian economy also followed the path of financial liberalization after the 1991 balance of payment crisis. The financial sector reform, in particular, the banking sector reform was important to allocate the scare resource to the deprived section of the society, small and medium enterprises (SME) and industrial houses for faster development of the economy. During the pre-1991 the government was holding major stake in the banks. The major decision on lending and deposit interest rate was based on the government decision. The large share of pre-emptive reserves was used by the government to fill the gap between revenue and receipts. Overall, the banks' had less functional autonomy in day to day working of bank. As a result the performance of the banks declined during the pre-liberalization period.

In the post-liberalization period, the reforms were undertaken to overcome the drawback faced by banks during the pre-liberalization period. In that context, government of Indianunder the direction of RBI started to deregulate lending and deposit interest rate, entry norms were relaxed and pre-emptive reserves were decreased. Further, the government introduced fiscal responsibility act to bring down the fiscal and revenue deficit of both canter and state. All theabove efforts from the government were undertaken to make banking sectorefficient and profitableand thereby to achieve the goal of development and growthrate.

The performance of bank in post-liberalization period has shifted from public sector banks to private and foreign banks. The public sector banks were dominant during the pre-liberalization period because of less competition from the private entity. In the post reform period, after the

entry of new private and foreign banks the performance of public sector banks has declined. The private bank has higher average growth in total asset, investments, investments in government securities, higher deposit growth compared to foreign, sib and its associates and nationalized banks. On the income side the private banks has emerged as winner in the post liberalization period. Thus in the initial investigation private banks are performing better followed by foreign banks, nationalised banks and sbi and associates. In the next chapter, the study tries to evaluate the determinants of bank performance in the post liberalization period encompassing bank specific characteristics, industry specific characteristics and macro-economic variables.

**Appendix**

| Year | Growth Rate of Gross Fiscal Deficit | Growth Rate of Total Revenue |
|---|---|---|
| Table 3: Growth rate of Fiscal Deficit and Tax Revenue | | |
| 1990-91 | 25.3 | 13.1 |
| 1991-92 | -18.6 | 17.3 |
| 1992-93 | 10.6 | 11.5 |
| 1993-94 | 50.0 | 6.3 |
| 1994-95 | -4.2 | 20.1 |
| 1995-96 | 4.4 | 18.1 |
| 1996-97 | 10.8 | 14.2 |
| 1997-98 | 33.3 | 8.7 |
| 1998-99 | 27.4 | 7.3 |
| 1999-00 | -7.6 | 18.1 |
| 2000-01 | 13.5 | 10.8 |
| 2001-02 | 18.6 | 2.6 |
| 2002-03 | 2.9 | 13.9 |
| 2003-04 | -15.0 | 15.9 |
| 2004-05 | 2.0 | 18.9 |
| 2005-06 | 16.4 | 18.8 |
| 2006-07 | -2.6 | 25.6 |
| 2007-08 | -11.0 | 21.2 |
| 2008-09 | 165.5 | 5.6 |
| 2009-10 | 24.2 | 6.3 |
| 2010-11 | -10.7 | 27.0 |
| 2011-12 | 38.1 | 15.4 |
| 2012-13 | -5.0 | 17.0 |
| 2013-14 | 2.6 | 9.4 |
| 2014-15 | 1.6 | 13.3 |
| 2015-16 | 4.8 | 11.8 |
| **Source : Author Calculation** | | |

# Chapter 4

## Determinants of Bank Performance in the Post Liberalization Period

### 3 Introduction

The banking sector can be considered as the lifeline of an economy. Banks play a crucial role in channelling funds to the most productive uses and in boosting the economic growth of any economy(IMF,1998). Therefore, the well-functioning of this financial institution is important for economic development. The recent financial crisis in United States has emphasized the importance of having stable financial institutions. While he the crisis of financial institutions in the US has traumatized the world economy as a whole, the magnitude of impact was most severe for the US and other European countries. India was also not able to insulate itself from the US crisis[20]. Today, the world economy works in a more or less integrated manner. In this integrated world, the stability of financial institutions is significantly important for economic growth.

Financial liberalization is the outcome of financial repression. Due to the financial repression the financial system was contracted or remained small and inefficient, leading to wide spread bank insolvency. Growth and macro-economic stability was considerably impaired (Fry, 1997). In India, the liberalization process was started in the year 1991 after the balance of payment crisis in 90's. The major aim of financial sector reform was to see that the banking

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[20] Fall in benchmark indices by some 50 per cent and second largest bank ICICI sufferd the drop in its share value due to wrong rumours that banks are exposed toxic US and UK assets (Economist, 2008).

sector performed efficiently and competitively to enhance the profitability of banks. In that direction the Narasimham Committee (1991) was constituted to examine issues relating to structure and functioning of Indian financial system. The main objective of the committee was to make banks more market oriented and rates are market determined and efficient allocation of resources. Further,committee recommended to provide financial institutions with operational and functional autonomy, enabling price discovery through the deregulation of interest rates, and increasing the role of the private sector are crucial for economic development and stability.

After the liberalization, the Indian banking sector has evolved significantly on par with the rest of the world. However, the process of liberalization has been gradual and cautious. In 1990's the government was holding the major share in the public sector banks, as a result the competition was within public sector banks. After the deregulation of entry norms the new private and foreign banks started to emerge in the Indian banking sector.By the entry of private and foreign players the Indian banking sector has become more dynamic. During these two decades of financial reform, the shareholding pattern of banks has changed dramatically. During the pre-reform and initial reform period the public sector banks were the major shareholders in total asset of banking sector. In the post reform period by the presence of private sector and foreign banks the share in total asset of public sector banks has decreased and the share private and foreign banks share in total asset has increased.

The performance of banks basically depends on bank specific characteristics, industry specific characteristics and macroeconomic economic variables. Furthr, bank ownership, the size of bank and revenue diversification are important variables to determine the performance and profitability of banks' (Athanasoglou et al. 2008). Firstly, it is important understand whether the ownership pattern plays an important role in influencing the performance of banks. In this

context, Indian banking structure offers a specific platform to analyse the bank ownership and stability across the different bank groups. The experience of government owned banks in the most of the countries were bad, because, after a few years of financial liberalization the government owned banks collapsed and created havoc in the system(Kaminsky & Reinhart, 1999; Kaufman, 2000). Thus reform process alters the ownership structure of banks and this in turn can have a significant impact on the performance of banks.

Second important aspect of the study is to examine the relationship between the bank size and stability across the different ownership types. In recent years, the Indian government put forwarded the proposal to merge the small banks into large banks. However, the relationship between bank size and performance has been ambiguous (Hughes and Mester, 1998). In India, the experience of merging is evolving with the time. Earlier the merging of banks used to take place when banks or industries were underperforming and faced operational failure. Such banks or industries were merged with the strong banks keeping in mind the interest of customers and depositors.[21]However, in recent years the banks are merging small bank with the large bank with cause of reducing the operating cost and enhancing the profit. In that direction, the State Bank of India (SBI) is in the process of merging all its subsidiaries banks in order to convert itself into one big bank. The Government of India has given green signal to this merger.[22]

Another important change is happening in the Indian banking sector is related to the change in the income sources. Earlier the banks' income source was basically dependent on the lending activity and profits from lending. However, in contemporary times, banks are dependent

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[21]Merging of Nedungadi Bank in 2002 with Punjab National Banks(PNB). Banaras State Bank merged with Bank of Baroda (BoB). In 1993, New Bank of India merged with PNB. In 1990s United Commercial Bank was merged with United Bank of India. List of merged bank is in the annexure
[22]The explanation given by the Government and SBI authority is as follows. The motive of merging is to reduce cost, revenue synergies, faster delivery of financial services, and risk reduction and grow as a larger market power.

both on the interest and non-interest incomes. The change in the pattern of income sources is a result of increasing competition among the banks. To survive in the competition the banks are in search for new avenues to enhance their income stream. One of important source of revenue is the non-interest income which includes fee income, brokerage and trading income. But the experience of developed countries with non-interest income is not quite promising and the results are vague. Therefore, it is interesting to analyse the impact of revenue diversification on the performance of banks' in the Indian context.

The present study takes into consideration the bank specific and macroeconomic characteristics to analyse the performance of banks in India during 1992-2015. Further, we break up the series into two periods; 1992-2005 and 2005-2015. The reason behind this break up is that the reform process was initiated in two stages, first stage in 1991-92 and second stage in 1998-99. The reform process was followed a cautious approach from 1998-2005. Therefore, we have chosen the year 2005 has breakup period for the two series under consideration here. In the second period the reform process started to take up to another level and banks are very much regulated during 2005-15. Thus, in this background the present work tries to evaluate the performance of banks via ownership, size and revenue diversification.

## 4.1 Review of literature

The performance of banks depends upon many factors such as bank specific factors, industry specific factors and macroeconomic factors (Athanasoglou et al. 2008). In the present era, both the internal as well as external factors influence the financial stability of an economy. The role of banks has changed from time to time. During the financial repression the financial system was contracted or remained small. Excessive control over the functioning of financial system made

the condition of the banking sector worse (Fry, 1997). To overcome the draw backs of financial repression, India started a new phase of liberalization. The main objective of financial liberalization was give banks greater freedom in the functioning of the financial system. The liberalization policy allowed the private and foreign players to start their business in the domestic economy. Therefore, a new competition regime came into place and the government owned banks had to deal with this competition to survive. Prior to this the government owned banks were in a safe haven under the financial repression. Thus, a new question was raised on whether the government owned banks will survive under the competition regime. Prior to this the general enigma was that public enterprises will perform less efficiently than private enterprises (Alchian, 1965; Boardman and Vining, 1989). However, there are also studies which show that in a competitive environment the government ownership is not less efficient then the private owned (Kay and Thompson,1986;Demsetz & Villalonga, 2001; Pasiouras & Kosmidou, 2007)

Further, the performance of banks depends upon the ownership pattern. Literatures give contradictoryresult on ownership type and bank stability. The dominant shareholder have the highest decision making power in all aspects of management compared to the manager with disperse shareholdings (Jensen and Meckling, 1976). Further, dominant shareholder has right to take quick decision compare to disperse shareholders. The dominant shareholder believe in the concept higher the risk higher the returns, whereas disperse shareholder or government owned business motive is not only profit maximization but also the social responsibility.In a competitive regime, government owned banks will require quality labour force, technology and better governance structure. However, government owned banks takes more time in acquiring the best technology and in recruiting the best talent. This is one of the important drawbacks of government owned banks. When compared to dominant decision making authority. Because of

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these above factors the government owned banks might perform less efficiently and with lower profitability. This in turn will lead to the closure of the government owned banks/industries or results in them being merged with some other strong government unit or disinvestment project. In the case of privately owned banks the stability depends on the shareholder concentration. A more focused ownership might reduce agency problem between the company's management and company's stakeholder. As long as the acting agent (manager) of shareholder is in charge of making the decisions, the shareholder's wealth will be maximised (Beck et al. 2009). Sun et al. (2002) evaluated whether the government ownership affects the performance of China's state owned enterprises (SOEs) in the privatization process. The study followed pooled regression analysis for the period 1994-1997. They found that partial government ownership has a positive impact on SOE performance. Further, they also found that the relationship between government ownership and firm performance has an inverted U shape pattern.

Micco et al.(2007) assessed the relationship between bank ownership and bank performance in the case of developed and developing countries. The paper found that the state-owned banks functioning in developing countries tend to have lower profitability, lower profit, and higher costs than their private banks and vice-versa for foreign-owned banks. In the case of industrial countries the paper found much weaker correlation between ownership and performance.

Iannotta et al.(2007) analysed impact of performanceon risk for 181 larger banks from 15 European countries during 1999-2004. The study incorporated ownership, profitability, efficiency and risk.The study found that after controlling for bank characteristics, country and time effects government-owned banks exhibited a lower profitability than privately owned banks. Secondly, public sector banks have poorer loan quality and higher insolvency risk

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compared to other private and foreign banks. Finally, ownership concentration is not a significantlyfactor for bank's profitability and a higher ownership concentration is associated with better loan quality, lower asset risk and lower insolvency risk. Pasiouras and Kosmidou (2007) pointed out that regardless of their ownership structure the profitability of banks depends on internal characteristics and changes in the overall banking environment.

Size is an important indicator to measure the profitability of banks. (Demirguc-Kunt, and Huizinga, 1999). Size is always discussed in the context of economics of scale and dis-economics of scale.[23]However, the experience of many countries show that the relationship between bank size and profitability across the different ownership types is as robust as it is puzzling (Hughes and Mester, 1998, Trujillo-Ponce, 2013). On the other hand the concept of "too big to fail" is emerging as a hot topic. Advocates of this concept argue that if a large financial institution suffers losses, then the total financial system as well as the total economic system will be affected adversely. Therefore, the larger financial institutions should be supported by the government. But the cost involved in the recovery of financial institutions is large and it further creates a moral hazard problem. In other words, it gives sign to other financial institutions that even if they fail, the government is there to protect them. It is not a good sign for the economy.  In the present Indian context the discussion on bank size is very important because State Bank of India (SBI), one of the largest banks in India, got clearance from the government to merge its subsidiaries to emerge as a larger market power. Several studies have found  weak

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[23]In microeconomics, the concept of economic of scale is discussed in the context of cost advantages the banks can gain due the size as cost per unit of output decreases with increasing scale as fixed costs are spread out over more units of output. Further due to economic of scale the operation efficiency is also greater with increasing scale, leading to lower variable cost as well. Dis-economics is vice versa of economic of scale

evidence between size and profitability(Goddard et al. 2004; Pasiouras and Kosmidou, 2007; Athanasoglou et al. 2008).

Another important variable to measure the profitability of banks is revenue diversification. In recent years, the banking industry has been trying to enhance their revenue base by expanding their base into non-interest incomes such as fee income, brokerage income, trading and other non-interest income sources. However, the studies have shown ambiguous results in case of many countries. Stiroh, (2004) tried to assess how the noninterest income affects variation in bank profits and revenues. The paper also further estimated that the concentration into non-traditional activities is correlated to the risk indicators. They found that that shift from traditional source of income to non-traditional source income will result in more stable profit or revenue. Elsas et al.(2010) evaluated whether revenue diversification affects bank value in the case of nine developed countries including Australia, Canada, France, Germany, Italy, UK, USA, Spain, and Switzerland over the period of 1996-2008. They found that revenue diversification enhance profitability of banks through higher profit from non-interest income reduces the cost income ratio. Higher bank profitability translates into higher market valuation, implying that diversification is an indirect positive impact on bank value.

Berger et al. (2010) evaluate the impact of revenue diversification on the performance of banks in a conventional framework. According to this framework, diversification reduced the risks and enhanced the performance of the Russian banks during the period 1999-2006. Their findings showed that bank following complete diversification strategies tends to increase the bank profits and reduces the risks. However, if they cross the threshold level then the benefits will be reversed. Further, the benefits of diversification depend upon the type of diversification that banks are undertaking. In other words, the benefits are dependent on whether the bank is

totally depending on fee based diversification or asset based diversification. The study by DeYoung et al.(2013) examined whether the income from non-traditional banking activities contributed to the failure of hundreds of US commercial banks during the financial crisis. They used multi-period logit model to assess the above question. They found that the probability of distressed bank failures decreases with fee based services such as security brokerage and increases with asset based non-traditional activities such as venture capital, investment banking and asset securitization. Conversely, the study by Lee et al.(2014) applies the dynamic panel generalized method of moment technique to investigate the impact of non-interest incomes on profitability and risk on  967 individual banks. They found that non-interest activity of Asian banks reduce risk, but do not increase profitability. The study further investigated bank specialization and a country's income level.  The result was complicated. Non-interest activities were found to be decreasing the profitability and increasing the risk for saving banks. Thus, the study pointed out that the benefit of diversification depends upon specializations.

Other than the bank specific and industry specific factors, the macro-economic variable also plays an important role in determining the banks' profitability. Among the macroeconomic variables Gross Domestic Product (GDP) is considered as significant variable because it is the most comprehensive measure of economic activity within the country. Inflation is also considered as another important indicator to measure the financial stability of the economy. Another important macroeconomic variable is the interest rate which decides investment in the economy. According to Kunt & Detragiache (1998)the financial crisis accelerate during the weak macroeconomic environment, particularly when the country is growing at lower rate accompanied by high inflation and high interest rate are clear indication of banking sector problems.. The relationship between inflation and bank performace depends upon anticipated

and unanticipated inflation. In the case of antcipated inflation, banks can timely adjust the interest rate results with faster increase in the revenue than the cost and has postive impact on the profitablity of banks. However, in the case of unatcipated inflation banks may be slow in adjusting their interest rates resulting in faster increase in cost than revenue. Therefore it has negative impact on profitablity (Pasiouras & Kosmidou, 2007).

## 4.2 Data and Variables

Our sample is an unbalanced panel data set of group-wise banks comprising of State Bank of India and its Associates, Nationalized Banks, Private Banks (Old private and new private banks) and Foreign Banks between 1992 and 2015. Our data consists of 95 observations. All the specific bank related data were drawn from Reserve Bank of India publication "Statistical Table Relating to Banks in India." GDP data are taken from the Reserve Bank of India publication "Handbook of Statistics on India Economy." The Gross Domestic Product data is available up to 2015 but in two base year series one is 2004-05, which is available up to 2013-14 and 2011-12 is available from 2011-12 to 2014-15. As our GDP data is available up to the year 2015 we have converted 2004-05 data series to 2011-12 series through splicing. Inflation rates were taken from the "Ministry of Statistics and Programme Implementation"

## 4.2.1 Variables

*Asset Structure:*

To assess the impact of asset structure on banks' profitability we have taken the loan to total asset ratio. This ratio is one of the important indicators to determine the profitability of banks. The general assumption is that the higher the loan rate higher is the profitability of banks, because, the basic role of banks is to lend at higher margin and increase their profit. There are many factors which play an important role in turning this true, because, the profitability of banks

also depend on the quality of lending. The quality of lending in turn depends on the efficiency bank manager in scrutinizing the background of the borrower. If the manager fails to properly scrutinize the background of the borrower, the profitability of the banks might be affected adversely. This is because, the borrower might be unable to pay the loan instalment on time and this will downgrade the balance sheet of banks. Therefore higher ratio of loan to the assets has positive as well as negative impacts on the profitability of banks(Dietrich & Wanzenried, 2011).

*Asset Quality (Credit Risk):*

To proxy credit risk we use two variables; first variable is the non-performing loans to total loans and second variable is the loan loss provision to total loan (LLR).The asset quality of banks depends on the quality of their loan. Therefore, the quality of loan is directly linked to profitability of banks. The poor quality of lending activity can impede the profitability of banks. Thus, there should be positive relationship between the relative percentage of loans in the asset of a banks and its profitability (Dietrich & Wanzenried, 2011). Further, if the quality of loans falls then non-performing loans of banks also increase. As a result the profitability of banks decreases. Non-Performing loans of banks determine how effectively the banks are securitizing the lending activity. Therefore, longer the banks' keep the non-performing loans under control the better it is for the banks' profitability.

Theory suggests that increased exposure to credit risk is normally associated with decreased firm profitability. The banks required a lot of extra reserves against lending to tackle any kind of unforeseen conditions. When LLR increases in the banks' account, then lending activity will falls and further the profit of banks also falls. Hence, we expect negative relationship between ROA (ROE) and LLR (Athanasoglou et al, 2008).

*Deposit to total Liabilities:*

Deposit to total liabilities shows the share of deposit in the total liabilities. Deposit in the total liability will contribute to profitability when the deposits are for long terms. Deposits can be used for lending purposes and banks can earn profit based on these lending activities. . If the deposits are for the short terms, it has negative impact on the banks profitability. In India, as a result of deregulation of deposits, the banks can give the interest to the depositors. This can lead to competition for deposits (among banks?). Each bank tries to procure deposits by giving higher interest rates. As a result, the interest margin can come down in the competitive regime.

*Capitalization*:

To capture the capitalization we use ratio of equity to asset. Here capital refers to the amount of fund available to support a bank's business. Banks' capital acts as a safety net in the case of adverse development. Earlier studies have found that there is a positive relationship between bank capitalization and bank profitability (Demirguc-Kunt, and Huizinga, 1999;Athanasoglou et al, 2008, Trujillo-Ponce, 2013 and Gilbert, 1984)

*Bank Size:*

Bank size is considered as an important determinant of banks' profitability. Here we use bank size, as proxied by log of total assets.In the literature the size of banks' are generally considered as one of important determinants of bank profitablity. The economics of Scale works better for banks with a larger size(Athanasoglou et al, 2008).. It helps the banks to reduce the cost and enhance their profits. However, the experience with the rest of world regarding relation between to bank size and profitability across different ownership types is as robust as it is puzzling (Hughes and Mester, 1998, Trujillo-Ponce, 2013).

India also has experienced the merging. However, the context of merging was different from the present merging context. In the earlier cases, the banks were used to merge which were underperforming and high chance of failure and such banks were merged with other strong banks to safeguard the interest of customers and depositors.[24] Whereas today, the one of the largest banks in India, State Bank of India (SBI), is merging all its subsidiaries banks emerge as a larger entity. The reason for merging is that to reduce cost, to facilitate revenue synergies, faster delivery of financial services, and risk reduction and to grow as a larger market power.[25] Therefore, thestudy also incorporates the bank size into the analysis to measure relationship between size and performance.

*Efficiency:*

Cost income ratio is a measure of efficiency and also an important indicator to measure the performance of banks'. The ratio describes how efficiently the banks are using its cost and revenue to enhance the profit of banks. The banks with the lower ratio are considered has more efficient than the higher ratio. An increase in the ratio over the period of time is indication that the banks operational cost is also increasing more than the income. Other possibility can also arise, where the banks operational income is also increasing and income is also increasing. This might be the case of new entrants into the system, who is trying to expand the market. Therefore hemay require more labour force to run the banks. Thus, there is an inverse relationship between the cost income ratio and the bank's performances.

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[24]Merging of Nedungadi Bank in 2002 with Punjab National Banks (PNB). Banaras State Bank merged with Bank of Baroda (BoB). In 1993, New Bank of India merged with PNB. In 1990s United Commercial Bank was merged with United Bank of India. List of merged bank is in the annexure

[25] Finance minister Arun Jaitely announced in his budget speech that the government will reveal the detail guidelines for merging thef public sector banks' (PSBs). In that direction on June 15, 2016 Union Cabinet gave permission for merging state bank of India and its associate's banks. (Business Line, June 15,2016)

$$\text{Cost to Income Ratio} = \frac{\text{Operating Expenses}}{\text{Operating Income}}$$

*Revenue diversification***:**

One more indicator to assess the bank performance is revenue diversification. In the post liberalization period banks are diverting their income stream from interest incomes and non-interest incomes. To measure the revenue diversification we have used Herfindahl-Hirschman index (HHI) (Trujillo-Ponce, 2013) with little modificationaccordinglydata availability in India.. In the earlier work, theresearchers have considered interest income, commission income, trading income and other incomes (Trujillo-Ponce, 2013; Sitroh and Rumble,2006). In the case of India, due to lack of data on trading income on bank-group wise, we have constructed an index based on bank groups taking into account the interest income and on the other income category we have taken commission, exchange and brokerage income and other incomes side we have excluded commission, exchange and brokerage income. The following is equation as follows

$$HHIRD = 1 - \left(\frac{INT}{TOI}\right)^2 + \left(\frac{CBI}{TOI}\right)^2 + \left(\frac{OTH}{TOI}\right)^2$$

Here, INT refers to total interest income, CBI refers the commission, exchange and brokerage income, OTH is other incomes. TOI is total operating income and is equal to the sum of the total value of INT, CBI and OTH. The HHIRD index takes the value between zero means the bank is fully focused in one business area and 0.75 or more shows that the bank are having balance revenue source from above three area.

*Industry Concentration***:**

In the current era of financial liberalisation, banks are competing with each other to survive in the market. The primary function of banks was accepting deposits and lending it, but in the recent year the banks are functioning in manifold ways. In this competitive regime, banks are encouraged to introduce new instruments to attract customers. Further, banks are in search of new avenues to enhance their revenues. As part of this competitive wave, banks are indulging in various risk taking activities. To measure the intensity of market concentration we use the Hirchman Herfindahl Index (HHIjt). It is the sum of the squares of the market shares of all banks based on total assets of each bank existing in country j in year t. If HHI index exceeds over 1.8 or 1800 then the market is highly concentrated and if HHI index below 0.01 (or 100) then it is said that market is un-concentrated.

More formally $HHI_{jt} = (TA_{i,t}/TA_{jt})^2$ where $TA_{it}$ is the total asset of the banks *i* in year and i=1,. . . .,$N.TA_{jt}$ is the sum of total assets of all banks in country j at time t. We expect a negative coefficient of $HHI_{jt,}$ with Z score. Studies have found positive relationship between market concentration and profitability ( Beck et al., 2009; Gilbert, 1984;Demirguc-Kunt, & Huizinga, 1999).

## *Macro-Economic Variables*

The macroeconomic variables are important indicator to measure the stability of a country. The higher the growth rate of economy is good indicator of strong growing economy and also gives apositive signal to investors to invest in domestic market. Interest rate is one more indicator to measures the dynamics of investment. If the country is having higher interest rate on lending then investor will set back and wait still interest rate comes down. The lower the interest will boost the investment in the economy. Therefore to measure the performance of banks the macroeconomic indicators are also

taken in my study. Therefore there is strong relationship between the macroeconomic variables and performance of banks(Beck et al., 2009; Athanasoglou et al., 2008.)

### 4.3 Methodology

The present work has used the dynamic panel data approach, suggested by Arellano and Bover (1995) and Blundell and Bond (2000). Importance of dynamic panel Generalized Method of Moment (GMM) techniques is that it takes care of endogeneity problem, hetroscedasticity and autocorrelation problems. Further, we have followed system GMM estimator using xtbond2 of Roodman's (2009) estimator, which is better than the Stata's in built commandxtbond.This command gives additional features such as windmeijer correction and orthogonal deviation. Therefore we have used xtbond2 command to construct dynamic panel generalized method of moment to assess the determinants of bank performance for India banks over the period 1992-2015. The following model is

$$
\begin{aligned}
\pi_{i,t} = \alpha_0 &+ \pi i_{i,t-1} + \beta_1 Loan/TA_{i,t} + \beta_2 NPL/GL_{i,t} + \beta_3 Equity/TA_{i,t} + \beta_4 Dep/TL_{i,t} \\
&+ \beta_5 GRDEP_{i,t} + \beta_6 CIR_{i,t} + \beta_7 LOGTA_{i,t} + \beta_7 HHIRD_{i,t} + \beta_8 HHIMC_{i,t} \\
&+ \beta_9 GRGDP_{i,t} + \beta_{10} INFRATE_{i,t} + \beta_{11} IR_{i,t} + \beta_{12} SBI_{i,t} + \beta_{13} PVTB_{i,t} \\
&+ \beta_{14} FB_{i,t} + \varepsilon_{i,t}
\end{aligned}
$$

**And**

$$
\begin{aligned}
\pi_{i,t} = \alpha_0 &+ \pi i_{i,t-1} + \beta_1 Loan/TA_{i,t} + \beta_2 NPL/GL_{i,t} + \beta_3 Equity/TA_{i,t} + \beta_4 Dep/TL_{i,t} \\
&+ \beta_5 GRDep_{i,t} + \beta_6 CIR_{i,t} + \beta_7 LOGTA_{i,t} + \beta_7 HHIRD_{i,t} + \beta_8 HHIMC_{i,t} \\
&+ \beta_9 GRGDP_{i,t} + \beta_{10} INFRATE_{i,t} + \beta_{11} IR_{i,t} + \beta_{12} NB_{i,t} + \beta_{13} PVTB_{i,t} \\
&+ \beta_{14} FB_{i,t} + \varepsilon_{i,t}
\end{aligned}
$$

The dynamic relationship is characterised by the presence of lagged dependent variable among the regressor.

$$\pi i_{\text{i,t}} = \alpha_0 + \beta_1 i_{i,t-1} \tag{1}$$

We will assume that the $u_{\text{i,t}}$ follows a one way error component model

$$u_{i,t} = u_t + v_t \tag{2}$$

Where $\mu \sim$ IID $(0, \sigma_\mu^2)$ and $v_{i,t} \sim IID$ $(0, \sigma_v^2)$ are independent of each other and among themselves. The dynamic panel data regression (1) and (2) is characterised by two sources which persist over time. The presence of auto correlation is due to the lagged dependent variable among the regressors and individual effects characterizing the heterogeneity among the individuals. One of the problem which arises by inclusion of a lagged dependent variable, since $\pi i_{i,t}$ is function of $\mu_{i,}$ is that it immediately follows that $\pi i_{i,t-1}$ is also function of $\mu_{i,}$. Therefore, $\pi i_{i,t-1}$, at the right hand side of the regressor in equation (1), is correlated with the error term. This renders the OLS estimator biased and inconsistent even if the $v_{i\ t,}$ are not serially correlated.

In the above equation i=1. . . . . . . . N, t=1. . . . . . . . . . .T, N refers to bank numbers, T indicates time; $\beta$ and $\pi$ are estimated parameters. $\pi_{\text{i,t}}$ is a set of dependent variables used to measure the financial stability. I have incorporated some of the variables like ROA , ROE, NPLTL and ZSCORE following the work of Beck et al. (2009); Chien et al., (2014) and Trujillo-Ponce, (2013) as proxies for measuring the performance of banks. To measure the profitability I have taken ROA and ROE. The Return on Asset (ROA) is a profitability ratio, which measures the profit generated from total assets. The Return on Equity (ROE) is a ratio, which measures the profit generated from shareholders' equity. Here, the equity refers to share capital reserves and surplus of banks. The Return on Equity is refereed as the Banks' equity multiplier, which measures financial leverage.[26] ZSCORE is a measure of bank stability and indicates the distance from insolvency, combining accounting measure of profitability,

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[26] The Definition of ROA and ROE is quoted from RBI Glossary.

leverage and volatility. The equation of ZSCORE is; Z = (ROA/CAR)/SDROA, which is an inverse of the profitability of insolvency. If ZSCORE is high then the bank is stable and it has less risk. If the banks are having higher ratio of non-performing loans to total asset then the bank is in the verge of distress.If the ratio non-performing loan to equity is higher then the banks are having higher risker portfolio (Chien et al, 2014).

Further, we have taken bank specific characters such as asset structure, asset quality, capitalization, efficiency, size, and revenue diversification to measure the performance of banks. Above factor plays an important role in mastering the performance of banks to stage of profitable. Apart from bank specific characteristics the country specific characteristics such as GDP growth rate (GRGDP), Inflation (IR) and interest rate (IR) are also taken into analysis because macroeconomic environment of a country plays crucial role in determining the performance of banks. Therefore, the present study is a culmination of bank characteristics, industry concentration and macroeconomic factors.

**4.4 Summary Statistics**

| Table 2: Descriptive Statistics. | | | | | |
|---|---|---|---|---|---|
| Variable | Obs | Mean | SD | Min | Max |
| Loan To Total Asset | 96 | 0.48 | 0.09 | 0.34 | 0.67 |
| Deposit To Total Asset | 96 | 0.76 | 0.2 | 0.45 | 2.1 |
| Non-Performing Loan Total Loan | 96 | 0.05 | 0.05 | 0 | 0.21 |
| Growth Rate Of Deposit | 96 | 18.39 | 8.69 | 3.9 | 45 |
| Cost Income Ratio | 96 | 48.74 | 9.76 | 19.5 | 87.5 |
| Log Total Asset | 96 | 6.58 | 0.61 | 5.2 | 7.8 |
| Income Diversification | 96 | 0.32 | 0.1 | 0.16 | 0.61 |
| Loan Loss Reserve | 73 | 0.19 | 0.13 | 0 | 0.59 |
| Industry Concentration | 96 | 3617.29 | 285.34 | 3250 | 4210 |
| GDP Growth Rate | 96 | 6.68 | 1.98 | 1.4 | 9.6 |
| Inflation Rate | 96 | 7.44 | 3.51 | 0.5 | 15.3 |
| Interest Rate | 96 | 12.77 | 2.49 | 8.9 | 19 |
| Note: Author Calculation | | | | | |

Table 2 depicts the descriptive statistics of all variables included in the analysis. The ratio of loan to total asset varies from 0.34 to 0.67, with an average lending of 0.48. The ratio of deposit to total asset varies between 0.45 to 2 per cent. The non-performing loan to total asset varies between 0 to 2.1 per cent. The growth rate of deposit varies between 3.9 to 4.5 per cent. To measure the size we have used log total asset as proxy and it varies between 5.2 and 7.8. The cost income ratio is a measure of efficiency and it varies between 19.5 and 87.5, with an average of 48.74. Income diversification is a measure of diversification from interest income to non-interest income is varies between 0.16 and 0.61. The values around 0 are less diversified and values near to 0.75 are more diversified. Loan loss provision depicts that provisions against the Non-Performing loans during the bad time varies between 0 and 0.59. Industry concentration variable varies between 3250 and 4210, which depicts that the market is highly concentrated.

| Table 3: Descriptive Statistics by Bank Group-Wise | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Banks | Variable | Mean | SD | MIN | MAX | Banks | Variable | Mean | SD | MIN | MAX |
| SBI | LOANTA | 0.50 | 0.11 | 0.37 | 0.67 | NB | LOANTA | 0.50 | 0.10 | 0.39 | 0.64 |
| | DEPTA | 0.76 | 0.04 | 0.66 | 0.81 | | DEPTA | 0.83 | 0.02 | 0.79 | 0.86 |
| | NPLTL | 0.06 | 0.06 | 0.00 | 0.17 | | NPLTL | 0.06 | 0.07 | 0.00 | 0.21 |
| | GRDEP | 16.26 | 6.39 | 7.30 | 33.50 | | GRDEP | 16.13 | 5.07 | 8.00 | 26.00 |
| | CIR | 53.24 | 6.32 | 45.10 | 65.10 | | CIR | 46.70 | 15.38 | 19.50 | 87.50 |
| | LOGTA | 6.73 | 0.42 | 6.10 | 7.40 | | LOGTA | 7.00 | 0.49 | 6.30 | 7.80 |
| | DIV | 0.28 | 0.04 | 0.21 | 0.40 | | DIV | 0.23 | 0.05 | 0.17 | 0.39 |
| | LLR | 0.19 | 0.09 | 0.04 | 0.37 | | LLR | 0.17 | 0.11 | 0.00 | 0.36 |
| | HHIMC | 3617.2 | 289.95 | 3250.00 | 4210.00 | | HHIMC | 3617.29 | 289.9 | 3250 | 4210.0 |
| | GRGDP | 6.68 | 2.01 | 1.40 | 9.60 | | GRGDP | 6.68 | 2.01 | 1.40 | 9.60 |
| | INFRATE | 7.44 | 3.57 | 0.50 | 15.30 | | INFRATE | 7.44 | 3.57 | 0.50 | 15.30 |
| | IR | 12.77 | 2.53 | 8.90 | 19.00 | | IR | 12.77 | 2.53 | 8.90 | 19.00 |
| PB | LOANTA | 0.50 | 0.07 | 0.41 | 0.61 | FB | LOANTA | 0.42 | 0.04 | 0.34 | 0.49 |
| | DEPTA | 0.84 | 0.32 | 0.54 | 0.87 | | DEPTA | 0.59 | 0.09 | 0.45 | 0.77 |
| | NPLTL | 0.04 | 0.04 | 0.00 | 0.11 | | NPLTL | 0.03 | 0.02 | 0.00 | 0.08 |
| | GRDEP | 24.85 | 8.95 | 9.10 | 45.00 | | GRDEP | 16.32 | 10.34 | 3.90 | 44.00 |
| | CIR | 50.53 | 5.80 | 43.70 | 66.80 | | CIR | 44.50 | 5.97 | 30.90 | 59.20 |
| | LOGTA | 6.44 | 0.70 | 5.20 | 7.40 | | LOGTA | 6.17 | 0.48 | 5.40 | 6.90 |
| | DIV | 0.32 | 0.07 | 0.19 | 0.44 | | DIV | 0.44 | 0.10 | 0.16 | 0.61 |
| | LLR | 0.20 | 0.15 | 0.00 | 0.56 | | LLR | 0.18 | 0.17 | 0.00 | 0.59 |
| | HHIMC | 3617.2 | 289.95 | 3250.00 | 4210.00 | | HHIMC | 3617.2 | 289.9 | 3250. | 4210.0 |
| | GRGDP | 6.68 | 2.01 | 1.40 | 9.60 | | GRGDP | 6.68 | 2.01 | 1.40 | 9.60 |
| | INFRATE | 7.44 | 3.57 | 0.50 | 15.30 | | INFRATE | 7.44 | 3.57 | 0.50 | 15.30 |
| | IR | 12.77 | 2.53 | 8.90 | 19.00 | | IR | 12.77 | 2.53 | 8.90 | 19.00 |

Note: SBI = State Bank Of India And Its Associates; NB= Nationalized Banks; Private Banks=PB,;FB = Foreign Banks.
Variable Description: LOANTA= Loans To Total Asset; DEPTA= Deposit To Total Asset; NPLTL= Non-Performing Loan Total Loan; GRDEP= Growth Rate Of Deposit; CIR= Cost Income Ratio; LOGTA= Log Total Asset; DIV= Income Diversification;LLR= Loan Loss Reserve; HHIMC= Industry Concentration; GRGDP = GDP Growth Rate; INFRATE = Inflation Rate; IR=Interest Rate

Table 3 depicts the descriptive statistics of determinants of profitability bank group wise. In the case of loan to total asset which depicts the asset structure of banks. The loan to asset of State Bank of India and Its Associates varies between 0.37 and 0.69 and Nationalized Banks varies between 0.39 and 0.64. For the private sector banks it varies from 0.41 to 0.61 and for the foreign banks it varies from 0.34 to 0.49. Deposit to total liabilities shows the share of deposit in the total liabilities. Banks are bound to repay on customer demands. Public sector banks are

having higher variation (0.66 to 0.81 for SBI and Its Associates and 0.79 to 0.86 for Nationalised Banks) than the private(0.54 to 0.87) and foreign banks (0.45 t0 0.77).Non-Performing loans to total loans is an indicator of asset quality of banks. Higher the ratio is poorer the performance of banks. The public sector banks such as SBI and Its associates are having variation of 0.00 to 0.17 and Nationalized Banks are having variation of 0.00 to 0.21. In the case of private banks (0.00 to o.11) and foreign Banks (0.00 to 0.08) the variation is lesser than the public sector banks.

Growth rate of deposit is much higher in the case of private banks (9.10 to 45.00) and foreign banks (3.90 to 44) when compared to the public sector banks (For SBI and Its associates it was 7.30 to 33.50 and Nationalized Banks 8.00 to 26.00). The cost income ratio is an indicator of efficiency and productivity. The lower the ratio is better for the banks to enhance the efficiency and productivity. The Public sector banks are having higher ratio (for SBI and Its Associates it varies between 45.10 and 65.10 and for nationalized Banks it varies between 19.50 and 87.50) than the private banks (43.70 to 66.80) and foreign banks (30.90 to 59.20). Foreign banks have a lower ratio which shows that they are capable of enhancing their efficiency and productivity based on given resources. Diversification is an indicator tomeasure income diversification from interest income to non-interest income.

The Public sector banks (SBI and Its Associates varies between 0.21 to 0.40 and Nationalized Bank varies between 0.17 to 0.39) and Private sector banks are having less variation (0.19 to 0.44) than the foreign banks (0.16 to 0.61). Therefore the foreign banks are more diversified than the rest of the banks. Loan Loss Provision is a measure of provision against the Non-Performing loans of the banks. The public sector banks (SBI and Its Associates

varies between 0.04 to 0.37 and Nationalized Bank varies between 0.00 to 0.36 and are having

lesser variation than the private (0.00 to 0.56) and foreign banks (0.00 to 0.59).

## 4.5 Two Sample T Test

**Table 10 : Difference Between SBI And Its Associates and Private Sector Banks**

| Variable | SBI And Its Associates | Private Banks | Differences |
|---|---|---|---|
| Loan To Total Asset | 0.495 (-0.0223) | 0.498 (-0.014) | -0.003 (0.027) |
| Deposit To Total Asset | 0.760 (-0.0082) | 0.845 (0.066) | -0.085 (0.066) |
| NPLTL | 0.062 (-0.012) | 0.041 (0.008) | 0.021 (0.014) |
| Growth Rate Of Deposit | 16.258 (-1.305) | 24.850 (1.826) | -8.592 (2.246)*** |
| CIR | 53.24 (-1.290) | 50.533 (1.185) | 2.704 (1.751 ) |
| Log Total Asset | 6.725 (0.09) | 6.438 (0.143) | 0.288 (0.167)* |
| Income Diversification | 0.280 (0.01) | 0.316 (0.014) | -0.036 (0.0162)*** |
| Loan Loss Reserve | 0.192 (0.02) | 0.202 (0.034) | -0.010 0.042 |

**Note:** Note: Above table notifies the difference in the determinants of the profitability between

the sbi and its associates and private banks in India during 1992-2015. P-value is calculated

using two group mean comparison test with unequal variance and standard errors are given in the

parenthesis. Statistical significant at *significance at 10 %, **significance at 5 %, ***significance

at 1 %

We find banks dummy are positive and but not significant for all three banks. The result

suggests that all the banks are inconclusive with the regard to the ROA. We find the relationship

between ROE and three banks dummy is negative and statistical significance. Therefore, banks

are having negative relation with respect to ROE. To observe divergence between the banks'

dummy we have conducted a statistical test of mean differences on bank specific regressor variables. In the above table, among all the regressors, the private banks are having a better result than the SBI and Its associates except in the case of bank size.

**Table 11: Difference Between SBI And Its Associates and Foreign Banks**

| Variable | SBI And Its Associates | Foreign Banks | Differences |
|---|---|---|---|
| Loan To Total Asset | 0.495 (0.023) | 0.419 (0.009) | 0.0758 (0.0245)*** |
| Deposit To Total Asset | 0.760 (0.008) | 0.585 (0.017) | 0.175 (0.0193)*** |
| NPLTL | 0.062 (0.012) | 0.034 (0.034) | 0.028 (0.0127)*** |
| Growth Rate Of Deposit | 16.258 (1.305) | 16.317 (2.111) | -0.058 2.48 |
| CIR | 53.238 (1.290) | 44.504 (1.218) | 8.733 (1.774)*** |
| Log Total Asset | 6.725 (0.086) | 6.167 (0.099) | 0.558 (0.132)*** |
| Income Diversification | 0.280 (0.009) | 0.445 (0.020) | -0.165 (0.0220)*** |
| Loan Loss Reserve | 0.192 (0.024) | 0.183 (0.038) | 0.009 (0.04) |

**Note:** Above table notifies the difference in the determinants of the profitability between the sbi and its associates and foreign banks in India during 1992-2015.P-value is calculated using two group mean comparison test with unequal variance and standard errors are given in the parenthesis. Statistical significant at *significance at 10 %, **significance at 5 %, ***significance at 1 %

In the above table we are interested in analysing the difference between SBI and its Associates and foreign banks. We can see that with respect to ratios of loan to asset, deposit to total asset and log to total asset the public sector banks are better than the foreign banks. But interestingly the foreign banks are performing better when it comes to enhancing the income through revenue diversification and in reducing the cost income. In terms of NPLTL the foreign

banks are better than the SBI and Its associates. Thus sbi and its associates are significantly different from foreign banks except in revenue diversification the foreign banks are better.

**Table 12: Difference Between Nationalised Banks And Private Banks**

| Variable | Nationalised Banks | Private Banks | Differences |
|---|---|---|---|
| Loan To Total Asset | 0.505 (0.020) | 0.498 (0.014) | 0.006 (0.024) |
| Deposit To Total Asset | 0.833 (0.845) | 0.003 (0.066) | -0.012 (0.066) |
| NPLTL | 0.062 (0.013) | 0.041 (0.008) | 0.021 (0.015) |
| Growth Rate Of Deposit | 16.130 (1.035) | 24.850 (1.826) | -8.720 (2.099)*** |
| CIR | 46.700 (3.140) | 50.533 (1.185) | -3.833 (3.356) |
| Log Total Asset | 7.004 (0.100) | 6.438 (0.143) | 0.567 (0.1748)*** |
| Income Diversification | 0.230 (0.011) | 0.316 (0.014) | -0.086 (0.0173)*** |
| Loan Loss Reserve | 0.173 (0.025) | 0.202 (0.034) | -0.029 (0.043) |

**Note:** Note: Above table notifies the difference in the determinants of the profitability between the nationalised bank and privatebanks in India during 1992-2015.P-valueare calculated using two group mean comparison test with unequal variance and standard errors are given in the parenthesis. Statistical significant at *significance at 10 %, **significance at 5 %, ***significance at 1 %

In the above table we are evaluating the differences between the nationalised Bank and private sectors banks with respect to determinants of profitability. The private banks are better in reducing the NPLTL and increasing the revenue through diversification in this context as well. From year to year the private banks are growing larger and have positive impact on profitability.

**Table13 : Difference Between Nationalised Banks And Foreign Banks**

| Variable | Nationalised Banks | Foreign Banks | Differences |
|---|---|---|---|
| Loan To Total Asset | 0.505 (0.020) | 0.419 (0.009) | 0.085 (0.022)*** |
| Deposit To Total Asset | 0.833 (0.585) | 0.003 (0.017) | 0.248 (0.0177)*** |
| NPLTL | 0.062 (0.013) | 0.034 (0.005) | 0.028 (0.0142)** |
| Growth Rate Of Deposit | 16.130 (1.035) | 16.317 (2.111) | -0.187 2.351 |
| CIR | 46.700 (3.140) | 44.504 (1.218) | 2.196 3.368 |
| Log Total Asset | 7.004 (0.100) | 6.167 (0.099) | 0.838 (0.141)*** |
| Income Diversification | 0.230 (0.011) | 0.445 (0.020) | -0.215 (0.023)*** |
| Loan Loss Reserve | 0.173 (0.025) | 0.183 (0.038) | -0.010 0.046 |

Note: Above table notifies the difference in the determinants of the profitability between the nationalised bank and foreign banks in India during 1992-2015.P-valueare calculated using two group mean comparison test with unequal variance and standard errors are given in the parenthesis. Statistical significant at *significance at 10 %, **significance at 5 %, ***significance at 1 %

In the above table the nationalized banks are better performers than the foreign banks. However, foreign banks are performing positively in terms of enhancing the profit of the banks through the diversification

## 4. 6 Main Results

Table 4 reports empirical estimation for the determinants of profitability. To measure the profitability we have used two indicators: i.e. ROA and ROE for the period of 1992-2015 for all the four banks group, i.e., State Bank of India and Its Associates, Nationalised Banks and Private

Banks. In the above analysis we have taken two equations. The first equation shows the interaction between State Bank of India, Private Sector Banks and Foreign Banks while keeping the rest of regressor the same. In second equation shows the Nationalised Banks interacting with the Private Sector and Foreign Banks. The results in column 1 of table 4 suggest that the coefficient of banks dummy are having positive sign but not significant with respect ROA. The coefficient value of private banks is higher in the case of ROA. The results of column 2 of table 4 suggest that coefficient of dummy SBI, private banks and foreign banks is having negative sign and significant. The coefficient value is higher for the foreign banks. The relationship between ROE and banks is not significant. In column 3 we have taken Nationalised Bank interacting with the private and foreign banks. The result of banks dummy for private bank is significant and positive, whereas the result of Nationalised banks and foreign banks shows negative signs and is not significant. The column 4 of table 4 shows that the coefficient value of banks dummy is negative and significant. The high statistical significance of lagged dependent variable also confirms the dynamic character of the model specification. The value of co-efficient of profitability variable is 0.71, which indicates a high persistence in bank profitability. This is similar to the findings of Trujillo-Ponce (2013) in the case of Spanish banks.

Loan to asset ratio is having positive and statistical significance relationship to enhance the profit of banks through ROA. However, in the case ROE the values are positive but not significant. Therefore, banks in India are able to convert higher loan ratio to profitability. Further, to measure the asset quality of banks we have taken the ratio of non-performing loan to total loans. It shows that positive and significant contributor to profitability. Deposit to total liabilities ratio is negative and not statistically significant. Further, the growth rate of deposit is negative and not significant in the case of ROA and positive and not significant in the case of

ROE. Therefore, the deposit to assets and growth rate of deposit is not significant determinants of profitability in Indian banking sector.

Cost-income-ratio is a proxy for operational efficiency. If the cost income ratio increases for the banks then the profit of banks falls down. In India the public sector banks is overcrowded by employees. To overcome the excessive burden of employees in public sector units the Government of India announced the Voluntary Retirement Scheme. This has significantly contributed to the increase in the profit of the public sector banks. At the same time, newly setup private sectors banks have started recruiting new employees to expand their market. Therefore, cost-income-ratio can play both a negative as well as positive role. In our analysis the value of cost-income ratio is negative and significant in the both the case of ROA and ROE.

To measure the bank size we have taken the proxy of log total asset. The log to total asset is positive but not significant in the case of both the determinants of profitability. Which gives clear signal to Indian bankers that size does not matter, but work efficiency matters when it comes to enhancing profitability. The case of Indian bank system shows some interesting results. In the Indian context the income diversification of banks is showing positive and significant results. It clearly indicates that the banks are not only depending on the interest income but also expanding into non-interest income.

We also found that Loan Loss Reserves are negative and significant in accordance with our expectation.  Industry concentration indicator is positive but not significant in the Indian banking sector. It indicates that the Indian banks are highly concentrated.  As a result this factor does not have a significant effect on the profitability of banks. As per our expectation the GDP growth rate is positive and significant in ROA and positive but not significant in the ROE.

Therefore, higher the growth rate, better the profitability of banks. Inflation is significant in the case of ROA, during the high inflation the banks can charge higher interest rate and earn more revenue. In the case of ROE the inflation is negative but not significant. It clearly hints that lower the inflation, the better it is for the economy as well as the investors. Interestingly interest rate is negative and significant; clearly highlighting the fact that higher interest rate is negative for profitability (ROA). In the case of ROE the interest rate is positive and significant.

Further we divided the data into two periods 1992-2005 and 2005-2015. The table 6 reports the empirical estimation for the determinants of performance of banks over the period 1992-2005. The results in column 1 of table 6 suggest that the coefficient of banks dummy is negative and significant during pre-2005 period where the banks had negative relationship between ROA and profitability. In the same column, Deposit to total asset is negative and significant, log to total asset is negative and these variables have a negative relationship with bank profitability during pre-2005 period. On the other hand, the loan to total asset ratio has a positive and significant relationship with profitability stating that prior to2005 the banks' loan to total asset ratio was important to enhance the profitability.

The results of column 2 of table 6 suggest that coefficients of dummy SBI, private banks and foreign banks shows negative sign and are significant. The coefficient value is higher for the foreign banks. In the case of ROE the loan to total asset, non-performing loan and total loan are having negative and significant relationship. At the same time, the Interest rate is having the positive and significant relationship stating that higher interest rate can increase the ROE. Income diversification is also positive and significant and it can enhance ROE by diversifying income sources.

The column 3 of table 6 shows ratio of non-performing loans to total loans which is a measure of credit risk. All the banks dummy such as SBI and Its Associates, private banks and foreign banks have positive but not significant impact. The loans to total asset and inflation rate are having negative and significant relationship. As loan to total asset increase there is fear that non-performing loans also may increase. Additionally, Inflation also has negative effect on the NPLTL. As the inflation increases there is a chance of increase in interest rate. Subsequently, the interest premium may also increase. Thus inflation is not good for the performance of the banks.

The column 4 of table 6 is ZSCORE is a measure of financial stability. The bank dummies such as SBI and Its Associates have positive and significant values, whereas Foreign banks has a negative and significant. Stating that SBI and Its Associates, private banks are more financial stable than the foreign banks.. Whereas Size is have negative sign and significant factor. It states that bank size is not an important factor for financial stability during pre-2005.

In the table 7 we have taken Nationalised Bank as a representative of public sector banks interacting with the private and foreign banks. The column 1 of table 7 shows the nationalised banks is significant and positive, whereas the result of private banks and foreign banks shows negative signs and is not significant in the case of ROA. Therefore nationalised banks are better performer than the private and foreign banks in case of ROA. Similarly, the same result prevails in the case of ROE, nationalised banks are better performer compare to the private and foreign in the case of ROE. Therefore in pre 2005 the Nationalised banks are able perform better in profitability indicator (ROA and ROE) compare to private and foreign banks.

Table 8 depicts the determinants of performance of banks in the post 2005 period amongst public sector banks (SBI and Its Associates), private sector banks and foreign banks.

Among the bank dummy the private bank coefficient is significant in all the three measures of performances, i.e ROA, ROE and NPLTL (except in the case ZSCORE). Foreign banks are positive and significant in the case of ROA and negative and significant in the case of ROE. SBI and Its Associates banks dummy coefficient is positive in NPLTL. The summary of Table 8 depicts that in the post 2006 period log to total asset ratio shows that bank size is negative for profitability indicators (ROA and ROE) but positive for NPLTL and ZSCORE. Therefore, banks size is not an important indicator for profitability but an important indicator of credit risk and financial stability. Growth rate of deposit is positive and significant for ROE, NPLTL, ZSCORE and negative for ROA. Income Diversification is negative for ROA in the post 2005 period. As per our hypothesis the Loan Loss reserve in negative and significant for the profitability indicators. Macroeconomic indicators show that growth rate of GDP is negative for NPLTL, inflation is significant and positive for ROA and interest rate is negative for profitability indicators and financial stability indicators.

Table 9 depicts the determinants of performance of banks in the post 2005 period. Here nationalised banks are compared with private and foreign banks. The dummy coefficient of private banks is positive and is a significant determinant of ROA. Private bank is negative and signification result for ROE, NPLTL and ZSCORE the same results follow for foreign banks. Non-performing loans to total loans is negative and significant for determinants of profitability. Loan Loss Reserve is significant and positive for ROE and negative for NPLTL. During 2005-2015 the private and foreignbanks are performing better than the public sector banks.

### 4.7 Conclusion

The present study assessed the determinants of bank performance in India in the post liberalization period. The performance of banks is measured by analysing the profitability

indicators such as ROA and ROE. To assess the quality of loan we have taken Non-performing loans to total loans to measure the credit risk. To assess the financial stability we have analysed the ZSCORE. Further, we have tried to assess how the policy changes have affected the performance of banks. To analyse the change in policy, the study has divided the series into two periods from 1992-2005 and 2006-2015. The study found that in the total sample period the dummy coefficient of SBI and its Associates and private banks is more stable when measured by ZSCORE. Foreign banks and private banks are able reduce their credit exposure. Income diversification, in the present era, is considered as one of the important methods to enhance the revenue. It has been found to be positive for the profitability and financial stability of banks. Loan Loss Reserve is meant for the Non-performing loans. As non-performing loans increases the banks keep aside more reserves to protect its customer during insolvency. Therefore, a higher reserve is not necessarily a good indicator of profitability and financial stability.

During 1992-2005, SBI and Its associate's banks were more stable compared to private and foreign banks. Loan to total asset measures banks' lending ability. Higher the lending is higher the profit. If the loans are properly scrutinized then it is profitable for banks and vice versa. Therefore, in our analysis it is positive and significant for profitability but negative for credit risk and financial stability. Cost income ratio is a measure of efficiency and has negative impact on profitability and financial stability. Thus, cost income ratio is negative to determinants of performance. Further, during this period the revenue diversification was positive for financial stability and profitability. The size which is measured using proxy log to total asset is negative for profitability and financial stability. Therefore, the policy makers should focus on factors other than size to enhance the profitability and financial stability of banks in India.

Industry concentration is considered as an important variable for profitability and financial stability in developed country is negative in India. Studies show that industry concentration has no significant and positive on profitability and financial stability. Deposit to total liability is negative and significant for all the four measure of performance. Thus, deposit is now considered as a burden because the bank should give interest on the deposit. Therefore, it increases the burden on the banks' balance sheet. Therefore, deposit cannot be considered as a good instrument for profitability.

Finally, the macroeconomic condition of economy plays an important role for banks' profitability and financial stability. The GDP growth rate is positive and significant for profitability and financial stability. Therefore, the higher the growth of the economy higher is the profitability and financial stability of banks. One more indicator of macroeconomic condition of the economy is inflation. A general rise in the price level is positive and significant for profitability and financial stability of banks and negative for credit risk. High interest rate prevailing in the economy impairs the investment activity and therefore profitability and financial stability. The interest is negative and significant. Thus, lower the interest rate the better it is for the profitability and financial stability of banks.

Further, the study used t-test (two group means comparison test) with unequal variance for the full the sample period. When we run t test to measure the difference between SBI and private sector banks and we found that private banks are significantly difference from sbi and its associated. The measure of difference between SBI and its associates and foreign banks we found that Sbi are better performer than the foreign banks, whereas, the foreign bank better significantly different in revenue diversification. In the next stage we have run t-test for mean difference between the nationalised bank and private banks. The nationalized banks emerged as a

significantly better than private banks, whereas the private banks are better in the area of income diversification and loan loss reserve than the nationalized banks. The same result followed in comparison with the foreign banks. Thus, t-test mean difference the SBI and Its associates and nationalized banks are better from the private banks and foreign banks.

# Appendix

**TABLE 4: Determinants Of Bank Performance In India For The Period 1992-2015 (inter-action between SBI and its Associates, Private and Foreign Banks**

| Variables | Profitability | | Credit Risk | Stability |
|---|---|---|---|---|
| | ROA | ROE | NPLTL | Z SCORE |
| DEP (L) | 0.71444*** | 0.46964*** | -0.01179 | 0.35776*** |
| | (0.21796) | (0.14398) | (0.06385) | (0.06077) |
| Loan to Total Asset | 1.48516*** | 7.05564 | -0.39496*** | -8.81170*** |
| | (0.53799) | (15.77412) | (0.08129) | (2.97872) |
| Deposit to Total Asset | -0.66423 | -14.48796 | | |
| | (1.03079) | (10.90992) | | |
| NPLTL | 5.49894*** | | | |
| | (1.52841) | | | |
| Growth Rate of Deposit | -0.00647 | 0.01968 | -0.00015 | -0.00765 |
| | (0.00439) | (0.04872) | (0.00012) | (0.00785) |
| Cost Income Ratio | -0.01776*** | -0.27909*** | -0.00145 | -0.02236 |
| | (0.00444) | (0.02309) | (0.00109) | (0.02261) |
| Log Total Asset | 0.19019 | 0.49236 | 0.04620** | -0.01379 |
| | (0.13296) | (2.14308) | (0.01935) | (0.16422) |
| Income Diversification | 1.64795*** | 27.69001** | 0.31179* | -3.81379 |
| | (0.47139) | (10.79733) | (0.16487) | (2.94098) |
| Loan Loss Reserve | -0.87075* | -9.30642** | -0.05771** | -1.61700*** |
| | (0.46744) | (3.75141) | (0.02514) | (0.11876) |
| Industry Concentration | 0.00003 | 0.00565 | 0.00018*** | -0.00177 |
| | (0.00031) | (0.00394) | (0.00006) | (0.00110) |
| GDP Growth Rate | 0.05543*** | 0.15296 | -0.00543*** | 0.18188*** |
| | (0.00897) | (0.20428) | (0.00200) | (0.06941) |
| Inflation Rate | 0.02251*** | -0.00141 | -0.00333** | 0.08603** |
| | (0.00513) | (0.09561) | (0.00134) | (0.04183) |
| Interest Rate | -0.03136* | 0.23389** | 0.01115*** | -0.10876** |
| | (0.01754) | (0.10513) | (0.00220) | (0.05493) |
| Sbi And Its Assocsiates | 0.09478 | -1.60980** | -0.00828 | 2.90651*** |
| | (0.14053) | (0.76845) | (0.01586) | (0.43673) |
| Private Banks | 0.21094 | -6.63972*** | -0.06329** | 2.59225*** |
| | (0.15278) | (1.59702) | (0.02948) | (0.54606) |
| Foreign Banks | 0.02789 | -13.25915*** | -0.14263*** | 0.78590 |
| | (0.18428) | (2.83189) | (0.03792) | (0.70600) |
| Capital Asset Ratio | | | | -0.12812 |
| | | | | (0.09992) |
| Constant | -1.37347 | -2.47716 | -0.73202** | 12.93635** |
| | (2.32978) | (25.37774) | (0.31176) | (5.66701) |
| Observations | 73 | 73 | 73 | 73 |
| Number of bank code | 4 | 4 | 4 | 4 |
| AR(2) | 0.487 | 0.408 | 0.503 | 0.355 |
| Sargen | 0.157 | 0.345 | 0.097 | 0.185 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 |

Note: The above table reports the determinants of bank performanceof India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build incommand xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.To measure the performance we have taken following set of variables ROA and ROE is a measure of profitability.Non-Performing Loans to Total loan (NPLTL) is a measure of credit risk and ZSCORE is a measure of stability..Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables.

GMM dynamic model automatically gives the result of AR(1),AR(2), Sargen and Hansen test when we use robust in the equation of GMM . ARand AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

**TABLE 5: Determinants Of Bank Performance In India For The Period 1992-2015 (inter-action Nationalized, Private and Foreign Banks**

| Variables | Profitability | | Credit Risk | Stability |
|---|---|---|---|---|
| | ROA | ROE | NPLTL | Z SCORE |
| DEP(L) | 0.71444*** | 0.46964*** | -0.012 | 0.35776*** |
| | (0.21796) | (0.14398) | (0.064) | (0.06077) |
| Loan To Total Asset | 1.48516*** | 7.05564 | -0.396*** | -8.81170*** |
| | (0.53799) | (15.77412) | (0.081) | (2.97872) |
| Deposit To Total Asset | -0.66423 | -14.48796 | | |
| | (1.03079) | (10.90992) | | |
| Npltl | 5.49894*** | | | |
| | (1.52841) | | | |
| Growth Rate Of Deposit | -0.00647 | 0.01968 | -0.000 | -0.00765 |
| | (0.00439) | (0.04872) | (0.000) | (0.00785) |
| Cost Income Ratio | -0.01776*** | -0.27909*** | -0.001 | -0.02236 |
| | (0.00444) | (0.02309) | (0.001) | (0.02261) |
| Log Total Asset | 0.19019 | 0.49236 | 0.0460** | -0.01379 |
| | (0.13296) | (2.14308) | (0.019) | (0.16422) |
| Income Diversification | 1.64795*** | 27.69001** | 0.312* | -3.81379 |
| | (0.47139) | (10.79733) | (0.165) | (2.94098) |
| Loan Loss Reserve | -0.87075* | -9.30642** | -0.058** | -1.61700*** |
| | (0.46744) | (3.75141) | (0.026) | (0.11876) |
| Industry Concentration | 0.00003 | 0.00565 | 0.000*** | -0.00177 |
| | (0.00031) | (0.00394) | (0.000) | (0.00110) |
| Gdp Growth Rate | 0.05543*** | 0.15296 | -0.005*** | 0.18188*** |
| | (0.00897) | (0.20428) | (0.002) | (0.06941) |
| Inflation Rate | 0.02251*** | -0.00141 | -0.003** | 0.08603** |
| | (0.00513) | (0.09561) | (0.001) | (0.04183) |
| Interest Rate | -0.03136* | 0.23389** | 0.011*** | -0.10876** |
| | (0.01754) | (0.10513) | (0.002) | (0.05493) |
| Nationalized Banks | -0.09478 | 1.60980** | 0.008 | -2.90651*** |
| | (0.14053) | (0.76845) | (0.01586) | (0.43673) |
| Private Banks | 0.11616** | -5.02993*** | -0.05501** | -0.31426 |
| | (0.05832) | (1.56236) | (0.02606) | (0.53420) |
| Foreign Banks | -0.06690 | -11.64935*** | -0.13435*** | -2.12061** |
| | (0.08924) | (3.22932) | (0.03293) | (0.82628) |
| Capital Asset Ratio | | | | -0.12812 |
| | | | | (0.09992) |
| Constant | -1.27869 | -4.08695 | -0.74030** | 15.84286*** |
| | (2.19113) | (24.86468) | (0.30302) | (5.81692) |
| Observations | 73 | 73 | 73 | 73 |
| Number of bank code | 4 | 4 | 4 | 4 |
| AR(2) | 0.487 | 0.408 | 0.503 | 0.355 |
| Sargen | 0.157 | 0.345 | 0.097 | 0.185 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 |

Note: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation. To measure the performance we have taken following set of variables ROA and ROE is a measure of profitability. Non-Performing Loans to Total loan (NPLTL) is a measure of credit risk and ZSCORE is a measure of stability.. Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables.

GMM dynamic model automatically gives the result of AR(1), AR(2), Sargen and Hansen test when we use robust in the equation of GMM . ARand AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

| TABLE 6:Determinants Of Bank Performance In India For The Period 1992-2005 (SBI) | | | | |
|---|---|---|---|---|
| | Profitability | | Credit Risk | Stability |
| VARIABLES | ROA | TOE | NPLTL | Z SCORE |
| DEP(L) | 0.3394** | -0.03518 | 1.088*** | -0.12048 |
| | (0.150) | (0.11421) | (0.185) | (0.13131) |
| Loan To Total Asset | 8.043*** | -111.167* | -0.507** | 5.08908** |
| | (2.56123) | (56.98) | (0.244) | (2.58777) |
| Deposit To Total Asset | -3.35836*** | -21.712 | 0.02874* | 3.60413 |
| | (1.14623) | (33.881) | (0.016) | (3.66243) |
| NPLTL | | -222.163*** | | |
| | | (67.955) | | |
| Growth Rate Of Deposit | -0.042*** | -0.170 | 0.0003 | 0.01239 |
| | (0.009) | (0.149) | (0.00071) | (0.01529) |
| Log Total Asset | -2.094*** | 17.08 | 0.08763 | -2.54*** |
| | (0.802) | (11.478) | (0.063) | (0.56695) |
| Income Diversification | 1.113 | 48.766** | 0.225 | 6.216*** |
| | (1.523) | (21.649) | (0.193) | (0.73769) |
| Loan Loss Reserve | 0.921 | -9.42160 | | 2.956*** |
| | (1.848) | (35.946) | | (0.896) |
| Industry Concentration | 0.001 | 0.01740 | 0.0004 | 0.00092 |
| | (0.001) | (0.021) | (0.0005) | (0.00099) |
| Gdp Growth Rate | 0.006 | -0.46140 | 0.00497 | -0.03407 |
| | (0.044) | (0.70631) | (0.00417) | (0.03137) |
| Inflation Rate | 0.0126 | -0.32703 | -0.00410*** | -0.03356** |
| | (0.0310) | (0.30431) | (0.00097) | (0.01407) |
| Interest Rate | -0.1749 | 4.204*** | 0.01954*** | -0.131* |
| | (0.1104) | (1.53375) | (0.00507) | (0.074) |
| Sbi And Its Associates | -0.8520*** | -7.810** | 0.01880 | 4.483*** |
| | (0.2656) | (3.769) | (0.02791) | (0.708) |
| Private Banks | -1.3979*** | -7.08 | 0.02126 | 1.140 |
| | (0.3880) | (4.96) | (0.05133) | (0.710) |
| Foreign Banks | -2.9712*** | -19.61** | 0.01863 | -2.314** |
| | (0.7606) | (8.83) | (0.04795) | (0.968) |
| Constant | 13.649 | -124.19 | -0.85844* | 9.473** |
| | (12.682) | (136.55) | (0.48274) | (4.171) |
| Observations | 33 | 33 | 52 | 33 |
| Number of Bankcode | 4 | 4 | 4 | 4 |
| AR(2) | 0.310 | 0.625 | 0.234 | 0.531 |
| Sargen | 0.841 | 0.347 | 0.243 | 0.174 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 |

Note: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command  xtbond, which gives additional features such as windmeijer correction and orthogonal deviation. To measure the performance we have taken following set of variables ROA and ROE is a measure of profitability. Non-Performing Loans to Total loan (NPLTL) is a measure of credit risk and ZSCORE is a measure of stability.. Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables.

GMM dynamic model automatically gives the result of AR(1) , AR(2), Sargen and Hansen test when we use robust in the equation of GMM .  AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

| Table 7: Determinants Of Bank Performance In India For The Period 1992-2005 (NB) | | | | |
|---|---|---|---|---|
| | Profitability | | Credit Risk | Stability |
| VARIABLES | ROA | ROE | NPLTL | Z SCORE |
| DEP (L) | 0.33212** | -0.03489 | 1.07935*** | -0.12048 |
| | (0.13892) | (0.11049) | (0.19502) | (0.13131) |
| LOAN TO TOTAL ASSET | 7.90995*** | -111.107* | -0.58217** | 5.08908** |
| | (2.79394) | (56.931) | (0.25107) | (2.58777) |
| DEPOSIT TO TOTAL ASSET | -3.22781*** | -21.757 | 0.04207*** | 3.60413 |
| | (1.11552) | (35.155) | (0.01566) | (3.66243) |
| NPLTL | | -222.140*** | | |
| | | (68.86) | | |
| GROWTH RATE OF DEPOSIT | -0.04175*** | -0.17055 | 0.00054 | 0.01239 |
| | (0.00815) | (0.146) | (0.00077) | (0.01529) |
| LOG TOTAL ASSET | -2.04672*** | 17.042 | 0.11648* | -2.53767*** |
| | (0.73342) | (11.236) | (0.05980) | (0.56695) |
| INCOME DIVERSIFICATION | 1.07975 | 48.75** | 0.30005 | 6.21554*** |
| | (1.50333) | (21.127) | (0.20003) | (0.73769) |
| LOAN LOSS RESERVE | 0.87084 | -9.43316 | | 2.95587*** |
| | (1.86620) | (35.929) | | (0.89611) |
| INDUSTRY CONCENTRATION | 0.00077 | 0.01739 | 0.00005 | 0.00092 |
| | (0.00132) | (0.022) | (0.00004) | (0.00099) |
| GDP GROWTH RATE | 0.00763 | -0.461 | 0.00413 | -0.03407 |
| | (0.04526) | (0.70172) | (0.00416) | (0.03137) |
| INFLATION RATE | 0.01316 | -0.32662 | -0.00460*** | -0.03356** |
| | (0.03110) | (0.30074) | (0.00110) | (0.01407) |
| INTEREST RATE | -0.17220 | 4.20039*** | 0.02316*** | -0.13055* |
| | (0.10704) | (1.51595) | (0.00579) | (0.07409) |
| NATIONALIZED BANKS | 0.84312*** | 7.81901** | -0.00281 | -4.48253*** |
| | (0.25012) | (3.76042) | (0.03028) | (0.70830) |
| PRIVATE BANKS | -0.51991*** | 0.72077 | 0.01452 | -3.34221*** |
| | (0.17210) | (1.81386) | (0.05409) | (0.38508) |
| FOREIGN BANKS | -2.04282*** | -11.83188** | 0.01644 | -6.79659*** |
| | (0.41241) | (5.06251) | (0.03313) | (0.57549) |
| Constant | 12.54559 | -131.65703 | -1.12143*** | 13.95527*** |
| | (11.82162) | (132.86719) | (0.42832) | (4.38840) |
| Observations | 33 | 33 | 52 | 33 |
| Number of bank code | 4 | 4 | 4 | 4 |
| AR(2) | 0.302 | 0.623 | 0.239 | 0.531 |
| Sargen | 0.840 | 0.347 | 0.266 | 0.174 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 |

Note: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation. To measure the performance we have taken following set of variables ROA and ROE is a measure of profitability. Non-Performing Loans to Total loan (NPLTL) is a measure of credit risk and ZSCORE is a measure of stability.. Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables.

GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant (< 0.05) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

| | Profitability | | Credit Risk | Stablity |
|---|---|---|---|---|
| **TABLE 8: Determinants Of Bank Profitability In India For The Period 2006-2015 (SBI)** | | | | |
| VARIABLES | ROA | ROE | NPL/TL | Z SCORE |
| Dep (L) | 0.70917*** | 0.39418*** | 0.32113 | 0.93883*** |
| | (0.20985) | (0.09302) | (0.33812) | (0.09868) |
| Loan To Total Asset | 3.45012* | | -0.03833 | -8.28140*** |
| | (1.97810) | | (0.05406) | (3.00321) |
| Deposit To Total Asset | -1.53199 | -11.42370** | 0.03059* | -3.00699 |
| | (1.19709) | (4.98230) | (0.01850) | (1.97746) |
| Growth Rate Of Deposit | -0.00294* | 0.04583** | 0.00012* | 0.06254*** |
| | (0.00177) | (0.01867) | (0.00007) | (0.02275) |
| Log Total Asset | -0.62135** | -2.00250 | 0.02258** | 1.93821** |
| | (0.28883) | (2.51440) | (0.00934) | (0.78708) |
| Income Diversification | -4.50321*** | 18.66674 | 0.12158 | 6.11838 |
| | (0.90902) | (21.09334) | (0.09163) | (4.19754) |
| Non-Performing Loan Total Loan | | -268.37393*** | | |
| | | (58.39073) | | |
| Loan Loss Reserve | -0.54960*** | -1.00745 | 0.02101*** | |
| | (0.09929) | (2.73296) | (0.00527) | |
| Industry Concentration | -0.00069 | -0.00084 | -0.00000 | |
| | (0.00073) | (0.00388) | (0.00002) | |
| GRGDP | | | -0.00439** | -0.07850 |
| | | | (0.00207) | (0.05449) |
| Inflation Rate | 0.04237* | -0.13235 | -0.00129 | 0.00200 |
| | (0.02364) | (0.18484) | (0.00095) | (0.03171) |
| Interest Rate | -0.04457 | -0.05754 | 0.00049 | -0.06498*** |
| | (0.04589) | (0.13673) | (0.00051) | (0.01464) |
| SBI And Its Associates | -0.06555 | -1.74135 | 0.01349*** | 0.66851 |
| | (0.37560) | (7.19894) | (0.00513) | (1.01524) |
| Private Banks | 1.36223* | -8.37167*** | -0.02846* | -2.44942 |
| | (0.72425) | (3.06441) | (0.01665) | (2.45307) |
| Foreign Banks | 1.52966*** | -11.95399*** | -0.01314 | -2.68749 |
| | (0.41126) | (1.46076) | (0.02674) | (2.04541) |
| Constant | 6.89522 | 49.67769** | -0.12889* | -7.57766* |
| | (4.87633) | (24.09687) | (0.07504) | (3.94378) |
| Observations | 37 | 37 | 37 | 37 |
| Number Of Bank code | 4 | 4 | 4 | 4 |
| Ar (2) | 0.237 | 0.179 | 0.483 | 0.768 |
| Sargen Test | 0.945 | 0.954 | 0.383 | 0.979 |
| Hansen Test | 1.000 | 1.000 | 1.000 | 1.000 |

Note: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation. To measure the performance we have taken following set of variables ROA and ROE is a measure of profitability. Non-Performing Loans to Total loan (NPLTL) is a measure of credit risk and ZSCORE is a measure of stability.. Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables.

GMM dynamic model automatically gives the result of AR(1) and AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1) and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

TABLE 9: **Determinants Of Bank Profitability In India For The Period 2006-2015 (NB)**

| VARIABLES | Profitability | | Credit Risk | Stability |
|---|---|---|---|---|
| | ROA | ROE | NPL/TL | Z SCORE |
| Dep (L) | 0.51920*** | 0.55623*** | 0.32114 | 0.93883*** |
| | (0.09070) | (0.08171) | (0.32632) | (0.09868) |
| Loan To Total Asset | 2.49719 | | -0.03764 | -8.28140*** |
| | (1.82358) | | (0.05230) | (3.00321) |
| Deposit To Total Asset | | -5.19522 | 0.02998* | -3.00699 |
| | | (8.15599) | (0.01679) | (1.97746) |
| Growth Rate Of Deposit | -0.00816*** | | 0.00015** | 0.06254*** |
| | (0.00317) | | (0.00006) | (0.02275) |
| Cost Income Ratio | -0.02062*** | -0.27808 | | |
| | (0.00527) | (0.25781) | | |
| Log Total Asset | -0.24579 | -0.12503 | 0.02284** | 1.93821** |
| | (0.25618) | (2.45163) | (0.01040) | (0.78708) |
| Income Diversification | -0.26117 | 23.98885*** | 0.11770 | 6.11838 |
| | (0.21398) | (3.98524) | (0.08930) | (4.19754) |
| Non-Performing Loan Total Loan | -15.14483** | -160.72895*** | | |
| | (6.33846) | (57.08229) | | |
| Loan Loss Reserve | -0.34826 | -12.91034*** | 0.02181*** | |
| | (0.57464) | (2.85984) | (0.00546) | |
| Industry Concentration | -0.00092 | 0.00203 | -0.00000 | |
| | (0.00070) | (0.00435) | (0.00002) | |
| GRGDP | | | -0.00434** | -0.07850 |
| | | | (0.00203) | (0.05449) |
| Inflation Rate | 0.00616 | 0.12518 | (0.00203) | 0.00200 |
| | (0.01251) | (0.14752) | -0.00127 | (0.03171) |
| Interest Rate | -0.04702 | -0.05154 | (0.00094) | -0.06498*** |
| | (0.04901) | (0.21170) | 0.00049 | (0.01464) |
| Nationalized Banks | 0.04713 | 1.15264 | -0.01430*** | -0.66851 |
| | (0.13118) | (1.40480) | (0.00460) | (1.01524) |
| Private Banks | 0.22273*** | -4.31434** | -0.04232*** | -3.11792 |
| | (0.03770) | (1.86894) | (0.01236) | (2.21238) |
| Foreign Banks | 0.90698*** | -9.83556** | -0.02575 | -3.35600* |
| | (0.25635) | (4.14963) | (0.02315) | (1.76393) |
| Constant | 6.02404 | 19.49769 | -0.11733 | -6.90915** |
| | (3.95306) | (42.65416) | (0.08151) | (3.38150) |
| Observations | 37 | 37 | 37 | 37 |
| Number Of Bank code | 4 | 4 | 4 | 4 |
| AR (2) | 0.489 | 0.257 | 0.585 | 0.768 |
| Sargen Test | 0.660 | 0.323 | 0.409 | 0.979 |
| Hansen Test | 1.000 | 1.000 | 1.000 | 1.000 |

Note: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation. To measure the performance we have taken following set of variables ROA and ROE is a measure of profitability. Non-Performing Loans to Total loan (NPLTL) is a measure of credit risk and ZSCORE is a measure of stability.. Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables.

GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

# Chapter 5

## Impact of Revenue Diversification on the Performance of Banks

**Introduction**

The work by Shaw (1973) and Mckinnon (1974) gave an imprint that change in policy regime from financial repression to financial liberalization initiates the trend towards the higher growth rate in the economy.Financial liberalization also plays the role of a good predictor of future rates of economic growth, capital accumulation and technological change (Levine, 1997; Rajan and Zingales, 1998). To gain the benefit of financial liberalization the well-functioning financial institution is the necessary condition for economic growth and development of the economy (Valderrama, 2003). In contrast, the literature have also proved empirically that often financial liberalization has led to financial crises (Kaminsky & Reinhart, 1999; Diaz-Alejandro, C., 1985; Daniel et al, 2007).Therefore, the process of financial liberalization has been quite contradictoryin the experience of developed and developing countries. One of the important factor in the liberalization is competition will increase by the entry of new entity into the system.Competition is not only increases among the peers but also from new entrants and other intermediaries, has been exerting pressure on banks margin (RBI, 2003-04). The competitive environment is forcing banks to enter into new stream of business and introducing new types of instruments to attract the customers and also to increase the revenue base. In this competition, only those banks that are technologically sound and able to absorb the best skill from the market and having better managerial experience can withstand the competition and survive in the market.

During the liberalization, the Indian banking sector has experienced a gradual change in the policy with regard to financial sector, in particular, the banking sector. The Indian Banking Sector has experienced the stiff competition from technology-intensive new private and foreign banks. These banks have emerged 'one-stop-shop' in providing financial services and quality services to the customers (RBI, 2003-04). With the entry of foreign banks and new private sector banks, the competition has gone to the new level. In this competitive regime the banking sector is gradually shifting from the traditional source of income such as interest income from lending and investment activities to non-traditional source of income like commission, exchange and brokerage income, net profit from investments, net profit from exchange transactions and other miscellaneous income. The main thrust for the shift towards the non-interest income is the increase in payment services adds up to the revenue base and it makes a significant contribution to profit of banks (Radecki, 1999). Further, reliance on non-interest income allows diversification gains to reduce the risk and the cyclical variation in banks' revenues and enhances the profits of the banks' (Report on Trend and Progress of Banking in India, 2003-04).

Due to entry of new banks in the Indian banking sector, the share of State Bank of India and its Associates (SBI) and Nationalized Banks) in total asset has decreased by an increase in the share of private and foreign banks[27]. The share of interest income in total assets over the period of 1992-2015 was 8.2 per cent for all the banks (SBI and its associates, nationalized banks, private Banks and foreign Banks). The share of non-interest income in the total asset over

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[27]In this competition the share of nationalized bank in the total asset has decrease from 54.7 in 1992 to 50.5 in 2015 and SBI and its associate's bank share in total asset has also come down from 33.8 to 21.7. Whereas the share private sector banks has increased from 4.3 per cent to 21.6 per cent and the share foreign banks has come down from 7.3 per cent to 6.3 per cent. In this competition the private banks is able to perform well compared to other banks.

the period of 1992-2015 was 1.4 per cent for SBI and its associates, 1.1 per cent for nationalized Banks, 1.6 per cent for private Banks and 2.4 per cent for Foreign Banks. The share of interest income to total assets for all the banks is downward sloping indicating that over the period of 1992-2015 the bank's interest share in total asset has decreased (Figure 2). The share of non-interest income to the total asset for all the banks is fluctuating over the period of analysis (Figure 3). Even then the private and foreign banks are able to perform better in enhancing revenue from the non-interest sources compared to SBI and its associates and nationalized banks.

The experience of rest of the world with regard to the relationship between the diversification of income and financial stability of banks is ambiguous. The basic presumption is that shift from interest income to non-interest income will increase the revenue base of banks and reduces the portfolio risk (Radecki, 1999; Elsas et al., 2010; Pennathur et al., 2012). In contrast, the literature has come out with the finding that diversification is not a significant factor for the stability of the bank. The banks which are depending more on the non-interest income are likely to face higher risk. (Stiroh, 2004; Stiroh and Rumble, 2006; Kunt et al., 2010;Kohler, 2014). However, the literature has found the alternative explanation regarding what kind of non-interest income is better for the bank stability and for reducing the portfolio risk as well. Literature has found that indulging more in trading activity is associated with higher risk and lower risk adjusted profits than the countries which are more active in fee based activities such as securities brokerage and insurance. Hence, the fee based activities are better than the trading for the banks to sustain the failure. (DeYoung & Torna, 2013; Lepetit et al., 2008). Sitroh (2004), therefore, gives caution to the believer of change from interest income to non-interest income offers large diversification benefits and boost the existing revenue base and lower the portfolio risk.

The present study is important for Indian banking sector because on one side SBI and its associates and nationalised banks are facing intensive competition from the private and foreign banks and on the other side the central bank of India (RBI) is urging the public sector banks to increase their ability to generate greater non-interest income and control operating expenses. Thus, the present study is examining the impact of revenue diversification on the performance of banks for the period 1992-2015. The study period is further divided into two sub-periods i.e., 1992-2005 and 2006-2015. The first sub-period would attempt to examine the impact of on-going reform process on the performance of banks. The second sub-period would endeavour to evaluate the advanced reform process on the performance of the banks. Therefore, the present study is an attempt to investigate the impact of revenue diversification on the performance of banks by using the dynamic panel data analysis (Generalized Method of Moment).

## 5.1 Review of literature

Although the earlier works on bank diversification were very much focused on the developed countries (especially, the U.S. and Russian Countries), there were a very few studies that were done on the case of emerging and developing countries. The experience of rest of the world with regard to the relationship between the diversification of income and financial stability of banks is ambiguous. In the case of U.S., Boyd and Graham, (1986) evaluated the most important question, whether diversification into nonbank activities decreases or increase bank risk of failure in the case of bank holding companies (BHCs) in U.S. for the period 1971-83. During the full sample period (1971-83) the study found that there was no significant relationship between the nonbank activities and increase of the return. Further, the study period was divided into two sub-periods, during the first sub-period 1971-77 when the financial policy was quite liberal they found that the increase in nonbank activity was able to reduce the risk of

bank failure. In the second sub-periods (1978-83), when the financial policies were quite rigid then the increase in non-banking activates were not able to reduce the risk of bank failure. Thus, the study gave hint to the policy makers the quite liberal policy with regard to non-interest income are better for reducing the risk of bank failure. Stiroh, (2004) tried to assess how noninterest income affects the mean and variation of bank profits and revenues in the case of U.S. banking industry. The paper also tried to determine whether the concentration in non-traditional activities is correlated to the risk indicators. They found that data provides a little evidence that shift from traditional source of income to non-traditional source of income and would result in more stable profit or revenue. Elsas et al.(2010) evaluated whether revenue diversification affects bank value in the case of nine developed countries including USA, UK Australia, Canada, Germany, Switzerland, France, Italy, and Spain over the period of 1996-2008. They found that shift from interest income to non-interest income increase bank profitability and helps in reducing the cost income ratio. Therefore, as profit of banks increase there is a chance that market valuation of the respective banks might also increase.

Lepetit et al., (2008) investigated the relationship between bank risk and product diversification in the changing financial environment of the European banking industry for the period 1996-2002. They found that the diversification of banks activity is positively correlated with the risk for small banks. Among the non-interest activity the increase in revenue from fee-based activity is better to tackle the risk of bank failure than the trading activity. Therefore, study shows that the banks which are more active in fee based activities such as financial services and brokerage are able to reduce the chance of bank failure.

Berger et al. (2010) evaluated the impact of revenue diversification on the performance of banks in a conventional framework. According to this framework, diversification reduced the

risks and enhanced the performance of the Russian banks during the period 1999-2006. Their findings showed that the bank following complete diversification strategies tend to increase the bank profits and reduced the risks. However, if they cross the threshold level then the benefits will be reversed. Further, the benefits of diversification depend upon the type of diversification that the banks are undertaking. In other words, the benefits are dependent on whether the bank is totally depending on fee based or asset based diversification.

DeYoung et al.(2013) examined an increase in non-interest income do contribute for the failure US commercial banks during the financial crisis.They used multi-period logit model to assess the above question. They found that the chance of banks failure decreased with the increase in the fee based activities. Conversely, the study by Lee et al., (2014) applies the dynamic panel generalized method of moment technique to investigate the impact of non-interest incomes on profitability and risk on 967 individual banks. They found that the non-interest activity of Asian banks reduced the risk, but do not increase the profitability. The study further investigated bank specialization and a country's income level. The result was complicated because the non-interest activities were found to be decreasing the profitability and increasing the risk for saving banks. Thus, the study pointed out that the benefit of diversification depends upon specializations.

Meslier (2014) examined the impact of bank revenue diversification on the performance of banks over the period 1999-2005, for 39 universal and commercial bank in the Philippines. They found that theshift from interest to non-interest has a positive influence on the profitability and reducing the portfolio risk, when the banks are more involved in trading of government securities in the case small and medium enterprises (SME).Chen et al., (2015) paper examined

the impact of income diversification on profitability in monetary framework for the emerging countries using unbalanced panel data over the period 2004-2010 for 18 emerging economics. They found that during thebubble time the banks' diversification is strong compared to the bust timesthe banks' diversification is weak. Kohler (2014) examined the how the non-interest income plays a role between the retail and investment banks in the case of Germany. They found that non-interest income plays a positive role in reducing the risk of retail banks which are active in lending and deposit taking activities than the bank which are investment oriented banks.

Saghi zedek, (2016) analysed the relationshipbetween ownership pattern and product diversification on performance of 710 European commercial banks. The study basically stressed on the relationship between ownership structures and better managerial experiences are able yield the benefit of diversification. They found that the when banks have less control on shareholder in that case the diversification yields diseconomies of scale. When the shareholder has control over the functioning of the banking institution then banks can ripe the fruit of diversification through higher profitability, lower earnings volatility and lower default risk. Further, the multiple managerial experiences play an important role in determining the benefit of diversification.

In the Indian case, the study by Pennathure (2012) evaluated basic question how the ownership plays an anchor role in revenue diversification. Further, the study examined the determination of non-interest income on the banks profitability among the public sector, private and foreign banks for the period 2001-2009. They found that the ownership do play an important auxiliary role in revenue diversification. Among the banks the private sector banks are emerged successor compared to public and foreign banks. Thus revenue diversification from interest

income to non-interest not only enhanced the profit but also reduced the risk significantly for public sector banks. Therefore, there is positive relationship between the ownership and diversification through which the banks can achieve the goal of higher profit with less risk.

The conventional argument with regard to revenue diversification increase in banks diversification can enhance the revenue base of banks and decrease the portfolio risk. However, the experience of conventional argument has differed from country to country. There is no accurate finding with regard to the relationship between diversification and performance. The present study is very important in the India context because the Indian banking sector is evolving par with the rest of the country. Second, deregulation of financial sector policy, specifically, banking sector policy is very much deregulated. Third, deregulation of entry norms has intensified competition among the banks. Fourth, in the deregulation period the ownership pattern is changing from government owned to privately owned sector. Therefore, from the above perspective the present research will help us to understand the role of diversification in the Indian banking sector.

## 5.2 Descriptive Statistics

| Table 1: Descriptive Statistics by Bank Group-Wise | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Banks | Variables | Mean | SD | Min | Max | Banks | Variable | Mean | SD | Min | Max |
| SBI | ROA | 0.54 | 0.30 | 0.11 | 1.02 | PB | ROA | 0.77 | 0.57 | 0.05 | 1.68 |
| | ROE | 10.45 | 5.10 | 4.05 | 18.76 | | ROE | 9.16 | 5.04 | 1.64 | 16.46 |
| | ZSCORE | 4.54 | 1.00 | 2.80 | 6.30 | | ZSCORE | 3.54 | 1.07 | 2.36 | 6.51 |
| | LLR | 0.19 | 0.09 | 0.04 | 0.37 | | LLR | 0.20 | 0.15 | 0.00 | 0.56 |
| | NPLTL | 0.06 | 0.06 | 0.00 | 0.17 | | NPLTL | 0.04 | 0.04 | 0.00 | 0.11 |
| | NPLE | 41.87 | 18.82 | 16.79 | 88.24 | | NPLE | 6.87 | 3.66 | 2.70 | 20.38 |
| | DIV | 0.28 | 0.04 | 0.21 | 0.40 | | DIV | 0.32 | 0.07 | 0.19 | 0.44 |
| | II | 6352719 | 5762722 | 1177559 | 20200000 | | II | 5336638 | 6396735 | 138186 | 21400000 |
| | OI | 364680 | 308114 | 43938 | 1143144 | | OI | 417105 | 414268 | 5326 | 1501343 |
| | CBI | 647405 | 509444 | 108614 | 1618501 | | CBI | 683725 | 829130 | 9425 | 2668419 |
| NB | ROA | 0.46 | 0.95 | -2.48 | 1.49 | FB | ROA | 1.30 | 1.12 | -3.40 | 2.28 |
| | ROE | 6.66 | 23.43 | -79.00 | 27.60 | | ROE | 12.09 | 21.95 | -74.57 | 63.52 |
| | ZSCORE | 0.45 | 0.96 | -2.90 | 1.30 | | ZSCORE | 0.83 | 1.01 | -3.10 | 3.50 |
| | LLR | 0.17 | 0.11 | 0.00 | 0.36 | | LLR | 0.18 | 0.17 | 0.00 | 0.59 |
| | NPLTL | 0.06 | 0.07 | 0.00 | 0.21 | | NPLTL | 0.03 | 0.02 | 0.00 | 0.08 |
| | NPLE | 9.30 | 16.39 | 3.59 | 78.34 | | NPLE | 1.72 | 2.34 | 0.29 | 10.93 |
| | DIV | 0.23 | 0.05 | 0.17 | 0.39 | | DIV | 0.44 | 0.10 | 0.16 | 0.61 |
| | II | 13500000 | 14200000 | 1897757 | 47400000 | | II | 1700796 | 1472764 | 286376 | 5044327 |
| | OI | 653542 | 1208836 | -835398 | 3175764 | | OI | 275537 | 258239 | -2741 | 888243 |
| | CBI | 594154 | 493242 | 109324 | 1625818 | | CBI | 296696 | 254906 | 31395 | 685517 |
| **Variable definition**; ROA= return on asset; ROE=return on equity; LLR=Loan Loss Reserve; NPLTL= Non-Performing Loan to Total loan; NPLE= Non-Performing loan to Equity; DIV=Revenue Diversification; II= Interest Income; OI=Other Income (excluding Commission, Exchange and Brokerage Income) and CBI= Commission, Exchange and Brokerage Income | | | | | | | | | | |

Table 1 reports the descriptive statistics by bank group-wise for the full sample period (1991-2015). The foreign banks report highest both in ROA (1.30) and ROE compared to other banks. SBI and associates banks are having highest ZSCORE (4.54) among the three groups. Nationalized banks maintained lowest loan loss reserve (0.17) compared to other banks. The foreign banking is having lowest NPLTL (0.03) among the other banks. SBI is having highest NPLE among the peers. The foreign bank is having highest score diversification score (0.44) compared to other banks. It means that the foreign bank is able to diversify the revenue base. The

nationalized bank is having highest interest revenue and other income compared to other banks. Whereas the private bank is having highest commission, exchange and brokerage income (CBI) compared to other banks.

| Table 2:Descriptive Statistics by Bank Group-Wise During 1992-2005 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Banks | Variables | Mean | SD | Min | Max | Banks | Variables | Mean | SD | Min | Max |
| SBI | ROA | 0.3 | 0.1 | 0.1 | 0.5 | PB | ROA | 0.3 | 0.3 | 0.1 | 1.1 |
| | ROE | 7.2 | 3.7 | 4.1 | 18.8 | | ROE | 5.6 | 3.2 | 1.6 | 13.3 |
| | ZSCORE | 4.8 | 1.1 | 3.0 | 6.3 | | ZSCORE | 4.0 | 1.2 | 2.8 | 6.5 |
| | LLR | 0.2 | 0.1 | 0.1 | 0.3 | | LLR | 0.1 | 0.1 | 0.0 | 0.2 |
| | NPLTL | 0.1 | 0.1 | 0.0 | 0.2 | | NPLTL | 0.1 | 0.0 | 0.0 | 0.1 |
| | NPLE | 40.0 | 7.5 | 29.1 | 49.5 | | NPLE | 7.6 | 5.0 | 2.7 | 20.4 |
| | DIV | 0.3 | 0.0 | 0.2 | 0.4 | | DIV | 0.3 | 0.1 | 0.2 | 0.4 |
| | II | 2577876 | 1204561 | 1177559 | 4405146 | | II | 1114177 | 905092 | 138186 | 2626545 |
| | OI | 196457 | 188289 | 43938 | 672860 | | OI | 160047 | 182048 | 5326 | 534151 |
| | CBI | 284146 | 115089 | 108614 | 479300 | | CBI | 95432 | 102590 | 9425 | 362845 |
| NB | ROA | 0.2 | 1.2 | -2.5 | 1.5 | FB | ROA | 0.9 | 1.3 | -3.4 | 2.0 |
| | ROE | 1.1 | 29.7 | -79.0 | 27.6 | | ROE | 12.2 | 29.1 | -74.6 | 63.5 |
| | ZSCORE | 0.2 | 1.2 | -2.9 | 1.3 | | ZSCORE | 0.8 | 1.3 | -3.1 | 3.5 |
| | LLR | 0.1 | 0.1 | 0.0 | 0.2 | | LLR | 0.1 | 0.1 | 0.0 | 0.2 |
| | NPLTL | 0.1 | 0.1 | 0.0 | 0.2 | | NPLTL | 0.0 | 0.0 | 0.0 | 0.1 |
| | NPLE | 12.8 | 23.0 | 4.8 | 78.3 | | NPLE | 3.0 | 2.8 | 1.4 | 10.9 |
| | DIV | 0.2 | 0.1 | 0.2 | 0.4 | | DIV | 0.4 | 0.1 | 0.2 | 0.6 |
| | II | 4353907 | 1993417 | 1897757 | 7631363 | | II | 670493 | 254273 | 286376 | 969960 |
| | OI | -204529 | 531666 | -835398 | 1050345 | | OI | 100173 | 70259 | -2741 | 238951 |
| | CBI | 249349 | 93194 | 109324 | 421830 | | CBI | 99851 | 54517 | 31395 | 215408 |

**Variable definition**; ROA= return on asset; ROE=return on equity;  LLR=Loan Loss Reserve; NPLTL= Non-Performing Loan to Total loan; NPLE= Non-Performing loan to Equity; DIV=Revenue Diversification; II= Interest Income; OI=Other Income (excluding Commission, Exchange and Brokerage Income) and CBI= Commission, Exchange and Brokerage Income.

Table 2 reports the descriptive statistics by bank group-wise for the period 1992-2005. Foreign Banks is having highest ROA,  (0.9), ROE (12.2)  among the other banks. Sbi and its associates is having highest ZSCORE (4.8) and highest NPLE (40.0) compared to other banks. Among the Diversification, loan loss reserve we have found that the there is much difference among the banks.  Private Banks is having highest interest revenue compared to other banks. SBI and its associate's banks are having highest other income and CBI compared to other banks.

| Table 3: Descriptive Statistics by Bank Group-Wise During 2006-2015 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Banks | Variables | Mean | SD | MIN | MAX | Banks | Variables | Mean | SD | MIN | MAX |
| SBI | ROA | 0.9 | 0.1 | 0.6 | 1.0 | PB | ROA | 1.4 | 0.3 | 1.0 | 1.7 |
| | ROE | 15.0 | 2.7 | 10.0 | 17.7 | | ROE | 14.1 | 1.7 | 11.4 | 16.5 |
| | ZSCORE | 4.3 | 0.8 | 2.8 | 5.1 | | ZSCORE | 2.9 | 0.3 | 2.4 | 3.4 |
| | LLR | 0.2 | 0.1 | 0.0 | 0.4 | | LLR | 0.3 | 0.1 | 0.2 | 0.6 |
| | NPLTL | 0.04 | 0.01 | 0.03 | 0.05 | | NPLTL | 0.0 | 0.0 | 0.0 | 0.0 |
| | NPLE | 43.6 | 25.5 | 16.8 | 88.2 | | NPLE | 6.2 | 1.5 | 3.6 | 7.9 |
| | DIV | 0.3 | 0.0 | 0.2 | 0.3 | | DIV | 0.3 | 0.0 | 0.3 | 0.4 |
| | II | 11600000 | 5438162 | 4930060 | 20200000 | | II | 11200000 | 6068215 | 3522263 | 21400000 |
| | OI | 600192 | 292832 | 275902 | 1143144 | | OI | 776986 | 379491 | 245079 | 1501343 |
| | CBI | 1155969 | 389203 | 531038 | 1618501 | | CBI | 1507336 | 670498 | 564048 | 2668419 |
| NB | ROA | 0.8 | 0.2 | 0.4 | 1.0 | FB | ROA | 1.9 | 0.3 | 1.3 | 2.3 |
| | ROE | 14.4 | 4.3 | 6.4 | 18.3 | | ROE | 11.9 | 2.9 | 7.3 | 16.1 |
| | ZSCORE | 0.8 | 0.2 | 0.4 | 1.0 | | ZSCORE | 0.9 | 0.1 | 0.7 | 1.1 |
| | LLR | 0.3 | 0.1 | 0.1 | 0.4 | | LLR | 0.3 | 0.2 | 0.1 | 0.6 |
| | NPLTL | 0.03 | 0.01 | 0.02 | 0.05 | | NPLTL | 0.03 | 0.01 | 0.02 | 0.04 |
| | NPLE | 5.8 | 3.0 | 3.6 | 13.0 | | NPLE | 0.5 | 0.1 | 0.3 | 0.7 |
| | DIV | 0.2 | 0.0 | 0.2 | 0.3 | | DIV | 0.5 | 0.1 | 0.4 | 0.6 |
| | II | 26300000 | 13900000 | 8857385 | 47400000 | | II | 3143219 | 1219294 | 1229083 | 5044327 |
| | OI | 1854842 | 759797 | 756169 | 3175764 | | OI | 521047 | 220188 | 249886 | 888243 |
| | CBI | 1076880 | 406610 | 481766 | 1625818 | | CBI | 572279 | 130767 | 287239 | 685517 |

**Variable definition**; ROA= return on asset; ROE=return on equity; LLR=Loan Loss Reserve; NPLTL= Non-Performing Loan to Total loan; NPLE= Non-Performing loan to Equity; DIV=Revenue Diversification; II= Interest Income; OI=Other Income (excluding Commission, Exchange and Brokerage Income) and CBI= Commission, Exchange and Brokerage Income.

Table 3reports the descriptive statistics by bank group-wise over the period of 2006-2015. Foreign Banks is having highest ROA, (1.9), ROE (11.9) among the other banks. SBI and its associates is having highest ZSCORE (4.3) and highest NPLE (43.6) compared to other banks. Among the Diversification, loan loss reserve we have found that there is no much difference among the banks. Nationalized Banks is having highest interest revenue and other income compared to other banks. Private bank is having highest CBI compared to other banks.

**5.3 Data and Methodology**

Our sample is an unbalanced panel data set of group-wise banks comprising of state bank of India and its associates, nationalized Banks, private Banks and foreign Banks for the period 1992 and 2015. Our data consists of 95 observations. All the specific bank related data were drawn from Reserve Bank of India publication "Statistical Table Relating to Banks in India."

| Table 4: Variables' Descriptions and Sources | | | |
|---|---|---|---|
| **Classification** | **Variable** | **Description** | **Source** |
| Dependent Variable | ROA | Return On Asset | RBI |
| | ROE | Return On Equity | RBI |
| | ZSCORE | ZSCORE | Authors' calculation based on RBI Data |
| | LLR | Loan Loss Reserve | |
| | NPLTL | Non-Performing Loan To Total Loan | |
| | NPLE | Non-Performing Loan To Share Holder Equity | |
| Types Of Income | INT | Interest Income | RBI |
| | OTH | OTHER INCOME (Excluding Commission, Exchange and Brokerage Income) | RBI |
| | CBI | Commission, Exchange and Brokerage Income | |
| Revenue Diversification | DIV | DIV ratio gives value between 0 and 0.75. The banks is fully expertise in one business stream then the value takes zero. If the bank is earning revenue from all sources then the value falls around 0.75 | Authors' calculation based on RBI Data |
| Control Variables | LOGTA | Log Total Asset | Author calculation |
| | GRTA | Growth rate of Total Asset | |
| | LOANTA | Ratio of Loans to total asset | |
| | DEPTA | Ratio of Deposit to total Asset | |
| Banks Dummy | SBI | SBI=1 And NB=0 PB=0 FB=0 | |
| | NB | NB=1 And SBI=0 PB=0 FB=0 | |
| | PB | PB=1 And NB=0 SBI=0 FB=0 | |
| | FB | FB=1 And NB=0 PB=0 SBI=0 | |

### 5.2.1 Methodology

The present study applies dynamic panel data approach suggested by Arellano and Bover (1995) and Blundell and Bond (2000) and uses the generalized method of moment technique to address the problem of endogeneity, heteroscedasticity, and autocorrelation problems. We adopted following modelLee et. al.(2014), with a change according to the requirement of Indian banking sector.

$$\pi_{i,t} = \alpha_0 + \alpha_1 \pi_{i,t-1} + \alpha_2 Div_{i,t} + \theta' INCS_{i,t} + -\alpha' F_{i,t} + \gamma_i + \eta_{i,t}, \quad \forall_{i,t}(1)$$

The dynamic relationship is characterised by the presence of lagged dependent variable among the regressor.

$$\pi i_{i,t} = \alpha_0 + \beta_1 i_{i,t-1}$$

We will assume that the $u_{i,t}$ follows a one way error component model

$$u_{i,t} = u_t + v_t \,(2)$$

Where $\mu \sim$ IID $(0, \sigma_\mu^2)$ and $v_{i,t} \sim IID$ $(0, \sigma_v^2)$ are independent of each other and among themselves. The dynamic panel data regression (1) and (2) is characterised by two sources which persist over time. The presence of auto correlation is due to the lagged dependent variable among the regressors and individual effects characterizing the heterogeneity among the individuals. One of the problem which arises by inclusion of a lagged dependent variable, since $\pi i_{i,t}$ is function of $\mu_i$, is that it immediately follows that $\pi i_{i,t-1}$ is also function of $\mu_i$. Therefore, $\pi i_{i,t-1}$, at the right hand side of the regressor in equation (1), is correlated with the error term. This renders the OLS estimator biased and inconsistent even if the $v_{i\,t}$, are not serially correlated.

In this equation $i = 1,…..,N$; t=1,……..,T; N refers to bank number; t indicates time and $\alpha$ and $\theta$ are the estimated parameters. The coefficient $\alpha_1$ is the estimated persistence coefficient of bank performance. A positive and significant $\alpha_1$ implies that the performance levels will be maintained from one year to the next. Thus, it is crucial to consider the persistence of performance through the dynamic panel data model.

The testable hypothesis is that, if the coefficient of $\alpha_2$ is positive, then the "portfolio diversification effect" holds. The paper has used multiple variables to assess the banks performance $\pi$ to be following set of bank performance measurement such as ROA, ROE, ZSCORE, LLR, NPLTL AND NPLE assess the bank performance. Return on Asset and Return on equity is a measure of profitability. ZSCORE[28] and Loan Loss Reserve (LLR)[29] is a measure of banks' stability. LLR is cushion against the bad assets, if the banks are having better reserves then the banks are in better position. So, higher the reserve is better from the banks. On the hand, if the reseves are high, under the LLR then the lending activity of banks reduces the profit of the banks. NPLTL indicates how strong and efficient banks' lending activitiesare managed by banks.If NPLTL ratio is greater than the presumption is that banks are handling risker loan portfolio. Hence, NPLTL and NPLE are proxied to measure the credit risk for a loan portfolio.

To measure the impact of diversification on the performance of banks, I have taken Herfindahl-Hirschman index (HHI) indicator developed by the Sitroh and Rumble, 2006; Trujillo-Ponce, 2013 We have modified the above equation according to the data availability in India, but the basics remain the same. In the earlier works, they have considered Interest income, commission income, trading income and other incomes.  In the case of India, due to lack of data on trading income, we have constructed an index based on bank group-wise taking into account

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[28]Description about ZSCORE is given in chapter 4
[29]LLR is measured by taking the provision to Non-Performing Asset to total loans (RBI)

the interest income, CBI and other incomes (excluding commission, exchange and brokerage income)

$$HHIRD = 1 - \left(\frac{INT}{TOI}\right)^2 + \left(\frac{CBI}{TOI}\right)^2 + \left(\frac{OTH}{TOI}\right)^2$$

Here, INT refers to gross interest income, CBI denotes the commission, exchange and brokerage income, OTH denotes other incomes. TOI means total operating income and is equal to the sum of the absolute value of INT, CBI and OTH. The HHIRD index takes the value between 0 means banks is fully expertise in one business streamand 0.75 means the bank is expertise in all three source of income stream. The positive and significant $\alpha_2$ indicates the greater diversification will generally improve bank performance

INCS refers to proxy of different types of revenue structures namely gross interest income (INT), other income (OTH) and Commission, Exchange and Brokerage Income (CBI). F is a vector of exogenous bank-specific characteristics. We include the log of total asset as a proxy to measure the bank size. The general impression in the academic arena is that the larger the size is better for income diversification and better profitability. The growth rate of total asset (GRTA) measures the rapid growth of banks. The ratio of loan to total asset measures the composition of loan to total asset quality. The profitability of the banks depends on the quality of loans. The ratio of deposit to total asset (DEPTA) is an indicator of funding choice, as deposit activities have most stabilizing effect on bank performance. The equity to asset ratio (Equity) is included to control the degree of financial leverage. In addition, $\lambda_i$ is an observed individual effect, and $\eta_{i,t}$is the error term.

## 5.3 Results

The study evaluated the impact of revenue diversification on the bank performance according to ownership for the period 1992-2015. Further, the sample is divided two periods. In the first periods, the sample is for the period 1992-2005[30]. The second period, the sample is over the period of 2006-2015[31]. In this transformation the present study is intend to understand how the performance indicators (Profitability, Stability, and Credit risk) are behaving in the case of Indian Banking sector. Further, we added banks dummy for investigating how ownership coefficient is behaving with regard to performance indicators.

Table 5 depictsthe empirical result for the full sample period (1992-2015) showing that the persistence co-efficient of performance (profitability, stability and credit risk) are positively significant indicating that the performance will be maintained from one year to next. When the DIV effect is considered, the coefficient of bank diversification on bank profitability and stability are positively significant,whereas, the coefficient of credit risk (NPLTL) is negatively significant, indicating that the risk can be reduced through revenue diversification. Among the three types of revenue, the effect of interest income and commission, exchange and brokerage income is significant on profitability and stability and negatively significant on credit risk (NPLTL). Thus, suggesting that the bank risk can be reduced through revenue diversification. The coefficient of CBI is positively significant, in the case of profitability and financial stability. Therefore, the banks which are earning more revenue from CBI can also able to improve profitability and stability of banks.Other incomewhich includes (net profit on investment, net profit on exchange and miscellaneous income) is negatively significant for profitability, stability

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[30]During these periods there has tremendous change in the policy reform in the banking sector
[31]During these periods the banking sector has gone advanced level of reforms and quality of data has also changed.

and credit risk (NPLE) indicating that the banks' higher dependence on these sources is having negative impact on the banks.

Table 6 reports the result of first sub period (1992-2005) showing that the persistence co-efficient of performance of stability (ZSCORE) and credit risk are positively significant, indicating the performance will be maintained from one year to next year. When the DIV effect is considered, the coefficient of bank diversification on profitability, and stability are positively significant, whereas, the coefficient for credit risk are negatively significant, suggesting that the risk can be reduced through revenue diversification. Therefore the bank profitability and stability can be improved through revenue diversification.

In the case of other revenue types, the effect of gross interest income on bank profitability are significantly positive, whereas in the case of credit risk the gross interest income is negatively significant on profitability, stability and credit risk. Suggesting that the dependency on other income cannot enhance the performance of banks'. Commission, exchange and brokerage income (CBI) is negatively significant on profitability, stability and credit risk. Hence, during 1992-2005 the Indian banking sector was not able to achieve the goal of diversification through OI and CBI. Thus only interest income was major indicator for profitability and stability of bank.

Table 7 reports the result of second sub-sample period from 2006-2015. The model depicts that the persistence coefficient of performance (profitability, Stability and credit risk) are positively significant, indicating that the performance will be maintained from one year to the next year.When DIV effect is considered the coefficient of bank diversification on stability and credit risk is positively significant, whereas the coefficient of profitability is negatively significant,

indicating that the in the second sub-sample period risk cannot be reduced through revenue diversification.

Among the other types of revenue, the effect of gross interest income (II) on banksprofitability,and stability are significantly negative, whereas, in the case of credit risk the result is significantly positive. Indicating thatbank profitability, stability is having negative relationship between banks income diversification and performance. The effect of OI and CBI on bank profitability is positively significant and negatively significant in the case of credit risk. Hence, a bank can achieve revenue diversification through increasing other income and CBI in post 2006 period.

Table 8 reports the result of impact of revenue diversification on the performance of banks' during 1992-2005 for bank group dummy (Nationalized Bank, Private Bank and Foreign Bank). The coefficient of NB are having negatively significant on profitability and stability (ZSCORE), indicating that during 1992-2015 the dummy banks has a negative relationship between revenue diversification with regard to profitability and stability. When DIV effect is consider the coefficient of bank diversification is positively significant on profitability and stability, whereas the coefficient of credit risk (NPLE) is having negatively significant, suggesting that the risk can be reduced through revenue diversification. The coefficient of OI and CBI are having negatively significant on profitability and stability, indicating revenue diversification through OI and CBI is not able to reduce the risk. The coefficient of II is positively significant on profitability and stability (ZSCORE), indicating increase in II can reduce the risk.

Table 9 reports the impact of revenue diversification on the performance of bank by using banks dummy (State Bank of India, Private Bank and Foreign Bank). The coefficient of SBI and FB are

having negatively significant on profitability and stability (LLR), indicating that the during 1992-2005 SBI and FB was not able to reduce the risk through diversification. The impact of DIV on profits (ROA) and stability (ZSCORE) is positively significant, whereas the coefficient of credit risk in negatively significant, indicating that the risk can be reduced through revenue diversification. The coefficient of interest income (II) is negatively significant on profitability and stability (ZSCORE), indicating that the interest income cannot reduce the risk, whereas the other income (OI) and CBI are having positive but not significant result.

Table 10 reports the impact of diversification on the performance of bank dummy (State Bank of India, Private Bank and Foreign Bank). The coefficient of SBI and PB are having negatively significant on profitability and positively significant on stability (ZSCORE), indicating that the banks are able to have stability through revenue diversification. The coefficient of FB is negatively significant on profitability and stability and positively significant on credit risk. The impact of DIV is positive significance on profitability (ROA) and stability (LLR) and negatively on credit risk, indicating that the risk can be reduced through the revenue diversification. The coefficient of interest income is having a negatively significant on profitability and stability(ZSCORE) and negative significance on credit risk (NPLTL). Hence revenue diversification can reduce the risk through commission, exchange and brokerage income (CBI).

Table 11 depicts the empirical estimation for the period 2006 to 2015 across different bank groups. The coefficient of nationalised banksare positively significant on profitability and stability (LLR) and negatively significant on credit risk (NPLTL), indicating that the NB was able to reduce the risk through revenue diversification. The coefficient of private banks is negatively significant on profitability and stability (ZSCORE), whereas negatively significant on stability and positive significant on credit risk.

The coefficient of DIV is positively significant on profitability, stability and negatively significant on credit risk, indicating that the banks can reduce risk through revenue diversification. The interest income and other income are negatively significant on profitability and positively on credit risk, indicating II and OI cannot reduce the risk. The coefficient of CBI is positively significant on profitability and stability and negatively significant on credit risk, indicating the CBI can reduce the risk through the revenue diversification.

## 5.4 Conclusion

The study was intended to evaluate the conventional argument regarding the relationship between revenue diversification and banks stability. The earlier experience of the developed countries with regard to revenue diversification has been vague. There is no accurate finding with regard to the relationship between diversification and performance. However, in the indicant context the study is very important because the central bank of India (RBI) is urging the public sector bank to undertake non-interest activity to survive in the competition. Further India liberalization policy is evolving par with the rest of the country. Second, deregulation of financial sector policy, specifically, banking sector policy is very much deregulated. Third, deregulation of entry norms has intensified competition among the banks. Fourth, in the deregulation period the ownership pattern is changing from government owned to privately owned sector. Therefore, from the above perspective the present research will help us to understand role of diversification in the Indian banking sector.

During the full sample period (1992-2015) the DIV effect is considered significant on bank profitability and stability.Whereas, the coefficient of credit risk (NPLTL) is negatively significant, indicating that the risk can be reduced through revenue diversification. Among the

three types of revenue, the effect of interest income and commission, exchange and brokerage income on profitability is significant on stability and negatively significant on credit risk (NPLTL), indicating the risk can be reduced through revenue diversification. The coefficient of CBI is positively significant, in the case of profitability and financial stability. Therefore, the banks which are earning more revenue from CBI can able to improve profitability and stability of banks. Other income which includes (net profit on sale on investment, net profit on exchange transaction and miscellaneous income) is negatively significant for profitability, stability and credit risk (NPLE) indicating that the banks' higher dependence on these sources is having negative impact on the banks.

The result of first sub period (1992-2005) was positively and significant with regard to the DIV effect on profitability, and stability, whereas, the coefficient for credit risk is negatively significant, suggesting that the portfolio risk can be decrease through an increase revenue diversification. Therefore the bank profitability and stability can be stabilized through revenue diversification. Interest income was able to reduce risk and enhance the profit of the banks through revenue diversification, where as other income and Commission, exchange and brokerage income (CBI) is having negative relationship between revenue diversification and performance of banks. Hence, during 1992-2005 the Indian banking sector was not able to achieve the goal of diversification through OI and CBI. Thus only interest income was major indicator for profitability and stability of bank.

The coefficient of bank diversification (DIV) on stability and credit risk is positively significant, whereas the coefficient of profitability is negatively significant, indicating that in the second sub-sample period risk cannot be reduced through revenue diversification. Interest income on bank profitability and stability is having negative relationship, whereas OI and CBI on bank

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profitability is having positively significant. Hence, a bank can achieve revenue diversification through increasing other income and CBI in post 2006 period.

During the 1992-2005 the coefficient of NB, PB and FB is negatively significant on profitability. Private bank is having positive sign in the case of stability but not significant. The foreign banks are having significantly negative with regard stability and credit risk. Interest income is positively significant on profitability and stability, whereas, other income and CBI is having negatively significant on profitability and stability. Therefore in first sub-sample period after introducing the ownership into the model we see that the interest income is important factor for profitability and stability of banks. The result varies when we replace NB with SBI the interest income has become negatively significant factor for profitability and stability. Therefore the relationship between ownership is not significant factor for profitability and stability in the first sub-sample period.

During the 2006-15 the same result is followed in the case of coefficient of banks dummy when we take SBI and other banks into the model. Div and CBI is significant factor for profitability and stability. Interestingly, when nationalised banks were taken into model with private and foreign banks, the nationalised banks is having positively significant on profitability, indicating that the NB was able to reduce risk through risk diversification. Interest income and other income are having negatively significant on profitably and stability of banks. CBI can play key role is increasing the profit as well as the stability of banks. Therefore, in the Indian case also commission, exchange and brokerage income as emerged as significant factor for increasing the profit and stability of banks. Thus in the model CBI has emerged as major indicator define the impact revenue diversification on profitability and stability of banks.

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**Appendix**

| Table 5: Impact of Diversification on Banks Performance over the period 1992-2015 | | | | | | |
|---|---|---|---|---|---|---|
| | Profitability | | Stability | | Credit Risk | |
| Variables | ROA | ROE | Z SCORE | LLR | NPLTL | NPLE |
| DEP(-), | -0.104 | -0.227 | 0.644*** | 0.384*** | 1.066*** | 1.201*** |
| | (0.175) | (0.200) | (0.061) | (0.048) | (0.046) | (0.022) |
| DIV | 6.139*** | 78.461*** | 2.000* | 0.308*** | -0.064* | 14.797* |
| | (1.354) | (13.854) | (1.139) | (0.073) | (0.036) | (7.786) |
| II | 0.000*** | 0.000*** | -0.000 | -0.000 | -0.000*** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| OI | -0.000*** | -0.000*** | -0.000 | 0.000 | 0.000** | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| CBI | 0.000*** | 0.001* | 0.000** | 0.000*** | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | -1.548*** | -20.727*** | -0.002 | -0.056 | 0.020* | -8.524** |
| | (0.378) | (7.470) | (0.847) | (0.037) | (0.011) | (3.989) |
| Observations | 92 | 92 | 92 | 69 | 92 | 72 |
| Bank Group | 4 | 4 | 4 | 4 | 4 | 4 |
| AR | 0.673 | 0.842 | 0.897 | 0.566 | 0.112 | 0.134 |
| Sargen | 0.596 | 0.119 | 0.278 | 0.419 | 0.998 | 0.334 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Notes: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.

Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

| Table 6: Impact of Diversification on Banks Performance over the period 1992-2005 | | | | | | |
|---|---|---|---|---|---|---|
| | Profitability | | Stability | | Credit Risk | |
| VARIABLES | ROA | ROE | Z SCORE | LLR | NPLTL | NPLE |
| DEP(-), | -0.295** | -0.347*** | 0.909*** | -0.166 | 0.909*** | 1.023*** |
| | (0.128) | (0.109) | (0.131) | (0.251) | (0.063) | (0.034) |
| DIV | 7.382*** | 130.698*** | 7.259* | 0.379** | -0.132*** | -7.460 |
| | (1.894) | (37.260) | (3.857) | (0.151) | (0.042) | (10.021) |
| II | 0.000*** | 0.001*** | 0.000 | 0.000 | -0.000*** | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| OI | -0.000 | -0.000 | -0.000 | 0.000 | -0.000* | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| CBI | -0.000*** | -0.005* | -0.000 | 0.000 | 0.000 | -0.000 |
| | (0.000) | (0.003) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | -2.093*** | -43.196** | -2.073 | -0.086 | 0.056*** | 3.947 |
| | (0.705) | (18.472) | (1.630) | (0.070) | (0.011) | (3.426) |
| Observations | 52 | 52 | 52 | 29 | 52 | 32 |
| Bank Group | 4 | 4 | 4 | 4 | 4 | 4 |
| AR(2) | 0.515 | 0.768 | 0.966 | 0.115 | 0.116 | 0.395 |
| Sargen | 0.900 | 0.507 | 0.255 | 0.089 | 0.792 | 0.355 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Notes: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system - GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.

Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

| | Profitability | | Stability | | Credit Rsik | |
|---|---|---|---|---|---|---|
| **Table 7: Impact of Diversification on Banks Performance over the period 2006-2015** | | | | | | |
| Variables | ROA | ROE | Z SCORE | LLR | NPLTL | NPLE |
| DEP(-) | 0.671*** | 0.736*** | 0.998*** | 0.382 | 0.512*** | 1.140*** |
| | (0.154) | (0.071) | (0.069) | (0.256) | (0.120) | (0.049) |
| DIV | 0.760 | -13.148*** | 1.117* | 0.501* | 0.045*** | 25.319* |
| | (0.515) | (0.205) | (0.658) | (0.264) | (0.012) | (14.87) |
| II | -0.000*** | -0.000*** | 0.000 | -0.000 | 0.000*** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| OI | 0.000*** | 0.000*** | -0.000 | 0.000 | -0.000* | -0.001 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) |
| CBI | 0.000*** | 0.000*** | -0.000 | 0.000 | -0.000** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | 0.223 | 8.516*** | -0.375 | -0.087 | -0.002 | -11.228* |
| | (0.153) | (0.900) | (0.254) | (0.091) | (0.011) | (6.30400) |
| Observations | 36 | 36 | 36 | 36 | 36 | 36 |
| Bank Group | 4 | 4 | 4 | 4 | 4 | 4 |
| AR(2) | 0.374 | 0.404 | 0.303 | 0.361 | 0.054 | 0.607 |
| Sargen | 0.921 | 0.875 | 0.283 | 0.256 | 0.456 | 0.866 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Notes: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.

Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM. AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant (< 0.05) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

**Table 8: Impact of Diversification on the Performance of banks during 1992-2005 across different bank-groups**

| VARIABLES | Profitability | | Stability | | Credit Risk | |
|---|---|---|---|---|---|---|
| | ROA | ROE | Z SCORE | LLR | NPL/TL | NPLE |
| DEP(-) | 0.27881 | 0.315 | 0.069 | 0.041 | 0.766*** | 1.212*** |
| | (0.29454) | (0.421) | (0.13067) | (0.568) | (0.239) | (0.134) |
| NB | -3.501** | -124.653*** | -5.596*** | -1.269* | -0.022 | 79,940.08 |
| | (1.503) | (34.905) | (1.179) | (0.680) | (0.068) | (117393.64) |
| PB | -13.502*** | -267.183** | 0.060 | 0.696 | -0.036 | 157570.467 |
| | (3.914) | (114.875) | (1.058) | (0.518) | (0.102) | (107999.64) |
| FB | -1.25 | -47.748 | -4.624*** | -1.047* | -0.006 | 56,465.60 |
| | (1.518) | (33.385) | (1.002) | (0.575) | (0.076) | (112503.88) |
| DIV | 16.084*** | 359.366*** | 15.116*** | 1.212* | 0.113 | -1.111 |
| | (4.290) | (123.883) | (2.947) | (0.602) | (0.162) | (260540.57) |
| II | 0.000* | 0.000*** | 0.000*** | 0.000 | 0.000 | -0.005 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.024) |
| OI | -0.000 | -0.000 | -0.000* | -0.000 | -0.000 | 0.017 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.032) |
| CBI | -0.000* | -0.000** | -0.000** | -0.000 | -0.000 | -0.158 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.273) |
| Observations | 52 | 52 | 52 | 29 | 52 | 32 |
| Number of bankcode | 4 | 4 | 4 | 4 | 4 | 4 |
| AR(2) | 0.155 | 0.602 | 0.571 | 0.192 | 0.635 | 0.636 |
| Sargan | 0.792 | 0.933 | 0.314 | 0.743 | 0.194 | 0.680 |

Notes: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.

Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

**Table 9 : Impact of Diversification on the Performance of banks during 1992-2005 across different bank-Groups**

| Variables | Profitability | | Stability | | Credit risk | |
|---|---|---|---|---|---|---|
| | ROA | ROE | Z SCORE | LLR | NPLTL | NPLE |
| DEP(-) | -0.700*** | -0.715*** | -0.028 | 0.195 | 0.751*** | 1.141*** |
| | (0.154) | (0.124) | (0.158) | (0.324) | (0.232) | (0.150) |
| SBI | -3.881*** | -56.053*** | 1.014 | -0.411* | 0.027 | 7,557.34 |
| | (0.834) | (16.891) | (1.194) | (0.221) | (0.048) | (93,556.054) |
| PB | 0.966 | 43.911** | 2.674* | -0.050 | -0.024 | 122737.402 |
| | (0.840) | (16.621) | (1.517) | (0.121) | (0.110) | (87,838.601) |
| FB | -3.034*** | -47.598** | -3.051** | -0.291* | 0.019 | 44,542.305 |
| | (0.924) | (18.661) | (1.454) | (0.167) | (0.066) | (112336.284) |
| DIV | 6.532*** | 46.736 | 8.146*** | 0.891** | 0.048 | -71115.064 |
| | (2.23) | (45.814) | (2.693) | (0.410) | (0.151) | (276593.675) |
| II | -0.000* | -0.000 | -0.000 | 0.000 | 0.000 | 0.012 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.015) |
| OI | 0.000 | 0.001 | 0.000 | -0.000 | -0.000 | 0.005 |
| | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) | (0.026) |
| CBI | 0.000 | 0.008 | -0.000 | -0.000 | -0.000 | -0.237 |
| | (0.000) | (0.006) | (0.000) | (0.000) | (0.000) | (0.264) |
| Observations | 52 | 52 | 52 | 29 | 52 | 32 |
| Bank groups | 4 | 4 | 4 | 4 | 4 | 4 |
| AR(2) | 0.793 | 0.804 | 0.623 | 0.244 | 0.602 | 0.572 |
| Sargan | 0.147 | 0.070 | 0.217 | 0.163 | 0.190 | 0.615 |

Notes: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.

Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

**Table 10 : Impact of Diversification on the Performance of banks during 2006-15 across different bank-groups**

| VARIABLES | Profitability | | Stability | | Credit Risk | |
|---|---|---|---|---|---|---|
| | ROA | ROE | ZSCORE | LLR | NPLTL | NPLE |
| DEP(-) | 0.444*** | 0.694*** | 0.766*** | 0.485*** | 0.788*** | 1.268*** |
| | (0.104) | (0.044) | (0.023) | (0.096) | (0.053) | (0.065) |
| SBI | -0.418** | -2.394* | 0.672* | -0.245* | 0.004 | -15.694 |
| | (0.175) | (1.304) | (0.384) | (0.141) | (0.009) | (12.375) |
| PB | -0.593** | -4.156*** | 0.430 | -0.324* | 0.012* | -2.900 |
| | (0.262) | (1.471) | (0.381) | (0.187) | (0.006) | (7.831) |
| FB | -0.377 | -6.996*** | -0.242 | -0.359* | 0.016* | 5.727 |
| | (0.373) | (2.307) | (0.448) | (0.201) | (0.009) | (8.830) |
| DIV | 1.167** | 3.730 | -0.301 | 1.196* | -0.001 | -23.343 |
| | (0.511) | (5.964) | (0.928) | (0.687) | (0.031) | (27.817) |
| II | -0.000** | -0.000*** | -0.000* | 0.000 | 0.000*** | 0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| OI | 0.000 | 0.000* | 0.000** | -0.000 | -0.000* | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| CBI | 0.000*** | 0.000*** | 0.000 | 0.000*** | -0.000*** | 0.000 |
| | (0.00000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | 0.47525*** | 6.585*** | 0.411 | -0.097 | -0.001 | 8.321 |
| | (0.10034) | (1.348) | (0.358) | (0.242) | (0.009) | (14.101) |
| Observations | 36 | 36 | 36 | 36 | 36 | 36 |
| Bank-Group | 4 | 4 | 4 | 4 | 4 | 4 |
| AR | 0.628 | 0.260 | 0.292 | 0.604 | 0.100 | 0.593 |
| Sargen | 0.664 | 0.710 | 0.939 | 0.924 | 0.688 | 0.064 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Notes: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.
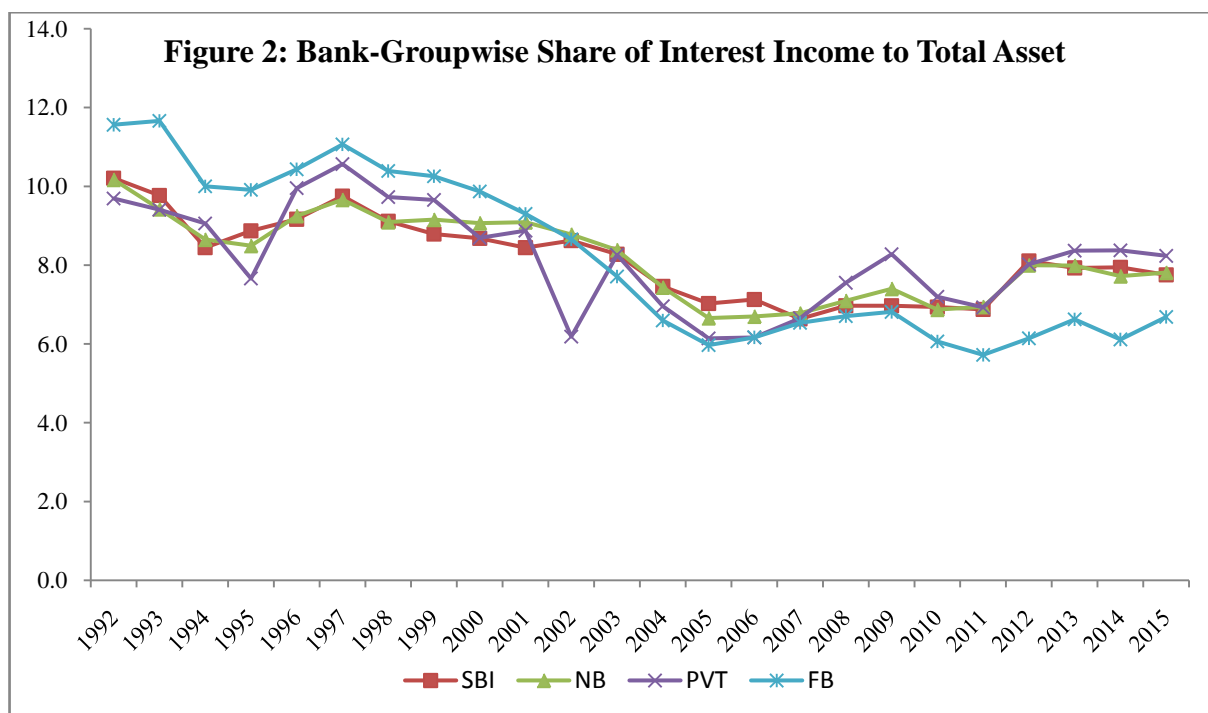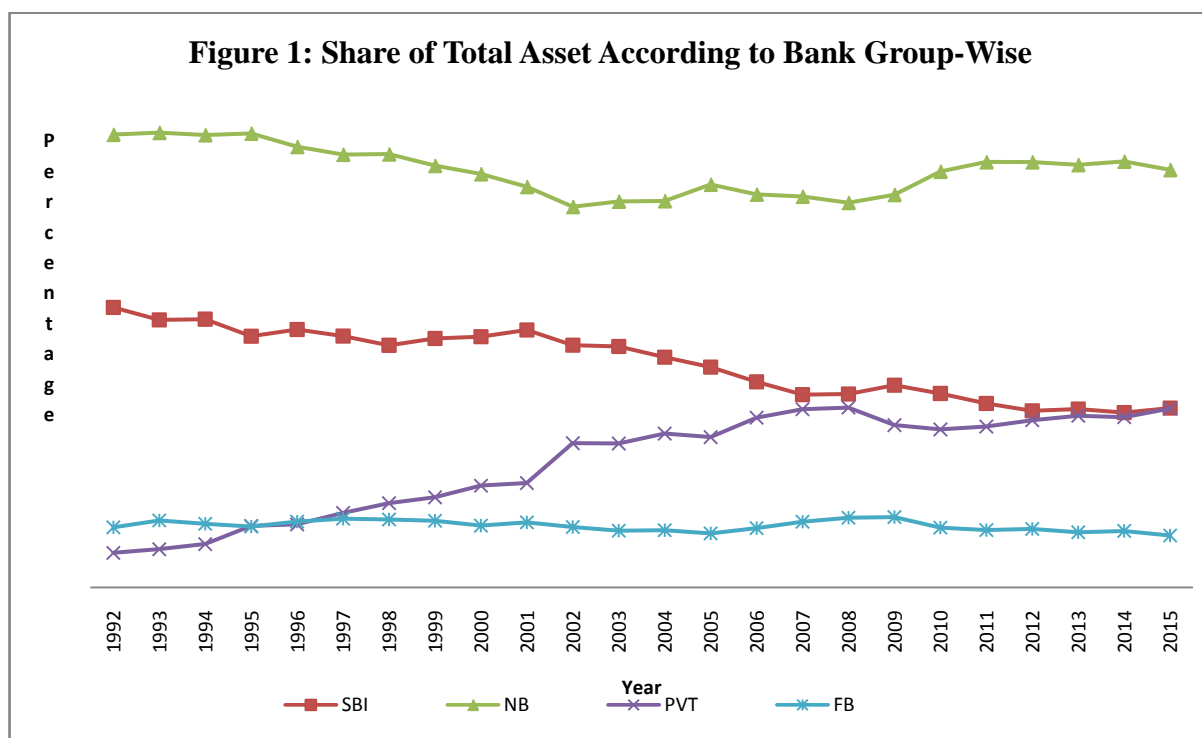
Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %
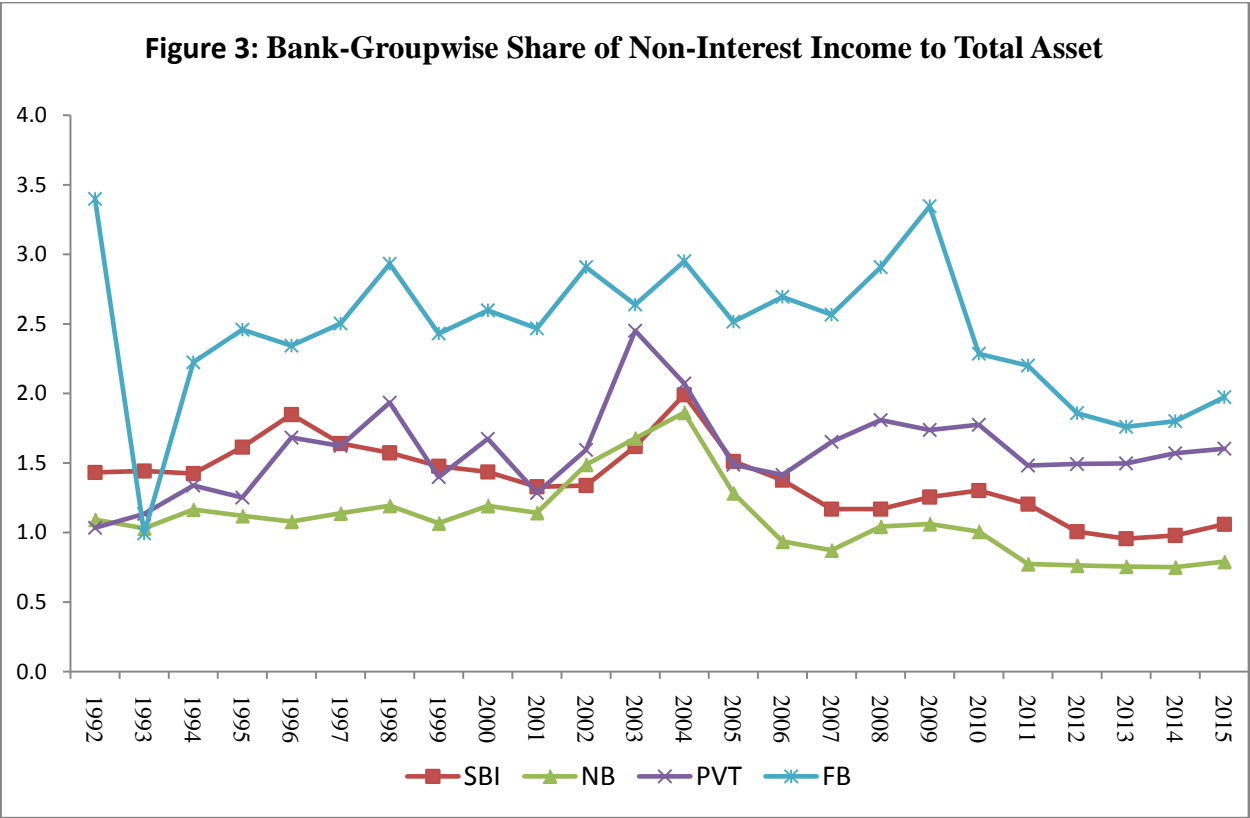
**Table 11 : Impact of Diversification on the Performance of banks during 2006-15 across different bank-groups**

| VARIABLES | Profitability | | Stability | | Credit Risk | |
|---|---|---|---|---|---|---|
| | ROA | ROE | Z SCORE | LLR | NPLTL | NPLE |
| DEP(-), | 0.414*** | 0.481*** | 0.460*** | 0.366** | 0.497*** | 1.211*** |
| | (0.082) | (0.171) | (0.105) | (0.182) | (0.162) | (0.020) |
| NB | 0.356*** | 4.207 | -1.602*** | 0.121** | -0.008 | 6.033*** |
| | (0.114) | (2.911) | (0.475) | (0.059) | (0.005) | (2.296) |
| PB | -0.056 | -4.882*** | -0.997*** | 0.008 | 0.008 | 7.047 |
| | (0.052) | (1.125) | (0.228) | (0.052) | (0.005) | (6.420) |
| FB | 0.370* | -7.874*** | -2.562*** | -0.176*** | 0.013*** | 8.357** |
| | (0.209) | (1.094) | (0.844) | (0.060) | (0.004) | (3.697) |
| DIV | 1.151** | 24.172*** | 2.994 | 0.976*** | -0.025 | -2.957 |
| | (0.473) | (7.638) | (3.111) | (0.276) | (0.030) | (9.674) |
| II | -0.000*** | -0.000** | 0.000 | -0.000 | 0.000*** | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| OI | -0.000*** | -0.000 | -0.000 | 0.000 | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| CBI | 0.000*** | 0.000*** | 0.000 | 0.000*** | -0.000*** | 0.000* |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Constant | -0.01695 | 1.21450 | 1.597 | -0.22210* | 0.01957 | -6.24481** |
| | (0.17149) | (2.71473) | (1.066) | (0.12642) | (0.01461) | (2.74988) |
| Observations | 36 | 36 | 36 | 36 | 36 | 36 |
| Bank-Group | 4 | 4 | 4 | 4 | 4 | 4 |
| AR | 0.474 | 0.291 | 0.303 | 0.479 | 0.101 | 0.792 |
| Sargen | 0.237 | 0.872 | 0.404 | 0.776 | 0.747 | 0.439 |
| Hansen | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Notes: The above table reports the determinants of bank performance of India banks for the period 1992-2015 using system GMM. We have used xtbond2 of Roodman's estimator which has advantage over the Stata's build in command xtbond, which gives additional features such as windmeijer correction and orthogonal deviation.

Figures in parentheses are standard error of the estimates. Dep(L) indicates the lagged one period of the dependent variables GMM dynamic model automatically gives the result of AR(1). AR(2), Sargen and Hansen test when we use robust in the equation of GMM . AR(1)and AR(2) test for autocorrelation of the residuals, if AR(2) is having a statistically significant ($< 0.05$) value then the variables are not appropriate instruments for the model. Sargan/Hansen test for over validating of instrument. The higher the p-value of the test is better for the model. *significance at 1 %, **significance at 5 %, ***significance at 10 %

Figure 1: Share of Total Asset According to Bank Group-Wise



Figure 2: Bank-Groupwise Share of Interest Income to Total Asset

**Figure 3: Bank-Groupwise Share of Non-Interest Income to Total Asset**

# Chapter 6

# Summary and Conclusion

## 6.1 Introduction

During last two decades, Indian banking sector has experienced the structural change, in the form of deregulation such as interest rate, regulated credit allocation, entry norms, reduction in pre-emptive reserves and functional autonomy. The main motive behind the deregulation was to make the Indian banking sector competitive, efficient and profitable. The Narasimham committee 1, which was formed in this period, was a landmark in the history of the banking sector. This committee laid down the roadmap for the Indian bank sector for the coming future.

One of the important suggestions of Narasimham committee 1 was to deregulate the entry norms. This norm has helped the private and foreign entity to start their banks in India. By opening up the Indian banking sector for the private and foreign entity, the competition has infused into the banking sector. In the initial years of reforms, there was not much competition in the banking sector because the private banks had started to show their presence in the market. After the second generation reforms (1998) the entry of new private banks has intensified competition in the Indian banking sector. In this course of time the performance of banks has also evolved, initially the public sector banks were holding 89 per cent of total asset of banking sector. In the due course of time the public sector banks started to lose its share to private sector banks. As on March 31$^{st}$, 2015 the share of public sector bank in the total asset has decreased to 72 per cent from 89 per cent and the share of private sector banks started with 4 per cent in 1992 increased to 22 per cent in the liberalization process. Therefore, in the liberalization period among the public sector banks the SBI and its Associates banks are losing their share in the total assets.

In the post liberalization period the performance of the scheduled commercial has increased. During the pre-liberalization period the public sector banks were loaded with the bad assets but in

the post reform period they were able to reduce non-performing asset to total assets. The capital buffer of banks measured in terms of capital adequacy ratio (CRAR) has also increased for majority of nationalized banks and private banks. Except a few nationalized banks, all the other banks are maintaining higher ratio than the Basel III rate of 11.5 per cent. These are the preliminary understanding about how the reform process has helped the Indian banking sector emerge efficient and profitable.

During the regulation period the government used to depend upon the pre-emptive reserves (CRR and SLR) to fill the deficit gaps. During 1991, the pre-emptive reserves reached the peak of 52.5 per cent. The Narasimham Committee 1 recommended for reduction in the CRR reserves from 15 per cent to 5 cent and SLR reserves from 38.5 per cent of net demand and time liabilities of banks. The committee also recommended to pay interest rate on the reserves at the annual rate of deposit rate. This measures helped to bring down CRR to 4 per cent and SLR to 21.5 per to this data. Thus, reduction in the pre-emptive reserves has allowed the banks with extra liquidity which can be effectively used for lending purpose.

Deregulation of interest rate has allowed the banks to set up their own interest rate according to the criteria of RBI. During the pre-reform period the banks used to charge multiple interest rates for multiple purposes to fulfil the goal of social obligation of the government. During the process of reform the government took initiative to bring down the multiple slabs and multiple purposes to the stable level. In this period the interest rate of banks started to decline on lending as well as deposit. RBI is not only looking at the bankers' interest point of view but also at the customer interest point of view. In the course of reform the benefit of reduction in policy variables (repo rate) was not transferred to the customersand the banks used to delay this transmission or wait for larger drop in the policy rate under the base rate system. In order to give the benefit of monetary transmission to customers, the government announced Marginal Cost Fund Lending (MCLR).

The above reforms have set a new benchmark in the history of Indian banking sector. The reforms are moving on par with the world economy. The experience of the developed, the developing and the emerging countries with liberalization has not been quite satisfactory. However, India had good knowledge of the world experience with related to liberalization. The countries which took initiative in the fast phase of liberalization without strong macroeconomic foundation had to face a setback. And this setback not only affected the banking sector but also caused huge burden on the economy. Hence, Indian government decided to follow the "slow and steady" liberalization process which would enable the banks to stand on themselves for competition. Today, the Indian banking sector has emerged as one of the competitive markets in the world.

To understand the impact of reform on the Indian banking sector, the present work is divided into three different levels. In the first level, the study has reviewed different policy of Indian banking sector and given graphical presentation and simple growth rate. In the second level, the study has followed the dynamic panel Generalized Method of Moment suggested by Arellano and Bover (1995) and Blundell and Bond (2000). We have followed system GMM estimator using xtbond2 of Roodman's (2009) estimator than the Stata's in built commandxtbond.This command gives additional features such as windmeijer correction and orthogonal deviation. Therefore, we have used xtbond2 command to construct dynamic panel generalized method of moment to assess the determinants of bank performance for India banks over the period 1992-2015.The same model is applied for two sub-periods to examine the reform process on the bank profitability, stability and credit risk. Further, too see the mean difference among the ownership performance we have use two group mean comparison with unequal variance t- test. In the last stage, we have used above model to assess the determinants of revenue diversification on the profitability, stability and credit risk.

## 6.2 Main Findings

In the preliminary analysis the performance of bank in post-liberalization period has shifted from public sector banks to private and foreign banks. The public sector banks were dominant during the pre-liberalization period because of less competition from the private entity. In the post reform period, after the entry of new private and foreign banks the performance of public sector banks has declined. The private bank has higher average growth in total asset, investments, investments in government securities, higher deposit growth compared to foreign, SBI and its associates and nationalized banks. On the income side the private banks has emerged as winner in the post liberalization period. Thus in the initial investigation private banks are performing better followed by foreign banks, nationalised banks and SBI and associates. In the next chapter, the study tries to evaluate the determinants of bank performance in the post liberalization period encompassing bank specific characteristics, industry specific characteristics and macro-economic variables.

The study for the full sample period (1992-2015) found that in the total sample period the dummy coefficient of SBI and its Associates and private banks is more stable when measured by ZSCORE. Foreignbanks and private banks are able reduce their credit exposure. Income diversification is positive and significant for all banks. Loan Loss Reserve is not significant factor for Indian banks. As non-performing loans increases the banks keep aside more reserves to protect its customer during insolvency. Therefore, a higher reserve is not necessarily a good indicator of profitability and financial stability.

In the first sub-sample period (1992-2005) the study found that the coefficient of SBI and Its Associates banks are more stable than the private banks and foreign banks. The nationalised banks are significant on profitability. In the initial period of liberalization loan to asset ratio was

able to increase the profitability of banks, whereas loan to asset ratio was negative for credit risk means the banks were able earn high profit form lending, but stability indicator was negative. The efficiency level was negatively significant for profitability and financial stability. It may be due to banks were in the mode of expansion. The size is not significant factor for profitability and financial stability. The macroeconomic variable GDP and inflation is significant for profitability and financial stability, whereas interest is significant factor for the profitability and stability of banks. Thus in the pre-liberalization the nationalized banks are profitable and stable. The bank specific characteristics such loan to total asset, macroeconomic variable GDP and Inflation was important factor for the profitability and stability of banks

During the second sub-period (2006-2015) where the policy were at the advanced stage the coefficient of private banks and foreign banks are significant factor for profitability compared to SBI and its associates and nationalised banks. Among the bank specific variable loan to total asset is significant factor profitability and stability. Thus as we found in the preliminary analysis at the initial stage of reform public sector banks were more profitable and stable as the reform process was evolving the private and foreign sector are emerged as profitable.

Further, the study used t-test (two group means comparison test) with unequal variance for the full the sample period. When we run t test to measure the difference between SBI and private sector banks and we found that private banks are significantly difference from sbi and its associated. The measure of difference between SBI and its associates and foreign banks  we found that Sbi are better performer than the foreign banks, whereas, the foreign bank better significantly different in revenue diversification. In the next stage we have run t-test for mean difference between the nationalised bank and private banks. The nationalized banks emerged as a significantly better than private banks, whereas the private banks are better in the area of income diversification and loan loss reserve than the nationalized banks. The same result followed in

comparison with the foreign banks. Thus, t-test mean difference the SBI and Its associates and nationalized banks are better from the private banks and foreign banks.

Finally to understand the impact of revenue diversification on the profitability we use the same methodology. During 1992-2015 the income diversification was significant in enhancing the revenue and decreasing the portfolio risk. Among the non-interest income the commission, exchange and brokerage income are significant in enhancing revenue and reducing the risk. During 1992-2005 the results follow the same as full sample period where income diversification is significantly important for increase in profitability and also to reduce the risk of banks. In the case of CBI is not significant in the first sub sample period. In the first period the ownership is not a significant factor for profitability and stability. During 2006-2015 the DIV and CBI is significant factor to enhance the revenue and reduce the risk. When nationalised banks were taken into the model with private and foreign banks, the nationalised banks is having positively significant on profitability, indicating that the NB was able to reduce risk through risk diversification.

The result based on the

- The first hypothesis is whether the change in the policy has positive impact on the Indian banking sector. The study found that the change in the policy has significant positive effect on the performance of banks.

- The ownership do played an important role in determining the performance of the banks for the total period, but not in the case of subsample period

- Revenue diversification was significant factor for enhancing the profitability and reducing the risk.

On the basis of finding we accept all three hypotheses. Suggesting the during the post liberalization period the performance of bank has increased. Further, the shift from interest income to non-interest income is better to enhance the profitability and reduce the portfolio risk. Therefore, the study supports the view of RBI urging that the public sector bank to generate greater revenue from non-interest income sources to reduce the portfolio risk.

## 6.3 Implications of the study

The present study is very important for the following reason

First, the performance of public sector banks are deteriorating in over given sample period and private sector banks are emerging as important competitor than the foreign banks in the reform period. This clear indicates for the policy makers that deregulation is not influencing the performance of the banks rather decreasing. Thus, study goes with the conventional argument that in the post reform period the private and foreign banks dominants in the banking sector.

Second, size is not a significant factor in our analysis in the total and as well sub period of analysis. It gives indication that running behind to merge banks to convert into one big firm is a important factor for the performance of the banks

Third, the revenue diversification has become important factor or the banks performance. Is showing positive sign in our study suggesting that income diversification enhances the profitability and stability of banks and reduces the portfolio of risk among the banks. Among the non-interest source of income the commission, exchange and brokerage (CBI) income is significant factor for the profitability and stability of the banks. Thus, venturing into CBI is not a wrong choice for the banks to enhance the profit and reduce the risk.

## 6.4 Roadmap for future studies

The present study was limited to bank group-wise to analyse the impact of reforms on the performance of banks. The study further can be extended to bank-wise analyses, where it can give the better results.

Secondly, the study is intra-country analysis, so study was not able construct the reform index, which has done in the case of inter-country analysis. To measure how the reforms has affected the individual ownership

Thirdly, the major banks in India are regional based banks, considering regional concentration of banks the efficiency of study can be enhanced.

Hence considering the above issues, the efficiency of the study can be further improved.

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