2.1. Introduction

This chapter encapsulates the major conclusions and propositions of previous research studies on NPA. The review of literature is utmost important in any research as it offers an explanation for the necessity of the current research initiatives. The asset quality and non-performing assets (NPAs) is debated in many academic literatures across the world. In Indian context, the literature focused mainly on a review of NPA among different bank groups and its management since the post-liberalization period. The review of the literature offered an in-depth view on the treatment of NPA in Indian banking sector over the years. The comparative studies available on NPA helped the researcher to evaluate the incidence of NPA and its management in different economies.

The review is presented in two parts;

2.2. Studies on NPA in Indian context

2.3. Studies on NPA in international context.

The non-performing assets (NPAs) engrossed the attention of researchers in the late 1980’s when the necessity to transform the banking sector was felt in Indian economy. The studies in this period highlighted the shortcomings in
the functioning of the banking sector and stressed the need to incorporate prudential norms for income recognition, asset classification and provisioning. Such analysis and inferences to a great extent helped the researcher in identifying the stages of development in NPA management.

2.2. Studies on NPA in Indian Context

The observations of Gopalakrishnan, T.V. (2004), explained in the research study “Management of Non-Performing Advances” portrayed the severity of NPA on bank’s survival and growth. Assessing the performance of Indian banking, especially the public sector banks (PSBs) during 1993-2001, the author confirmed a significant relationship between NPA and macroeconomic indicators like GDP, Inflation, Index of industrial and Agricultural Production, etc. Based on primary data, the author stressed the need to further enhance existing measures to manage NPA. The findings of the study reiterated that NPA pose significant blow on the balance sheets and profitability of banks and high level of NPAs in bank books is a great risk to bank’s health, stability, viability and soundness.

The above observations were further reiterated by Reddy, B.R. (2004) who compiled 38 research papers presented in National Conference on NPA in Tirupathi during 2000. Using both secondary and primary data, these research articles highlighted the developments in the management of NPA. In summary, these studies identified NPA as a severe threat for the existence and stability of Indian banking and demanded more proactive and curative measures to manage it.

In a similar research on NPA in Indian commercial banks, Jain Vibha (2007) explained that in the early stages, the NPA was mainly contributed by directed lending and significant government intervention. The analytical part evaluated the trend in the movement of NPA during 1997-2003 and concluded
that the root cause of NPA is the inadequate credit risk management system. The author reiterated that the profitability of banks is invariably related to its alertness, operational efficiency, customer orientation, creation of large volumes of performing assets and attainment of optimum level of productivity.

In a descriptive research, Pathak (2009) elucidated the role of asset quality in financial health of banks. Using statistical data, the study explained that NPA is a serious threat to the Indian economy, estimated around 9.8% of GDP at constant prices in 2005. The study detailed the list of banks whose NPA is more than their net worth which posed a significant question on the efficiency of credit risk management.

Apart from explaining a conceptual framework of the NPA, Faizanuddin, Md and Mishra R.K. (2011) examined the dimensional approach of NPA in the banking system in India with special focus on State Bank of India, Patna Circle, Bihar. Findings and inferences based on analysis recommended major changes in the recovery policy, project financing norms, legal aspects and supervision of NPA accounts.

Ghosh., et al (1998) examined the narrow banking in India and asserted that an increased presence of NPA forced banks to select tactics to reduce risk by investing in safe and liquid assets. A major contribution of this study is their finding that even without a directive, narrow banking on the asset side is being practiced as part of the asset-liability management of these banks. It is observed based on the analysis that the narrow banking may expose weak banks to immense market and interest rate risks and thus make it vulnerable to idiosyncratic and systemic risks arising from macroeconomic shocks.

In a comparative study on NPA of Indian Banks with international markets, Deolalkar, G.H. (1998) stated that the increased focus on NPA
particularly after 1991 influenced the risk-taking behavior of banks. The problem of the NPA is handled differently by different countries depending on the politico-economic system under which the banks operate. The author further stated that banks in India holds higher levels of NPA than international markets. The analysis supported the need for an effective asset reconstruction company (AMC) to manage the NPA accounts. The author recommended more autonomy for banks to improve its operational efficiency and to reduce the increased trend of NPA.

In an attempt to examine the presence of high average NPA shares in total bank advances and the higher level of dispersion among banks, Rajaraman., et al (1999) undertook specification tests for the impact of region of operation on domestically-owned banks during 1996-97. The authors based on analysis confirmed that operational environment is an important determinant of bank efficiency. The authors further commented that no sustainable improvement in the performing efficiency of domestic banks is possible without prior improvement in the enforcement environment in difficult regions of the country.

In a descriptive and comparative study Reddy, PK. (2002) assessed NPA management measures in selected Asian countries. The study identified legal impediments, postponement of the problem by the banks to show higher returns and manipulation by the debtors using political influence as major reasons for the high NPA level in Indian banks. All the Asian countries had a weak legal mechanism for asset disposal that prevented early resolution of the problem. The author explained the need to understand the macroeconomic variables and systemic issues pertaining to banks and the economy for solving the NPA problem along with the criticality of a strong legal framework and legislative framework.
In order to examine the presence of variations of NPA within PSBs that are homogenous on ownership dimension, Rajaraman, I. and Vasishtha, G. (2002) applied a panel regression model on the data available on NPA of PSBs for a five year period ending 1999-2000. Twenty seven PSBs were taken for the study. The analysis grouped banks with higher than average NPAs into those explained by poor operating efficiency, and those where the operating indicator does not suffice to explain the high level of NPAs, and leaves an unexplained intercept shift. The results of the study explained that two of the three weak banks identified by the Varma Committee, Indian Bank and United Bank of India, fall in this category. The authors concluded that the recapitalization of banks with operational restructuring is not recommended as a mean to manage NPA in cases where there exists a residual problem even after controlling for operating efficiency.

In a similar research article, Dong, H. (2002) explained that the credit quality is low in PSBs and development finance institutions (DFIs). The study is comparative in nature and drawn conclusions based on the analysis of regional and cross country experiences in dealing with impaired assets during the periods of financial crisis. The study recommended the integration of ARCs as a major tool to manage NPA. The author suggested more operational independence for ARC, changes in the foreclosure laws to speed up the repossession of assets and removal of legislation that tends to protect the defaulting companies, for managing NPA in Indian banking.

In another major research article focused on comparing NPA in Asian markets, Batra, S. (2003) made a significant observation on higher levels of the NPA in Indian banking. The author expressed the view that the most important business implication of the NPAs is that it leads to the credit risk management assuming priority over other aspects of bank’s functioning. The
bank’s whole machinery is pre-occupied with recovery procedures rather than concentrating on expanding the business. The author asserted that NPA in banks cannot be eliminated, but can only be contained; it has to be done not at a heavy cost of provisioning and increasing the portfolio of credit. Based on the data analysis, the author recommended that along with the recovery of NPA accounts, fresh inflow of NPA should be brought down at a level much less than the quantum of its exit.

In a study on NPA and terms of credit of PSBs in India, Ranjan and Dhal (2003) evaluated the effect of terms of credit, bank size induced risk preferences and macroeconomic shocks on NPA of banks. The study based on panel regression models identified that the terms of credit variables exercise a significant effect on the banks NPA in the presence of bank size and induced preferences and macroeconomic shocks. With regard to the terms of credit variables, changes in the cost of credit in terms of expectation of higher interest rate induce a rise in NPAs. The study further identified that variables like the horizon of maturity of credit, better credit culture, favorable macroeconomic and business conditions can lead to lowering NPAs.

In another descriptive study on management of the NPA in institutional agencies, Mohan, B. and Rajesh, K. (2004) pointed out the significant role played by the prudential norms in the management of NPA of commercial banks. The authors recommended for strengthening the Debt Recovery Tribunals (DRTs) to deal with defaulters diligently. The emphasis of this study was mainly on strengthening regulatory measures to manage NPA in Indian banking sector.

In an analytical research article, Das, A., et al (2004) examined the efficiency of Indian Banking in the post liberalization era, during 1997-2003,
using Data Envelopment Analysis (DEA). They underlined that Indian banks in the post liberalization period are not much differentiated in terms of input or output oriented technical efficiency and cost efficiency. Based on statistical analysis, the authors commented that bank size, ownership, and the fact of its being listed on the stock exchange are some factors that have a positive impact on the average profit efficiency and to some extent revenue efficiency scores of banks. The study also recognized that the median efficiency scores of Indian banks in general and of the biggest banks in particular have improved considerably during the post-reform period.

In another descriptive and comparative study titled “Changing Dynamics in Asian Non-Performing Loan”, Vassiliou, L. (2004) evaluated various NPL resolution techniques in Asian countries. The study confirmed that most countries applied techniques like forming AMCs, Corporate Debt Restructuring (CDR) Committee and Securitization to manage the increased level of NPAs. The study highlighted the significant role played by ARC, SARFAESI Act and National Company Law Tribunal in the management NPA.

Naidu, B.R. and Naidu, A.P.S. (2004) assessed the impact of NPA on the profitability of PSBs. The authors identified the diversion of funds as the number one reason for the NPA in the banking sector. The study highlighted that NPA in PSBs is significant, at about 16% of credit portfolio and is reported in excess of international standards. The study recommended amendments of laws relating to recovery of loans and implementation of new strategies to deal with NPA.

In a similar study on management of the NPA in commercial banks, Rao, B. (2004) emphasized the need for more proactive measures to manage NPA of banks. The study used the financial results relating to NPA from 1998-99 to
The study recognized that the alarming level of NPA deteriorated the bank’s profitability and the initiatives taken by RBI such as DRTs, ARCs, CDR and ARF influenced the level of NPA to some extent. Even though the curative measures could able to manage the NPA to some extent, the study holds that the key to successful NPA management is the presence of a sound credit appraisal system to ensure the quality of the loan portfolio.

Khasnobis, S. (2005) in the research article “NPA- An emerging challenge in India” explained that the distribution of the NPA in the Indian banking system followed a 80-20 rule, wherein 20% of borrowers are responsible for 80% of value of impaired assets and vice versa. The study found that the large impaired assets which comprise industrial assets possess good restructuring potential. The small assets, however, have to be put through a recovery process, where the collateral-based financing practice followed by the banking system offers a fair recovery potential. The author recommended speeding up of the recovery process for successful NPA management.

In a theoretical and descriptive research article, Chaudhauri, T. (2005) explained the resolution strategies for maximizing value of NPA in India. Based on literature review, the study concluded that if a resolution strategy for recovery of dues from NPAs is not put in place quickly and efficiently, the impaired assets would deteriorate in value over time and little value would be realized at the end. The study recommended a State - Resolution - Mapping (SRM) framework to maximize recovery of NPA accounts. The literature, however, has not specifically discussed about the various resolution strategies that could be put in place for recovery from NPAs, and in particular, in which situation which strategy should be adopted.
Kakker, R. (2005) studied “Role of Asset Reconstruction Company in NPA Management”. The author stressed the need for management of the NPA by stating that a high level of NPAs severely affects the economy in many ways. The study was concluded by stating that ARC’s with statutory/regulatory powers are likely to emerge as nodal resolution agencies coexisting with CDR mechanisms for management of NPA.

In a study of the determinants of the NPA in Indian PSBs, Biswas and Deb (2005) examined the random and non-random reasons for NPA in PSBs during 1995-2004. The authors underlined the shortfalls of existing system and the existence of a high degree of arbitrariness in defining NPA. A notable contribution of this research study is its conceptualization of random reasons for default in a simplified framework of a Poisson process. The study pointed out that while one set of policies granting greater autonomy to the PSB are proved quite effective in restricting formation fresh NPA, the other set of policies designed to recover loans, after default, has failed to deliver the goods. Finally, the authors concluded that the incidence of the NPA is as much due to the malfunctioning of the banking institutions as due to the external institutional environment.

Basu, P. (2005) in an exploratory study examined India’s banking system with specific focus on a question “How distress is India’s Banking System? Based on the review of major performance indicators during 2000-01 to 2003-04, the author observed that the banking system distress in India is considerable, both in absolute terms and when compared with the distress faced by many of the East African countries on the eve of their crisis. The study reiterated the significant linkage between asset quality and level of NPAs to financial vulnerability in the banking sector. The study recommended various banking reforms, integration of best practices from abroad and the development of capital market to counteract the threat of financial distress.
In a descriptive study, Choksi (2006) viewed that the prudential norms are formulated on the basis of objective criterion rather than on any subjective criterion, to provide a more transparent and vibrant banking sector in the post liberalization era. The study was mainly focused on the various guidelines of RBI on asset classification, prudential norms on income recognition and provision of advances.

In an analytical study on NPA, Shiralashetu and Akash (2006) examined the bank-wise and sector-wise NPA during 2003-04. The authors reported that the priority sector, in particular the SSI sector contributed NPA significantly during the study period. The study underlined that PSBs accounts for 91.07% and private sector banks account for 8.93% of the total NPA of priority sector. Based on the study, the authors recommended improvements in recovery management and credit management to deal with NPAs in the banking sector.

In a descriptive study on reforms and reorganization of banking in India Chakrabarti, R. (2006) discussed the major contemporary issues affecting the banking sector in India. In particular, the study stressed on the nature and effects of interest rate deregulation, public sector bank performance, the nature and management of NPAs, and the new competitive market structure of commercial banking. The author briefed that Indian banking sector is suffering from considerable NPAs in their asset portfolio. The study recommended more transparency in PSBs decisions and subjecting these banks to competitive pressures to accomplish the improvements in their performance rather than selling them lock, stock and barrel to private parties.

In a similar study on management of NPA, Noronha (2006) also stressed the need for managing NPA for a robust banking system. Using statistical information available on NPA and classification of loan assets, the impact of
various measures such as One-time settlement scheme, SARFAESI Act, Lok Adalats, Debt Recovery Tribunals, etc were analyzed. The study asserted that NPA is unavoidable in the banking sector and proper management would lead to curbing them and in turn lead to a healthy growth of the financial sector.

In a descriptive study on NPA in PSB, Reddy. B.K., et al (2006) analyzed trends in NPAs of PSB, its sectoral composition, asset quality diagnosis and the scenario of NPAs at the bank level. The analysis highlighted the gross and net NPA has reduced from 23.2% and 14.5% in 1993-94 to 7.8% and 3.0% respectively during 2003-04. Based on analysis, the study concluded that the quality of the portfolio of the PSB has improved quite impressively due to the effectiveness of various measures initiated by the RBI and Government of India. A major limitation of the study is that it relied heavily on NPA ratios to generate inferences.

In a descriptive study on the effect of the NPA in cooperative banks, Michael., et al (2006) has explained the importance of central co-operative banks in rural development and financial inclusion. The study addressed the threat posed by alarming level of NPA for cooperative banks. The study focused on a theoretical assessment of the effect of NPA on the operational efficiency of Central Co-operative Banks in India. The study suggested the need for effective recovery strategy and prompt, preventive and curative measures to curb the menace of NPA.

John, K. and Philip Thomas (2006) examined the NPA in Indian Banking Sector with a focus on recovery through Debt Recovery Tribunals. The authors commented that the prudential norms introduced into the banking sector helped in reducing the volume of the NPA in the balance sheets of the banks. The study used the all India figures relating to DRT cases during 1996.
to 2005. The analysis revealed a meager recovery through the speedy process of DRT. The authors concluded that the bulk of the NPA in the banking sector remains as an economic cost to the nation. The study is useful as it explains inadequacy of an existing recovery mechanism and the need for streamlining it for better management of NPA.

In an exploratory research on NPA, Chipalkatti and Rishi (2007) examined the behavior of Indian banks in the context of tighter regulatory standards that became effective after 1999. Based on the analysis, the authors observed that "weak" Indian banks - defined by low profitability and low capital ratios camouflaged the magnitude of their gross NPAs in the post-1999 period. The study revealed a disturbing fact; that the true nature of India's bad loan problem is more serious than explained the prior research studies.

In a comparative study on the NPA in Indian Public, Private and Foreign Sector Banks, Vallabh., et al (2007) examined the fundamental factors which impact NPA of banks using an extended Altman model. The model consisted macroeconomic factors and bank-specific parameters. The macroeconomic factors of the model are GDP growth rate and excise duty, and the bank-specific parameters are Credit Deposit Ratio (CDR), loan exposure to priority sectors, Capital Adequacy Ratio (CAR), and liquidity risk. The authors, based on analysis, commented that the NPA movement can be explained well by the factors considered in the model for the public and private sector banks. The other notable observation is that the banks' exposure to priority sector lending reduces the NPA. Even though some of the observations of this study are refutable, the study provided an insight on a few analytical tools that can be widely used in analyzing the asset quality of banks.
In an analytical study on NPA with special reference to State Bank of Hyderabad, Rajendar, K. and Suresh, S. (2007) evaluated the effectiveness of the reform process on the basis of the recommendations of the Narasimham Committee, using statistical data on banks for the period 2000-01 to 2005-06. Inference based on ratio analysis showed a reduction in NPA during the period. The authors pointed out that the better management of the NPA is the result of good recovery and sufficient provisioning for doubtful debts and write-off bad debts.

In a similar study on the impact of NPA on the performance of commercial banks, Aravanam and Vijayakumar (2007) deliberated on the impact of NPA on the performance of banks using statistical data for the period 2000-01 to 2005-06. The authors observed that the level of the NPA is a critical indicator for assessing banks' credit risk, asset quality and efficiency in allocation of resources to productive sectors. Based on the analysis, the study recommended improvements in credit appraisal systems of banks.

Rajendran, K. and Karthikeyan, K. (2007) in their article on NPA explained that the high level of NPA not only affects the overall quality of the loan portfolio but also puts a burden on the income statement of banks in the form of higher provisions. The study reviewed recovery of NPA through various mechanisms like OTS, DRTs, ARCs, SARFAESI Act, etc during 2003-04 to 2005-06. Inference based on analysis revealed a considerable improvement in the management of NPA through the various mechanisms mentioned above. The study suggested the need to consider ‘reduction of NPA’ in the banking sector as a national priority item.

In a descriptive study on NPA in India and China from a public policy perspective Istrate., et al (2007) evaluated three major aspects of the NPA: the
degree of the NPA problem, its causes and the solutions adopted to address the issue. The research provided an insight by classifying the causes for NPA into systematic and situational causes. A notable contribution of this research is about recognizing a proper classification of NPA and its contribution by providing a mix of short-term and long-term remedial measures in dealing with NPA.

Chipalkatti and Rishi (2007) in their research article on “Do Indian Banks understate their bad loans” examined the bank’s behavior in India during the period 1996-2002. Using econometric techniques on 78 banks, the study tested the hypothesis that weaker banks – defined as those with low capital adequacy ratios and low profitability – understate their loan loss provisions and their gross NPA when compared to the earlier period due to the tightening of CAR guidelines and provision norms. Inference based on analysis revealed that the weak banks camouflaged the magnitude of their gross NPA in the post 1999 period. The authors cautioned that the true nature of India’s bad loan problem is more serious than alluded to in various studies.

Ramu, N. (2008) examined the management of the NPA in Urban Cooperative Banks (UCBs) with special reference to 5 UCBs in Tamil Nadu. The author stated that even though the banks played an important role in credit deployment its NPA stood alarming as seen from their gross NPA and net NPA ratios at 23.4% and 12.5% respectively in 2005. Based on the analysis, the authors recommended improvements in the credit management through removing existing deficiencies in the credit appraisal, monitoring and improving the overall lending policies.

In a similar study on NPA in commercial banks with special reference to small scale sector, Rajeev (2008) used various econometric models and
analyzed the level of NPA and its relationship with key performance indicators in Indian banking. Inference based on analysis revealed that rural branches contribute more NPA in SSI sector. Also, the analysis revealed that PSBs have improved their efficiency during 1997-2005 compared to private and foreign banks. Regarding the generation of the NPA, the study pointed out that inadequate funds and higher amounts of accumulated NPAs resulted in the creation of the more NPA in SSI.

Karunakar., *et al* (2008) in a descriptive study on NPA in Indian context observed that the level of NPA depends on how various risks are managed in the business. The study is explanatory in nature and briefed the NPA trends of PSBs from 1992-93 to 2005-06. Based on the study, the authors concluded that the lasting solution to the problem can be achieved only with proper credit assessment and risk management mechanism.

In an analytical study on NPA of banks in India and China, Shanker, D., *et al* (2009) compared the operative performances of the banking institutions, considering the institutional differences in the banking sectors of these two economies. The study utilized non-parametric technique, to assess the efficiency of the banks between 2002 and 2005. Inference based on analysis showed a decline in efficiency of restructured Chinese banks. The findings revealed that two Indian banks, SBI and ICICI, have consistently been shown to be the most efficient banks. The authors attributed efficiency differences to institutional differences in both countries.

In another descriptive study on NPA in PSBs, Jayakumar, A. and Amutha, R. (2009) examined some of the core dimensions in the NPA of PSBs using financial data during 2000 and 2007. A notable observation in this study is that even though statistical data showed a decline in NPA ratio, there has
been a constant increase in NPA of PSBs. The incidence of NPAs is marginally greater in the old private sector banks than PSBs. The study briefed the various reasons and measures to curtail NPA and cautioned that the bank should be vigilant and incorporate various preventive measures to curtail the ever increasing level of NPA.

Basak, A. (2009) in a study on performance appraisal of urban cooperative banks (UCBs) examined the devastating role of NPA on the operational efficiency of UCBs in India. The author analyzed the issue with special reference to Contai Cooperative Bank Limited in West Bengal for the period 1995-96 to 2006-07. The study strongly recommended that the banks should take proactive measures in tackling the alarming level of NPA through an efficient system of credit appraisal and like.

In a similar descriptive study on trends and issues on priority sector advances, Uppal, R.K. (2009) examined the priority sector advances of the public, private and foreign bank groups. The study utilized parameters that include lending to priority sector and targets achieved while lending to priority sector during 2006-07. The author explained that the NPA is significant in PSBs while it was least in foreign bank groups. It is observed that NPA of PSBs has increased because of high priority sector advances. The study contributed valid insights into the issues on priority sector lending and suggested various strategies to sort out these issues.

Rajendar, K. (2009) examined the management of the NPA in PSBs in India using statistics available for 1999-00 to 2006-07. Inference based on analysis showed a decrease in NPA evidenced by net NPA ratios. The findings support various reform measures particularly SARFAESI Act 2002, ARCs, Lok Adalats, One Time Settlement (OTS) and DRTs.
Dash, M.K. and Kabra, G. (2010) examined the determinants of NPA in the Indian Commercial Banks with particular emphasis on the sensitivity of NPA to macroeconomic and bank specific factors in India. The study used regression analysis and a panel data set covering 10 years (1998-99 to 2008-09). The authors explained that both bank specific and macroeconomic factors has impacted the loan portfolio of commercial banks in India. Based on analysis, the study concluded that the commercial banks that are aggressive and charge relatively higher interest rates incurred greater NPAs.

On a similar topic, Debarshi Ghosh, D. and Ghosh, S. (2011) examined the composition, trend and management of NPAs in PSBs. The results of the study indicated an increased CRAR and NPA level during 2009-10. The analysis shared the general view that NPA is still a significant threat that should be managed to improve the efficiency of Indian banking sector.

Misra, B.M. and Dhal, S. (2010) examined the pro-cyclical movement of NPA in PSBs using pooled data regression analysis using 27 banks during 1996-2008. The authors opined that NPAs are influenced by three major sets of factors, i.e., terms of credit, bank specific indicators relating to asset size, credit orientation, financial innovations (non-interest income), and regulatory capital requirement and the business cycle shocks. The authors concluded that the terms of credit variables such as interest rate, maturity, collateral and bank specific variables have a significant effect on the banks’ NPAs in the presence of macroeconomic shocks. The study is significant for policy decision makers since it provides useful insight into the various indicators that should be properly managed to curtail the menace of NPAs.

Thiagarajan, S. and Ramachandran, A. (2011) analyzed the credit risk component of the Indian Banking sector using financial data for the period
2001-2010. In specific terms, the authors examined the use of certain key credit risk ratios to measure the credit risk. Inference based on ratio analysis highlighted a gradual decrease in the ratio of NPA to total loans for both public and private sector banks from 2001 to 2008 and gradual increase from 2009 to 2010. Their findings are consistent with the findings that although a similarity exists in movement of selected ratios, the sector wise comparison showed significant differences among different bank groups.

Chaudhary, K. and Sharma, M. (2011) examined the loan portfolio of Indian PSBs and private sector banks with specific focus on the classification of advances, priority sector and non-priority sector advances, etc. The study was basically concentrated on the structural differences between PSBs and private sector banks. Based on the analysis, the authors recommended integration of modern statistical tools like Value-at-risk analysis and Markov Chain analysis to improve the quality of risk assessment practices. The authors also recommended to incorporate information sharing among the bankers about the credit history of the borrower.

Prasad and Veena, D. (2011) in their study examined the trends and issues relating to the NPA in Indian Banking Sector. Inference based on analysis indicated that the impact of increased recovery on NPA, decline in fresh slippage, sharp increase in gross loans, setting up of ARC, etc helped to present better NPA ratio’s. The authors pointed out that PSBs problems are mainly due to excessive manpower, excessive NPA while private sector banks consolidated themselves through the adoption of latest technology and systems. The study recommended revitalizing the PSBs and incorporating the best practices in operations, technology and management to improve financial performance.
In a comparative study Malyadri, P. and Sirisha, S. (2011) examined the nature of NPAs in PSBs and private sector banks in India. The scope of the study was limited to the analysis of NPAs pertaining to only weaker sections during the period 2004-2010. The inference based on analysis revealed that asset quality of PSBs and private sector banks improved consistently during the study period as reflected in the decline in the ratios such as NPAs as percentage of advances to weaker sections.

Jayasree, M. and Radhika, R. (2011) in their study examined the sector-wise comparison of NPA for the period 2004-05 to 2008-09. The analysis highlighted higher levels of NPA in new private sector banks and foreign banks. The analysis supported the findings that the NPA had a negative impact on net-profit. The significance of this study is in its finding that prudential norms and RBI guidelines, securitizations and changes in law have a positive impact on asset quality of banks.

Siraj, K.K. and Pillai, P.S. (2011) in their study assessed the impact of global financial crisis on NPA of the banking sector. The study measured the annual average growth rate (AAG) of NPA indicators, before and during the financial crisis. The authors confirmed the susceptibility of Indian banking sector to financial crisis citing higher operating expenses, higher provisions, higher additions to the NPA, a reduced CD ratio and deterioration in the asset quality. The study recommended improvements in the management of the loan portfolio to withhold the impact created by the financial crisis.

Poongavanam, S. (2011) examined various literatures on issues, causes and remedial solution to manage NPA in Indian banking sector. The article explained the significant changes in Indian banking during the liberalization period and indicated the need to further enhance measures to manage the NPA.
The author concluded the study stating the need to provide more importance to NPA management and proper remedial solutions.

Thiagarajan, S., et al (2011) in their empirical study examined the determinants of credit risk in the Indian banks. Using econometric models on a panel data at the bank level for 22 PSBs and 15 private sector banks in India for the period 2001-2010, the study elucidated that the lagged NPAs had a strong and statistically significant positive influence on the current NPAs. There is a significant inverse relationship between the GDP and the credit risk for both public and private sector banks. The study revealed that both macroeconomic and bank-specific factors played crucial role in determining the credit risk of the commercial banking sector.

Yadav, M.S. (2011) in the research article on the impact of NPAs on profitability and productivity of PSBs in India, examined various micro variables affecting productivity and efficiency of banks. Using simple linear regression analysis on financial data between 1994-95 to 2005-06, the author explained that the level of the NPAs of PSBs affected fifty percent profitability of the banks and its impact has increased at very large extent with other strategic banking variables. Also, the high coefficient value explained a high degree of variability in productivity and efficiency of PSBs in terms of business per employee and operating profit per employee.

Chaudhary, S. and Singh, S. (2012) examined the impact of post-liberalization banking sector reforms on asset quality of SCBs in India. The objective of the research study was to analyze the impact the reforms on group-wise/year-wise asset quality of public, private and foreign banks in India. The study utilized secondary data on NPA, classification of assets etc for the period 1996-07 to 2009-10 and used statistical tools such as ratio
analysis and ANOVA technique. Based on the analysis, the authors concluded that asset quality has shown a significant improvement over the years in all the groups of the banks. The results of the study supported the role of banking reforms in transforming banks into a strong, stable, profitable and prosperous entities.

Siraj, K.K. and Pillai, P.S. (2012) examined the performance of NPA in Indian banking during post-millennium period. To achieve its stated objectives, the authors utilized bank-group wise performance statistics during post-millennium period up to the period ended 31st December 2011. Using various statistical tools such as AAG rate, correlation and regression study, the study recognized that NPA remains a major threat and the incremental component explained through additions to NPA poses a great question mark on the efficiency of credit risk management practices of banks in India.

The review of literature mentioned above indicated the distressing role of NPAs in banking sector stability and growth. Even though many studies focussed on explaining the trend in the movement of the NPA, the analytical part mostly concentrated on ratio analysis, correlation and regression using a shorter study period. The primary emphasis of these studies was to evaluate the movement of NPA and to check effectiveness of various regulatory measures in managing NPA of banks. The majority of these studies recommended further studies on NPA and the establishment of more proactive and curative measures to manage it. NPA emanates due to various reasons and is influenced by many bank specific and economy specific factors. This relationship which is moderating or mediating in nature is not explained in the literatures. A detailed discussion on NPA during the financial crisis and a comparison between pre-crisis and post-crisis period is not undertaken. Also, the expert feedback on incidence of the NPA and its management is discussed.
in a few studies. The present research addresses the suggestions of previous researches and discusses NPA in detail.

2.3. Studies on NPA in International context

Various studies were conducted in the international context on NPA and its trends. These studies explained various facets of NPA that includes the various reasons behind the accumulation of NPA, the effectiveness of measures taken by the government to reduce NPA, to name a few. Some of the studies focused on specific factors and its impact on increasing or decreasing the level of the NPA in the banking sector.

Herr and Miyazaki (1999) in their research article about the NPA problem in the Japanese banking industry briefed the various problems faced by the banking sector in managing their NPA accounts. Aggressive levels of NPA during 1990s, a tax system that doesn’t provide tax reductions for write offs, increased number of bankruptcies etc., were evident in the Japanese banking sector since 1990. The authors based on literature review rated securitization as an effective way to handle NPAs in the banking industry. The authors also proposed sale of NPA to a jointly established Special Purpose Companies (SPCs) to allow banks to remove NPA from their balance sheets.

Krueger, A. and Tornell, A. (1999) examined the financial crisis in Mexico and the credit crunch and increased level of NPA. The authors explained that the bail out policy adopted in 1995 could not resolve the problem of NPA in the banking sector. Based on the analysis, the authors explained that NPA is unlikely to disappear on their own even under a high growth scenario. The authors called for an alternate strategy under which all NPAs were recognized at once and the fiscal costs were all paid up-front as preferable to solve the issue of the NPA in the banking sector.
Adhikari, R. and Oh Soo Nam (1999) examined the banking sector reforms after the Asian financial crisis. The authors observed that in countries where not only the financial sector, but also the whole process of economic reform is not complete, the banking sector accumulated a huge financial burden. The NPA ratio in Indonesia was estimated around 80%, 60% in Thailand etc. The authors stressed the need for financial sector reforms focused on resolving unviable banks (closure, merger, nationalization), recapitalizing viable banks (capital injection), resolving NPAs (restructuring, rescheduling, sale and swap), revamping the regulatory framework (regulation, supervision, reorganization), strengthen the bank management and credit culture (governance, foreign participation, no political interference) and strengthen the borrower repayment culture (exit laws, repayment of directed credits, reform of corporate sector).

Woo, D. (2000) examined two approaches to resolving NPAs during financial crisis with special focus on the Asian financial crisis that erupted in 1997. The study examined the creation of AMC and the development of out-of-court centralized corporate debt workout framework to manage NPA accounts. Based on literature review, the the author recommended setting up of AMC for financial restructuring and of the out-of-court centralized corporate debt workout framework for corporate restructuring. But the study also cautioned that there are some inherent weaknesses in both of these approaches due to their dependence on government involvement.

Hoshino, Y. (2002) examined the trend in the movement of NPA of Japanese Banks during the period 1996-2001. The authors examined the problems of NPA within Japanese banks from the viewpoint of both economic and accounting aspects. The author observed the existence of some constitutional problems in the banking system such as the convoy system, the
existence of a main bank relationship, and insufficient information disclosures. In the light of analysis, the author recommended; (1) raising the loan rate and developing the new commission rate business, (2) reducing costs such as branch and salary overhead, implementing drastic organizational and asset restructuring, and (3) disposing NPA, and transforming poorly managed banks.

Montreevat, S. and Rajan, R. (2003) examined financial crisis, bank restructuring and foreign bank entry in Thailand. The study focused crisis scenario during 1997-98 and the steps taken for financial sector restructuring. The authors observed that the accumulation of NPA forced banks to develop risk average lending policy. They recommended the setting up of different AMC to manage the increased level of the NPA in the market.

Ralph, K. (2003) in a research study on “selected issues in the treatment of NPAs in macro economic statistics” explained that due to the linkages between loan recognition and interest accrual, and between loan write-offs and operating surplus, the treatment of NPAs significantly impacted the calculation of major aggregates in the national and international economic accounts. Based on statistical analysis, the authors recommended the treatment of loan principal and its valuation, loan interest and the operating surplus. The study is significant as it contributes to the literature on the statistical treatment of NPA in national and international accounts.

Wadman, I. and Peterson, J. (2004) examined the trends in NPAs in Italy and Sweden. They explained the ways in which Sweden and Italy secured their NPAs from three aspects; the market, legal and financial aspect. The results of the study highlighted historic actions of the government, credit culture and management decisions to be crucial causes for the spread of the NPA. While
the Swedish legal system allowed banks to secure their own defaulted loans in a fast and efficient way, the Italian is more unwieldy and doesn’t give the banks any incentive to work out their NPA. The results also showed the necessity to adopt mechanisms that best adapt to the environment in which the bank exists.

Shih, V. (2004) examined the political constraints and financial policies in China dealing with NPAs. The study is conducted in the wake of political distress on account of the stagnation of economic reforms and higher levels of NPAs in the banking sector. The author evaluated the opinion that the politicians make policies based on both political and economic considerations. The framework is tested on three cases related to China’s NPAs problem: the politicization of the NPAs problem, policies designed to slow the creation of NPAs and policies aimed at decreasing the pool of NPAs. The findings strongly supported the role of political considerations in shaping financial policies in China.

Zuniga, J.D. and Espenilla, N.A. (2004) examined the trends and development in insolvency and risk management in the Philippines. Using statistics for the period 1999-2004, the study explained the risk management practices of the Philippines and the measures taken by regulatory authorities to curb NPA. They concluded the study stating that asset quality improvement using measures such as intensified collection efforts, restructuring, foreclosures and the sale of NPA reflected in the easing of NPA and NPA ratios.

need to spend more resources than private banks to cut their NPA. Both bank groups followed a similar trend the study period. Compared to those established before deregulation, banks established after deregulation required almost twice as many resources in order to reduce one unit of NPA. The study also found that NPA shadow prices increased over time for old banks, but decreased over time for new banks. It is recommended based on the study that Taiwan’s commercial banks on average could increase their technical efficiencies provided that all banks operated on the production frontier.

In a descriptive research paper, He, D. (2004) examined the role of the AMC in resolving NPA in the Republic of Korea during 1997-98 financial crises. The author emphasized the role of the NPA in the financial crisis. The author argued that the development of a market for distressed assets was critical to Korea’s success in resolving NPA. Using statistical data analysis, the study explained that AMC incentive to dispose of NPA rapidly was conditioned by a strong desire on the part of the Korean society for a quick recovery of public funds injected for financial sector restructuring. The study listed the various NPA resolution techniques that include international bidding, ABS issuance, foreclosure and public auction, etc. The study concluded by emphasizing the role of the AMC in managing the NPA in the banking sector.

In an analytical study on the relationship between bank ownership and NPA with special focus on Taiwanese banks, Hu, J.L., et al (2004) utilized statistical data of 40 Taiwanese commercial banks during 1996-1999. The analysis revealed that the rate of NPA decreases when government shareholding in a bank goes higher up to 63.51 percent, while thereafter it increases. The study also found that the banks’ sizes are negatively related to the rate of NPA. The revenue source diversification cannot effectively reduce the rate of NPA. Another notable finding of the study is that banks established
after deregulation, in average, have lower rates of NPA than those established before deregulation.

In a similar study, Xu Min (2005) examined the resolution of NPA in China. The alarming level of NPA, despite the economic growth of the nation, was the focus point of the study. Using ratio analysis the study asserted that NPA resolution progress is not satisfactory because of the bulk disposal which requires regulatory approval. The results of the study recommended further strengthening of the legal and regulatory framework that includes implementation of securitization law, the acceleration of the transfer process from banks to AMC and provision for banks to sell NPA below book value to third parties.

In order to validate the research question “Do high levels of problem loans usually seen as a signal of the financial distress of a bank necessarily imply bank’s inefficiency? Dongili, P. and Zago, A. (2005) examined the relationship between bad loans and efficiency in Italian banks during the period 1998-2003. Using a directional output distance function, the study found a strong correlation between the NPA and economic efficiency of banks. The results of the study showed that once problem loans are taken into account, the economic efficiency of banks increases significantly, suggesting that a significant aspect of banking production, credit quality, needs to be considered when evaluating banks’ performances.

Ahtialan, P. (2005) developed a model to study the bank lending behavior in the presence of customer-specific capital and the critical nature of the loan decision. It is shown that the bank is in a corner solution with respect to its best customers, and other customers often have an incentive to get to a corner. The author argued that it can be optimal to extend loans to (present and
expected future) good customers at an interest rate loss. A rationed customer with a concave enough probability function can receive a larger loan by asking for less. The study is useful as it provides insight into the developing relationship between bank lending and interest rate, differentiated for type of customers.

With a view to examine the macroeconomic implications of the NPA in Sub-Saharan Africa, Fifack, H. (2005) investigated the leading causes of NPA during the economic and banking crises in the 1990s. Using correlation and causality analysis based on data drawn from 16 African countries for the period 1993-2002, the study highlighted strong causality between loans and economic growth, real exchange rate appreciation, the real interest rate, net interest margins and interbank loans. The results of the study showed that macroeconomic stability and economic growth are associated with a declining level of NPA; whereas adverse macroeconomic shocks coupled with the higher cost of capital and lower interest margins are associated with a rising scope of NPA.

In a similar study, Loi (2006) analyzed the NPA problem in Vietnam Banking Industry. The literature explained that the accumulation of the NPA in Vietnam banks is mainly due to the policy driven lending practices and insufficient or limited credit assessment skills. The resolution of the NPA is found difficult on account of the inadequate legal framework, lack of reliable information, limited methods to resolve NPAs and non availability of second buyers even though there exists a state owned AMC. Some of the measures initiated by the government which were found effective includes creation AMCs, legal and institutional developments and creation of separate bank to undertake directed and policy lending activities, and autonomy for banks to decide on lending and remarkable changes in banking regulations pertaining to
capital adequacy and safety requirements and loan classifications and loan loss provisioning. It may be observed that similar structural reforms were projected in India as well by the various committees’ reports formed after financial liberalization movement in 1991.

Chang (2006) examined the role of the NPA and Capital Adequacy in banking structure and competition with special reference to Korean banking industry. The empirical analysis used unique data set of the entire commercial banking sector in Korea, which covers both pre and post banking crisis periods over 28 years between 1976 and 2003. The researcher through using empirical studies highlighted that the change from price cap regulation to rate of return regulation impacted the banking structure.

With a view to assist the policy makers in developing measures to combat NPA, Lancaster, J. (2006) studied the NPA management in Bank for Agriculture and Agricultural Cooperative (BAAC), Thailand. Using population study and financial data obtained for the period 2000 to 2003, the study deployed regression analysis to determine how the non-performing loan ratio of BAAC branches can be explained by the debt suspension program implementation and the average loan of customers. Based on the result of five multiple regression analysis tests, the study found that debt suspension program has negative impact on the NPA ratio while and average loan has a positive impact on the NPA ratio in the area with highest income only. Expansion of the loan amount should go together with the expansion of number of borrowers. There is no evidence suggesting that lower average loan (higher depth of outreach) would contribute to higher NPA ratio.

Rottke B and Gentgen, J. (2006) examined the workout management of NPA with special reference to German NPA market. Specifically, the authors
reviewed two approaches for NPA resolution (1) a workout solution of NPA in their own workout department (integrative approach) and (2) the option of outsourcing the workout to a third party. Based on the assumption of transaction cost economics, the authors found that the specificity of the investment of the workout manager (and also the bank) is crucial for the decision of integrating or disintegrating the workout of real estate loans. The study revealed that the bank and the workout manager both under-invest in integration and disintegration scenarios. However, if the degree of specificity of the investments is equal, non-integration is superior to integration. Forward integration is superior to non-integration, if the bank’s investment is more specific than the workout manager’s investment.

In order to study the significance of the NPA in Bangladesh banking sector, Adhikary, B.K. (2007) examined the behavior of NPA statistics during the period 2000-2005. The results of the study highlighted the presence of the alarming level of NPA in both Nationalized Commercial Banks and in the Development Financial Institutions. The results of the analysis revealed that poor enforcement of laws relating to settlement of NPA, followed by insufficient debt recovery measures on the part of the banks, has aggravated the financial malaise. The study suggested prevention of the ‘flow problem of bad loans’ accompanied by other resolution measures to sort out the NPA mess in Bangladesh.

In a similar study, Ferguson, P. (2007) examined Securitization of NPA in Russia. The analysis revealed that the securitization of the bad loans has not occurred in Russia at anticipated levels because of legal and regulatory impediments that have discouraged investors and lenders alike. The study is significant as it highlights the legal and regulatory impediments while combating the problem of NPA in different markets.
In a descriptive study on the strength of the banking sector in East Asia, Turnert, P. (2007) examined whether Asian Financial Crisis stimulated structural changes in banking practices. The author based on literature identified NPA and poor risk management practices as major factors that contributed to bank failures during the crisis period. The author analyzed various East Asian markets including Indonesia, Malaysia, South Korea, Philippines, etc. The results of the study highlighted major structural changes in the banking sector in some countries. Based on the study, the author suggested that increased government control, poor risk management practices, quality of public information, NPA and quality of loan portfolio, etc. were some areas that banks and regulatory authorities shall concentrate to avoid banking failures in future.

In an attempt to study the determinants of NPA and its relationship with various macroeconomic variables, Vallcorba, M. and Delgado, J. (2007) examined the determinants of the NPA in Uruguayan banks. The results of the study indicated the existence of a relationship between NPA ratio and variation of wages measured in dollars and interest rates. The study concluded that lower wages and higher rates lead to a higher default ratio in the long term. This conclusion emphasized the importance of the exchange-rate risk over the credit risk in such economies with dollarized banking systems.

Chaffai, M.E., et al (2007) conducted a study on the price of bad loans, using a database of 2154 banks located in 29 emerging countries during 1996-2000. These banks were selected from Eastern Europe, Asia and Latin-America. To study the objective, the authors estimated a logit model of bank failure where NPL shadow price is introduced as one exogenous variable among other variables such as the bank’s size, equity and temporal dummies. The estimation function used in the study enabled the researchers to derive the
shadow price of bad loans. The results of the study showed that the NPA shadow prices serve as an indicator of the bank’s absolute level of credit risk. In particular, it is found using a logit model that bad loans estimated shadow prices are a good predictor of banks’ risk of failure.

In a similar study on NPA and productivity in Chinese banks, Matthews, K., et al (2007) examined the productivity growth of the nationwide banks of China over the ten years to 2006. In this study, the authors considered NPA as an undesirable output and addressed the problem of inference inherent in the use of DEA as a measure of relative performance. Based on the analysis, the study found that the average productivity of the Chinese banks improved modestly over the selected period. Adjusting for the quality of loans, by treating NPA as an undesirable output, the average productivity growth of the state-owned banks was zero or negative while the productivity of the joint-stock banks was markedly higher.

In another descriptive study on NPA in German banking sector, Nico, B.R. and Julia, G. (2008) examined workout management of NPA using a formal model based on transaction cost economics. The authors approached the NPA problem from an academic standpoint, integrating both the banking and the real estate perspective. The results of the study indicated that the specificity of the investment of the workout manager (and also the bank) is crucial for the decision of integrating or disintegrating the workout of real estate loans. The degree of specificity required to perform the workout tasks is dependent on the status of underlying credit engagement and the characteristics of the collateral (the real estate).

Suzuki, Miah and Yuan (2008) examined China’s Non Performing Loan Crisis and the role of economic rents. The authors in their study applied the
financial restraint model as the analytical framework and argue that failure to create sufficient economic rents is the chief reason underlying the dismal performance of banks. The results of the study indicate that while the formal financial system is less important than the informal system—especially for financing the private enterprises that are playing a crucial role in economic growth—not addressing the NPA crisis in the formal financial system will likely invite an economic slow-down.

Boudriga, A., et al (2009) examined the bank specific and institutional environment determinants of NPA with special focus on MENA countries. Using a sample study on 46 banks in 12 countries over the period 2002-2006, the study employed random-effects panel regression model that controls for cluster effects at the country level. The study found that bank specific factors that include foreign participation coming from developed countries, high credit growth, and loan loss provisions reduce the NPA level. However, highly capitalized banks experience high levels of credit exposure. Credit quality of banks is also positively affected by the relevance of the information published by public and private bureaus.

Boudriga, A., et al (2009) examined the relationship between bank supervision and its impact on NPA. The study employed aggregate banking, financial, economic and legal environment data for a panel of 59 countries during 2002-2006. The results of the study indicated that higher capital adequacy ratio and prudent provisioning policy reduce the level of problem loans. The findings do not support the view that market discipline leads to better economic outcomes and reduce the level of problem loans. The study is useful for regulators, bankers and investors as well. To reduce credit risk exposure, the effective way to do it is through enhancing the legal system,
strengthening institutions and increasing transparency and democracy, rather than focusing only on regulatory and supervisory issues.

In a similar study, Maggi, B. and Guida, M. (2009) attempted to model NPA probability in the commercial banking system with special focus on banks in Italy. The database for the study included a panel across two years (2003 and 2004). The results of the study indicated that traditional efficiency indicators of cost elasticity do not fit properly with the problem and proposed a measure based on the costs for managing and monitoring the loans which, according to the related density function, is effective. The study recommended for further study since the probability of an uncertain loan to become non performing is extremely costly for the banking system across the world.

In another significant study on the role of the AMC in the management of NPA, Haibo, K., et al (2010) examined the NPA that is disposed through AMC with Collateralized Debt Obligations Disposal. The research paper utilized Monte Carlo method to explore the role of AMC in non performing assets CDO pricing. The results of the study provided a theoretical guidance and technical support for the research of AMC non performing asset disposal with CDO in China.

Somoye, R.O.C. (2010) in the study ‘The variation of risks on non performing loans on bank performance in Nigeria’ examined the performance of banks within the context of non performing loans. The NPA in a bank’s portfolio is assessed using a sample study of 15 banks selected from the total 24 banks. The study used audited financial statements and applied tools like multiple regression model of Ordinary Least Square (OLS) method, correlation coefficient and Student’t’ distribution. The results showed that earnings risk is most prevalent in explaining the variations in NPA
followed by interest rate risk and monetary rate. The study recommended an efficient loan appraisal technique consisting of conventional investment analysis and risk measurements. The study also recommended that the credit policy must be in line with the institutional objectives. The Basel accords according the author need to be reviewed in the light of financial crunch of 2007.

Espinoza, R. and Prasad, A. (2010) examined NPA in the GCC banking system and their macroeconomic systems. The study was first of its kind in the region, and investigated the effect of global financial crisis on NPA. The study estimated a macroeconomic panel VAR in order to discuss the potential feedback effects of bank performance on the supply of credit and growth. The results of the study highlighted a strong and significant inverse relationship between real (non-oil) GDP and nonperforming loans. Among bank control factors, efficiency and past expansion of the balance sheet were found to be significant. The authors suggested that in the context of their exchange rate pegs, a stronger focus on macro prudential regulation, particularly through capital and liquidity buffers, and countercyclical provisioning, could help mitigate the impact of macroeconomic risks to the banking system and the feedback effects of credit risks in the economy.

Bologna, P and Prasad A (2010) examined the Oman banking sector resilience in the context of global financial crisis during 2007-09. The exposure to the Oman banking sector towards various types of risk is also assessed in this report. The study found that the deterioration in credit quality is relatively limited and the coverage provided by the loan loss reserves remains adequate. The study highlights the relatively less exposure of Oman banks to NPA due to the higher rates of provisions provided every year.

Aremu, O.S., et al (2010) in their study “effective credit processing and administration as a panacea for NPA in Nigerian Banking System” addressed
the threat of NPA emphasizing that the NPA creates nightmare for not only the borrower and lender, but also poses a serious setback to the economy. The study is undertaken for the period 2003-2009. The results of the study refuted earlier suggestions to increase the loan loss provisions to manage NPA since it as it jeopardizes the profitability of the banks in the country. The authors based on the study recommended improvements in credit administration, adequate segregation of duties in credit administration, effective internal controls, religious compliance with policies and transparency in credit administration to maintain credit administration more transparent and effective.

In order to examine the relationship between bank efficiency and NPA with special reference to Malaysia and Singapore, Abd Karim, M.Z., et al (2010) examined the cost efficiency using the stochastic cost frontier approach assuming normal-gamma efficiency distribution model proposed by Greene (1990). The cost efficiency scores were then used in the second stage Tobit simultaneous equation regression to determine the effect of non-performing loans on bank efficiency. Inference based on analysis showed that there exists no significant difference in cost efficiency between banks in Singapore and Malaysia, although banks in Singapore exhibit a higher average cost efficiency score. Based on the Tobit simultaneous equation regression results, the study explained that higher NPA reduces cost efficiency. The result also supports the hypothesis of bad management proposed by Berger and DeYoung (1992) that poor management in the banking institutions results in bad quality loans, and therefore, escalates the level of NPA.

In order to study the role of interest rate spread on NPA, Collins, NJ and Wanjau, K., (2010) examined the relationship between the effects of interest rate spread on the level of NPA in the Kenyan banking sector. The study adopted a descriptive research design on a sample of all commercial banks in Kenya. The
The results of the study indicated that interest rate spread affects performing assets in banks as it increases the cost of loans charged to the borrowers. Regulations on interest rates have far-reaching effects on assets non-performance, for such regulations determine the interest rate spread in banks and also help mitigate moral hazards incidental to NPAs. The study recommended charging an interest rate based on client assessment to improve performing assets in banks. Otherwise, an ineffective interest rate policy may increase the level of interest rates and consequently the NPA.

In order to examine the macroeconomic and bank-specific determinants of the NPA in Greece, Louzis, D.P., et al. (2010) employed dynamic panel data methods using financial data on 9 leading commercial banks in Greek, from 2003 to 2009. Inference based on analysis revealed that the NPA in the Greek banking system can be explained mainly by macroeconomic variables (GDP, unemployment, interest rates, public debt) and management quality. It is also found that bank-specific variables such as performance and efficiency possess additional explanatory power when added into the baseline model thus providing support to the ‘bad management’ hypothesis, linking these indicators to the quality of management.

Siraj, K.K. (2010) undertook a study on banking sector in the Sultanate of Oman, with special focus on the effect of global financial crisis on the Oman banking sector. The study used banking performance indicators for the period 2007-09. Based on the analysis, the study concluded that the banks in Oman were not affected by the global financial crisis due to a sound credit management mechanism and less exposure to the international financial system.

utilized five economic and financial factors to examine their impacts on the increasing NPA. The study employed NPA statistics of 13 banks and applied descriptive statistics and multicollinearity test, cluster analysis and panel data analysis. The results of the analysis showed that financial deregulation, soundness of bank management, and changes in land prices have significant impact on financial instability in Taiwan. The study recommended strong banking regulations and supervision, strengthening the efficiency of bank management and improving the quality of loans and asset portfolios by reducing the dependency on land-secured loans to reduce NPA of banks.

In a comparative study on NPA and financial soundness, Shajari, P and Shajari, H. (2010) examined the relationship between financial soundness indicators (asset quality, capital adequacy and profitability) and key macroeconomic, bank-specific, and structural variables. The authors in their study utilized financial data from 1979 to 2009 and applied a combination of reduce form model of Jimenez and Sausina (2005) and also the approach adopted by Demirguc Kunt and Huizinga (2010). The results of the study confirmed that asset quality and capital adequacy are influenced by the business cycle. Lending interest rate has a negative effect on asset quality. Capital adequacy is affected by short term deposit interest rate and changes in the exchange rate. Profitability fluctuates with the inflation rate and NPA ratio. Beside the macroeconomic variables, the study identified management instability as one of the important determinants of the asset quality in Iran’s banking system.

Tracey, M. (2011) examined the impact of NPA on Loan Growth using an econometric case study of Jamaica and Trinidad and Tobago. To undertake the study, the author utilized banking statistics from Bank of Jamaica, the Central Bank of Trinidad and Tobago The study estimated the threshold range
for the Loan-NPL relationship using regression analysis for two Caribbean countries. The results of the study suggested a threshold range for NPA as determining differential loan behavior of banks. An implication of the study is the inference drawn which highlight that bank lending behavior could restrain economic activity, especially in periods of stress when NPA is high.

Adebolaa, S.S. *et al* (2011) examined the determinants of the NPA in Islamic banking in Malaysia for the period 2007 to 2009. The authors utilized the ratio of NPA to the total financing in Islamic banks to measure the extent of the NPA in Malaysia. The study employed ARDL of Pesaran and Shin (1999) and Pesaran et al. (2001) to examine the effects of some macroeconomic variables which include industrial production index, interest rate and producer price index. The results of the study indicated two long run relationship among the variables and noted that the interest rate has significant positive long run impact on NPA. Industrial production index turns out with a positive but an insignificant sign. The results reflected the popular belief that the Islamic banking system in Malaysia is not fully motivated by profit and loss mechanism, as the impact of interest rate is stronger relative to productivity. The producer price index appeared to have a negative and significant impact on NPA.

Abel, E.E. (2011) examined the asset quality and identified the major determinants of bank asset quality in an era of regulation-induced industry consolidation, in a case study on Nigerian banking sector. The study selected panel data from 19 out of a total of 25 banks operating in Nigeria. A multivariate constant coefficient regression model is adopted as the estimation technique. Based on the analysis, it is found that deterioration in asset quality and increased credit crisis in the Nigerian banking industry between the periods 2004 and 2008 were exacerbated by the inability of banks to optimally
use their huge asset capacity to enhance their earnings profiles. The results showed excess liquidity syndrome and relatively huge capital bases fueled reckless lending by banks; and that increase in the level of unsecured credits in banks' portfolios ironically helped to mitigate the level of NPA.

Nkusu, M. (2011) examined the link between NPA and macroeconomic performance using a sample of 26 advanced countries that spans the period from 1998 to 2009. The study addressed two empirical questions on the NPA and macro financial vulnerabilities: the question of the determinants of the NPA and that of the interactions between the NPA and economic performance. The analysis showed that provisioning for bad loans can make a difference on banks’ ability to withstand adverse shocks to the quality of their loan portfolio and their ability to continue lending after such shocks. The study recommended that even though NPA remain a permanent feature of banks’ balance sheets, policies and reforms should be geared to avoiding sharp increases that set into motion the adverse feedback loop between macroeconomic and financial shocks. In this regard, preventing excessive risk-taking during upturns through adequate macro prudential regulations is the first best.

Olweny, T. and Shipho, T.M. (2011) examined the impact of bank-specific factors like capital adequacy, asset quality, liquidity, and operational cost efficiency and income diversification on the profitability of commercial banks in Kenya. The study used financial statements of 38 Kenyan banks for the period 2002-08 and applied regression method to evaluate the objectives. The results of the study showed that all bank specific factors had a statistically significant impact on profitability, while none of the market factors had a significant impact. Based on the findings the study, the authors recommended policies that would encourage revenue diversification, reduce operational costs, minimize credit risk and encourage banks to minimize their liquidity holdings.
Zeng, S. (2012) applied a dynamic model to study the NPA of banks in China. The author attempted to find: 1) the Hamiltonian multiplier of the bank NPA growth rate in the model which expresses the rate of change in NPA over time with respect to the NPAs, 2) a model that demonstrates the equilibrium value of the saddle point of the bank NPA; 3) a model explaining the NPA phenomenon in the Chinese banking system—mainly the state owned banks. 4) A test of hypothesis: the equilibrium value of the bank NPLs is dependent on micro-economic factors under the circumstances of macro-economic factors. The results of the study identified a significant decline in NPA of state owned banks, mainly due to the setting up of AMCs, implementation of new policies, etc. The results of the study also stressed the need to strengthen banks’ internal management effort must be enhanced.

In an analytical study, Klein, N (2013) investigated the significant linkages between macroeconomic conditions, bank specific factors on incidence of NPA, with special focus on Central, Eastern and South-Eastern Europe in the period of 1998–2011. The panel VAR analysis broadly confirms the existence of strong macro-financial linkages. In particular, the impulse response functions revealed that a positive shock to GDP growth and credit (as a ratio of GDP) contributes to the reduction of NPA while a higher inflation leads to higher NPAs. In addition, other things being equal, a positive shock (increase) to NPA ratio leads to a contraction of credit-to-GDP ratio and real GDP and to a higher unemployment rate.

In the international context, studies on NPA mainly focused on identifying the trend and the reasons for the incidence of NPA and its interaction with various performance indicators. The studies also contributed significantly towards implementing new measures to manage NPA in post-crisis (Asian financial crisis) period.
2.4. Conclusion

Review of literature on NPA in Indian and international context revealed the complexity of the NPA to the development and growth of banking across the world. The studies in general compared NPA and its incidence and suggested various measures to mitigate the risk of NPA and reduce to the minimum possible level. Many of the suggestions put forward in the literature are common and may be classified into two (1) strengthening the credit risk management system, and (2) changes in regulatory measures. These measures are significant and help banks to improve the quality of asset portfolio and recover NPA accounts at the earliest.

Many of the measures stated in the literature were implemented in the Indian banking sector. Still the level of NPA is alarming and its fluctuations during financial crisis are really a reason to worry about. Hence a further research on NPA in banking is required.