
CONCEPTUAL FRAMEWORK OF NON-PERFORMING ASSETS (NPA)

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ABSTRACT

The banking sector serves as the lifeblood of a modern economy. Yet, for decades, the Indian financial system has grappled with the debilitating pathology of Non-Performing Assets (NPAs) and the "Twin Balance Sheet" problem. This dissertation provides a comprehensive legal assessment of the evolution, efficacy, and future trajectory of NPA resolution mechanisms in India, tracing the jurisprudential shift from the "debtor-in-possession" model of the *Sick Industrial Companies Act (SICA)* to the transformative "creditor-in-control" regime introduced by the *Insolvency and Bankruptcy Code (IBC), 2016*.

Using a Doctrinal Legal Research Methodology, this study analyses the constitutional validity and operational challenges of key statutes, specifically the SARFAESI Act, 2002, and the IBC, through landmark judicial pronouncements such as *Mardia Chemicals* and *Innoventive Industries*. The research critically evaluates the "Twin Implementation Deficit" of judicial delays and administrative inertia, noting that while the legislative framework has matured, the adjudicatory infrastructure remains a bottleneck.

Empirical analysis covering the period from 2010 to 2025 reveals that the Gross NPA ratio of Scheduled Commercial Banks has declined from a peak of 11.2% in 2018 to a multi-decadal low of approximately 2.2% in 2025. The study identifies the IBC as the dominant resolution channel, accounting for 52.4% of total recoveries in 2024-25, significantly outperforming legacy mechanisms like Debt Recovery Tribunals (DRTs). However, the research highlights a critical "two-speed" recovery system in which secured corporate debt is resolved efficiently, whereas unsecured retail debt lacks an expedited recovery mechanism.

Furthermore, this dissertation bridges a significant gap in the existing literature by examining the role of Technology Transfer and foreign direct investment (FDI) in asset resolution. It explores how global capital flows and the operationalisation of the National Asset Reconstruction Company

Ltd (NARCL) have facilitated the cleanup of Public Sector Bank balance sheets. The study also investigates the integration of Artificial Intelligence and "Early Warning Systems" (EWS) in shifting the paradigm from reactive resolution to proactive prevention.

Keywords: Non-Performing Assets (NPA), Insolvency and Bankruptcy Code (IBC), SARFAESI, Judicial Delay, Technology Transfer, NARCL, Banking Law.

INTRODUCTION

1.1 Introduction and Overview

The banking industry functions as the backbone of an economy of modern times, helping to create capital, supply liquidity, and allocate resources efficiently among different sectors of production. Considering that of a developing economy like India, the stability and efficiency of the banking system is crucial for the country to maintain its impressive rates of economic growth and promote financial inclusiveness, the build-up of Non-Performing Assets (NPAs) has been the most significant stumbling block. This problem of "twin balance sheet" is such that both the banking sector and the corporate sector suffer from crippling financial distress. The present chapter discusses the theoretical aspects of the topic along with an extensive review of literature on the topic.

It may be said that the journey of the Indian banking system, especially during the post-liberalization period since the early nineties, has been marked by the cyclical build-up of stressed loans. It would be correct to mention that the occurrence of NPAs is not simply a case of bookkeeping errors or mere fluctuations; rather, these indicate deep-rooted problems existing within the system for decades now. As pointed out by the Reserve Bank of India (RBI) and different studies, it may be seen that the gross NPA ratio of Scheduled Commercial Banks (SCBs) reached a high of 11.2% in 2018, and then there was a downward trend to about 3.9% in 2023-24.¹

The chapter is organized in such a manner that a thorough discussion of the topic is provided. It starts with a detailed conceptual explanation of NPAs through an examination of IRAC as laid out by the Reserve Bank of India (RBI). The chapter proceeds to discuss in detail the

¹ Reserve Bank of India, *Report on Trend and Progress of Banking in India 2023-24* (Reserve Bank of India, Mumbai, 2024); Abhiman Das, "Drivers of NPAs in Indian Banks: An Empirical Analysis of Bank-Specific Factors", *Journal of Asian Economics* (2024).

theoretical foundation of credit risk and asset quality, especially in terms of the factors contributing to defaults both at the macro and micro levels. A considerable amount of the literature review section addresses the evolution of banking reform, particularly the landmark recommendations of the Narasimham Committees (I & II), which foundation for modern banking regulation in India.² Further, there is an attempt made in this chapter to critically evaluate the researches conducted empirically in relation to the connection between NPA, reduction in GDP growth rate, failure of credit appraisal process, and resolution of distressed companies through ARCs and IBC. Finally, this chapter brings out the missing aspect in existing literature in relation to “transfer of technology” and operational restructuring as compared to financial restructuring in handling stressed asset situations, which will lead to the main research question of the dissertation.³

1.2 The Anatomy of Non-Performing Assets

In order to understand the significance of the NPA issue, it is essential to have a clear understanding of what an NPA means under the regulations of India. The definition of NPA has undergone a change from its earlier connotations such as “sticky advances” and “bad debts” to the current one which is more specific, time-bound, and conforms to international standards.

1.2.1 Evolution of Prudential Norms (IRAC)

However, before India introduced the financial sector reforms in the early 1990s, India's banking system existed under an accounting framework whereby the recognition of income was subjective and followed the concept of accrued income irrespective of realisation. It created a scenario where banks could inflate their bottom line through the recognition of interest income even without receiving the money.⁴ The coming of the Prudential Norms on IRAC brought about a paradigm shift. The norms made it compulsory that income earned from NPAs would no longer be accounted for on the basis of the accrual method but rather should only be recognized once it was received.⁵

² Government of India, *Report of the Committee on the Financial System* (Ministry of Finance, New Delhi, 1991); Government of India, *Report of the Committee on Banking Sector Reforms* (Ministry of Finance, New Delhi, 1998).

³ Khurana & Khurana, "Valuation of Intangible Assets in Insolvency Proceedings", available at: <https://www.iiprd.com/valuation-of-intangible-assets-in-insolvency-proceedings/> (last visited Jan. 15, 2026).

⁴ Meenakshi Rajeev and H.P. Mahesh, "Banking Sector Reforms and NPA: A Study of Indian Commercial Banks", Working Paper 252 (Institute for Social and Economic Change, Bangalore, 2010).

⁵ *Supra* note 2.

As per the Reserve Bank of India's Master Circulars, an asset, including a lease asset, is considered to be non-performing when it stops yielding any earning for the bank.⁶ The turning point in Indian banking was when subjective approach was replaced by an objective approach depending upon the record of recovery and not the security available.

Current IRAC norms stipulate that a loan or advance is classified as an NPA if:

1. **Loans to Term Borrowers:** The interest payment and/or repayment of the loan outstanding is overdue for more than 90 days. This benchmark of 90 days has been introduced in phases, starting from four quarters (180 days), as per the recommendation of the Narasimham Committee (1991), to reach the present benchmark of 90 days.⁷
2. **OD / CC:** The account remains 'out of order'. When an account is said to be out of order, it is because the outstanding balance is always more than the sanction limit / drawing power. In addition, when the outstanding balance is within the limit but there are no credits for 90 days from the balance sheet date, then the account is said to be out of order.
3. **Bills Purchased/Discounted:** The bill remains overdue for a period of more than 90 days.
4. **Agricultural Innovations:** This definition takes into consideration the crop cycle due to the cyclic pattern of agriculture cash flows. In the case of short-term crops, if the principal or interest instalment is not paid for two crop cycles, then the loan becomes an NPA. In the case of long-term crops, the overdue period is only one crop cycle.

The switch to the 90 days rule of delinquency was a crucial move toward the exposure of the real levels of stress within the banking sector because it limited the period within which banks could use tactics such as "ever-greening."

1.2.2 Asset Classification Categories and Provisioning.

A classified system for determining the degree of assets is specified by the RBI, depending

⁶ Reserve Bank of India, *Master Circular - Prudential Norms on Income Recognition, Asset Classification and Provisioning pertaining to Advances* (RBI/2014-15/74, July 1, 2014).

⁷ M. Narasimham (Chairman), *Report of the Committee on the Financial System* (Ministry of Finance, Government of India 1991).

upon the period of non-performance of such assets and the realizability of the dues. The provisions thus have a direct impact on the bank's profitability, since the amount to be provided for is determined by such classifications.

1.2.2.1 Standard Assets: -Standard assets are those which reveal no signs of any trouble and also have risk within the usual limit for that particular business operation. Normal loans are those where there is regular servicing of debts by the borrower. In order to create a cushion against potential dangers, it becomes obligatory for banks to create a general provision on normal loans (Contingent Provision) between 0.25% to 1.00% based on the industry. This can be taken as an example where the Commercial Real Estate (CRE) industry needs higher provisioning on normal loans.⁸

1.2.2.2 Sub-standard Assets: -Such an asset is considered substandard when the duration of the asset being kept as an NPA does not exceed 12 months. It occurs where the net worth of the borrower or guarantor at present or the current market value of the security offered is not adequate enough to guarantee complete recovery of the dues from the banks. These assets have an element of loss to the bank, which is inherent in them.⁹

- **Provisioning Requirement:** -The provision of 15 per cent on the overall amount outstanding is generally provided without taking into consideration any cover of ECGC guarantees. The 'unsecured exposures' classified under the category 'sub-standard' will be provided an extra provision of 10 per cent, which would make it total 25 per cent on the overall amount outstanding.¹⁰

1.2.2.3 Doubtful Assets: -When an asset has been in the substandard category for at least one year, it will be considered a doubtful asset. In the case of a loan considered a doubtful asset, it will have all the weaknesses associated with the substandard assets and also, according to the information available now, it is difficult and unlikely to collect or recover the entire amount.¹¹

⁸ Reserve Bank of India, *Master Circular - Prudential Norms on Income Recognition, Asset Classification and Provisioning pertaining to Advances* (RBI/2023-24/06, April 1, 2023).

⁹ Reserve Bank of India, *Master Circular – Prudential Norms on Income Recognition, Asset Classification and Provisioning Pertaining to Advances* (July 1, 2015), at para 2.1.

¹⁰ *Ibid.*

¹¹ RBI, *Prudential Norms on Asset Classification*, supra note 1.

- **Sub-categorisation:** The doubtful assets can be subdivided as D1, when the NPA is less than one year; D2, one to three years; and D3, greater than three years.
- **Unsecured portion:** 100% provision is required for the unsecured portion of the doubtful asset.
- **Secured portion:** Provisioning starts at 25% for D1 properties and increases to 40% for D2 properties before going up to 100% for D3 properties. The increase in the percentage is due to the decreasing chances of recovery as time goes on.

1.2.2.4 Loss Assets: An impaired asset is where there is an asset in which the loss has been recognized by the bank, either internally or externally through the RBI, but the total loss has not yet been provided for. In simple terms, this means that it is a worthless asset to the extent that it cannot remain in the bank's portfolio.

Provisioning Requirement: One hundred percent must be covered by an allowance or written off. This item constitutes the ultimate level of deterioration of the asset, where the bank recognizes a total loss of the exposure.

1.2.3 Income Recognition Policy

There is also a very stringent policy relating to the recognition of income. Accrual basis of recognizing income arising out of NPA assets will not hold any water. The reason being, there is no recognition of income arising from NPAs until the income is received. This ensures that the bank does not record fictitious income by recording income from loans which are non-productive. It needs to be mentioned that when an account becomes NPA, all the income recognized due to accrued interest but unrealized earlier should be reversed.

1.3 Theoretical Perspectives on Asset Quality and Default

NPAs do not happen in isolation but are the product of intricate relationships between economic cycles, bank policies, regulations, and customer behavior. There are a number of theories within literature that can be used to examine the issue, such as macroeconomic determinism and agency theory.

1.3.1 Macro-Financial Linkages and Pro-cyclicality

One such theoretical perspective that links asset quality and the business cycle is one where during periods of prosperity, optimistic attitudes result in increased credit creation, usually with lax lending criteria, known as Minsky's "Financial Instability Hypothesis." The business cycle when such turning points, marked by economic slowdowns, interest rate increases, or specific industry shocks, occur, the capacity of borrowers to repay debts becomes weaker, thus leading to higher NPAs.

Several studies have revealed that there exists an inverse relationship between NPAs and GDP growth.¹² For example, the economic slowdown that India experienced after 2011, along with policy paralysis and delayed projects in the infrastructure segment, is considered one of the major reasons behind the NPA crisis that reached its peak in 2018.¹³ According to a study conducted by Sengupta and Vardhan in 2017, there are two different kinds of NPA crises – those of the late 1990s and those that occurred after 2008.¹⁴

Another consequence of "pro-cyclical" banking regulation is that stringent provisions may hinder the supply of credit in downturns. Provisioning leads to a reduction in capital adequacy, which reduces the ability of banks to lend. It is a vicious circle that makes the economic slowdown worse since the credit growth rate fell from 20.9 percent in FY2018 to 15.4 percent in FY2023.¹⁵ It affects those industries that rely on funding from banks.

1.3.2 The Moral Hazard and "Too Big to Fail" Hypothesis

Agency issues in banking are also explored in the literature. Under the "Moral Hazard" theory, it is argued that banks, especially Public Sector Banks (PSBs) that face government ownership, might adopt risky lending practices, expecting a bailout in case of failure. The implicit sovereign guarantee makes risky behavior more subsidized.

While empirical evidence from India shows that the moral hazard theory might not be valid in all cases of bank lending, there is proof that banks considered too big to fail may benefit from

¹² Swati Singh and Manpreet Arora, "Examining and Analysing the Determinants of Non-performing Assets in Public and Private Sector Banks in India", 25 *International Journal of Economics and Business Research* 553 (2023).

¹³ *Ibid.*

¹⁴ Rajeswari Sengupta and Harsh Vardhan, "Non-performing Assets in Indian Banks: This Time it is Different", 52 *Economic and Political Weekly* 85 (2017).

¹⁵ *Supra* note 22.

having higher NPA levels thanks to the implicit sovereign guarantee.¹⁶ This is supported by statistical data indicating that PSBs record relatively high gross NPA levels (14.6% in 2018) compared to private sector banks.¹⁷ Thus, ownership becomes an essential factor in determining asset quality,

where public banks suffer the most due to mandated lending and development activities with associated higher risks of defaults.

1.3.3 Soft Budget Constraints

Moral Hazard can be very much linked with the Soft Budget Constraint Theory (SBC) proposed by Janos Kornai. It is argued that government or politically motivated companies are unlikely to face any hard financial constraints since, if they are close to bankruptcy or default, the government itself (or its affiliated banks) will always come forward to help them out.

The research findings in India indicate that the rise in NPAs has been caused by poor governance and the existence of soft budget constraint where the rationing of credits has not been properly coordinated according to the riskiness of the borrowers. This gives rise to a situation referred to as ever-greening, whereby new credits are granted to borrowers in order for them to pay back their old debts.¹⁸ This trend was rampant during the period before the Asset Quality Review (AQR).

1.3.4 Operational Inefficiency and Asymmetric Information

However, apart from macroeconomic variables, other specific determinants within the bank are equally significant. According to the “Bad Management” theories, operational inefficiencies, poor credit assessment methods, and insufficient monitoring after disbursement are some of the factors causing NPA formation. The information asymmetry problem arises when the borrower, who has access to the true condition of the project, tries to take advantage over the lender who needs information from the borrower. Some studies using CAMEL analysis found

¹⁶ Robin Thomas and Shailesh Singh Thakur, "Non-performing Loans and Moral Hazard in the Indian Banking Sector: A Threshold Panel Regression Approach", 24 *Global Business Review* 1482 (2023).

¹⁷ Vivek Rajbahadur Singh, "Non-Performing Assets in Indian Banking Sector - A Study of Literature Review", *ResearchGate* (2016).

¹⁸ L. Tian and S. Estrin, "Debt Financing, Soft Budget Constraints, and Government Ownership", *Journal of Corporate Finance* (2007).

strong correlations between indicators measuring management efficiency and NPA ratios.

The failure of banks to determine whether a particular project is viable from either the technological or business perspective has caused problems in assessing asset quality. In addition, the lack of “end-use monitoring” of the funds has resulted in diversion of money into non-productive uses, which has been responsible for willful defaults by borrowers in India.

1.4 Historical Evolution and Policy Interventions (1991–2024)

The history of NPA management in India has been significantly influenced by several measures initiated through legislation and regulation that have largely been prompted by the requirement for conformity to international practices due to economic liberalization in 1991. This has been characterized by various stages.

1.4.1 The Pre-Reform Era and the 1991 Crisis

Prior to 1991, the Indian banking industry was marked by “social banking,” high statutory pre-emptive ratios (SLR & CRR), and administered interest rates. Banks were viewed more as tools for development than as businesses. There existed hardly any concept of NPA since the recording of income was subjective, i.e., it allowed the bank to declare interest as income irrespective of whether it had actually been realized. This made it extremely difficult to see any inefficiencies prevalent in the system.¹⁹

1.4.2 The Narasimham Committee I (1991): The Blueprint for Reform

The committee of the financial system chaired by Mr. Narasimham is viewed as an ideal model for reforming the banking system in India. The recommendations of this committee played a significant role in moving the sector from regulation to markets.

- **Prudential Norms:** The major suggestion made by the committee was that there should be a standardization of accounting norms concerning the income recognition, asset classification, and provisions for losses. As a result, NPAs were defined objectively depending on the record of recovery initially of 180 days but later changed to 90 days.²⁰

¹⁹ Supra note 2

²⁰ Committee on the Financial System, *Report of the Committee on the Financial System* (M. Narasimham Comm.), Reserve Bank of India, Bombay, India (1991).

- **Asset Reconstruction Fund (ARF):** Taking into consideration the problem of historical non-performing assets, the committee suggested forming an ARF Tribunal which would be responsible for handling part of the bad debt from banks. In essence, this is what ARCs and the "Bad Bank" NARCL stand for nowadays after several decades have passed.²¹
- **Reduction in Statutory Pre-emptions:** The other suggestion put forward by the committee concerned the reduction of SLR from 38.5% to 25% and CRR from 15% to 3-5%.
- **Deregulation:** Phasing out of directed credit schemes along with deregulation of interest rates was a very important recommendation which would enhance allocative efficiency along with enabling banks to price risk correctly.

1.4.3 The Narasimham Committee II (1998): Second Generation Reforms

Formed in order to analyze the pace of reform measures along with making the financial system more resilient, the second committee had its focus on stability and competitiveness in the global economy.

- **Capital Adequacy:** It suggested that CAR be raised to meet Basel standards, thus making sure that banks maintain adequate capital as a buffer against any possible crisis.²²
- **NPA Reduction Targets:** Its target for reducing gross NPAs by 2002 was to reach 3%, and in this process of restructuring, the committee made it quite clear that some legal measures had to be taken to speed up the whole process of restructuring.
- **Narrow Banking:** In order to solve the problem of particular public sector banks which were having a lot of NPAs, the idea of Narrow Banking was recommended, which basically means that these banks must operate in only one direction, i.e., by lending in risk-free government papers.

²¹ Reserve Bank of India, *Report on Trend and Progress of Banking in India* (various years) (discussing evolution of asset reconstruction mechanisms in India).

²² Government of India, *Report of the Committee on Banking Sector Reforms* (Ministry of Finance, New Delhi, 1998).

- **ARC Mechanism:** It reiterated the need for Asset Reconstruction Companies to offload stressed assets, paving the way for the SARFAESI Act.

1.4.4 SARFAESI Act (2002)

On the basis of suggestions made by the committee, the SARFAESI Act came into force in the year 2002. The SARFAESI Act was revolutionary in nature as it allowed banks to enforce their security interests without any interference from the courts.²³ It also provided the legal framework for the registration and regulation of Asset Reconstruction Companies (ARCs).

1.4.5 Post-2008 Crisis and the Asset Quality Review (AQR)

Post-GFC (2008), there has been a rapid growth in credit to infrastructure and industries. However, with the slowdown in economic growth after 2011, these credits started to become bad debts. Banks adopted different restructuring methods such as CDR, SDR, and S4A to postpone their classification as NPAs.

In order to solve the problem of regulatory forbearance, RBI introduced the Asset Quality Review (AQR) in 2015. Under this initiative, banks were forced to classify stressed assets as NPAs and make adequate provisions. The exercise led to a sharp rise in NPA ratio, reaching its peak at 11.2% in March 2018.²⁴ Although painful, the exercise proved to be very important for the country to understand the actual magnitude of the problem.

1.4.6 The Insolvency and Bankruptcy Code (IBC) 2016

The greatest change in the field of insolvency in India was made through the passage of the Insolvency and Bankruptcy Code (IBC) in 2016. The code harmonized the various insolvency regulations and provided for a time-bound mechanism (180–270 days).

- **Creditor-in-Control:** This code transferred power from the “debtor-in-possession” to the “creditor-in-control,” making it possible for the CoC to determine the destiny of the distressed debtor.

²³ *The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002* (Act 54 of 2002).

²⁴ Reserve Bank of India, *Report on Trend and Progress of Banking in India 2017-18* (Reserve Bank of India, Mumbai, 2018).

- **Resolution vs. Liquidation:** The key motive behind introducing the IBC is to restructure and resolve insolvency of corporates in an efficient and timely manner with the maximum recovery of assets, and where insolvency cannot be solved, then comes liquidation.²⁵
- **Impact:** The IBC has played a major role in settling several corporate defaults, which have also led to the recovery of huge sums owed. This code has brought about a change in the borrower-lender relationship by bringing discipline in lending.²⁶

1.5 Causes, Determinants, and Impacts of NPAs

1.5.1 Determinants of NPAs

Scholars have extensively analysed the causes of NPAs, categorising them as internal and external.

- **Internal Factors:** Kharche and Gupta (2023) and Bhandari (2019) also highlight that excessive lending during booms along with ineffective monitoring results in asset quality degradation. The period of "credit boom" in the mid-2000s, during which the credit extended by banks to the corporate sector grew 47 times between 1990-91 and 2015-16, contributed to future defaults.²⁷ Operational inefficiency, lack of proper SWOT analysis of projects, and management weaknesses in PSBs are also considered important internal reasons.²⁸
- **External Factors:** A slowdown in global economic growth, government policy shifts (such as the withdrawal of coal blocks and telecom spectrum problems), and delays in getting environmental clearances have delayed projects, especially in the infrastructure industry. According to the Journal of Banking & Finance (2023), macroeconomic shocks play a major role in influencing the borrowing firm's ability to repay debts.
- **Sectoral Concentration:** Some sectors show a large number of NPA accounts, such as Infrastructure, Power, Steel, and Textiles. These capital-intensive industries are the

²⁵ *The Insolvency and Bankruptcy Code, 2016* (Act 31 of 2016).

²⁶ Reserve Bank of India, *Report on Trend and Progress of Banking in India 2023-24* (Reserve Bank of India, Mumbai, 2024).

²⁷ Swati Raju, *Research Report on Non-Performing Assets* (IIBF, Mumbai, 2017).

²⁸ *Supra* note 27.

worst-hit sectors due to economic downturns and policy paralysis.

- **Ownership Structure:** The other issue that stands out is the difference between Public Sector Banks (PSB) and Private Sector Banks (PSB). According to Singh (2016) and Dudhe (2017), the PSBs are prone to NPA due to the exposure to the priority sector, infrastructure finance requirements, and political influence, while PSB shows good asset quality management. In March 2023, the PSB had a gross NPA of 6.1%, while PSB had 3.2%.²⁹

1.5.2 Economic and Financial Impacts

The accumulation of NPAs has profound consequences for the banking sector and the broader economy.

- **Profitability Erosion:** According to Choudhary (2021) and Shivani Mohan (2022), an increase in NPAs negatively impacts ROA and ROE metrics. The reason is the two-sided effect of not recognizing interest income and the necessity to make provisions, which reduces the net profit of the bank.³⁰
- **Capital Erosion:** The need to have large provisions decreases the bank's capitalization, which requires governmental financial support for PSBs to comply with Basel III standards. It reduces funds that could be spent on economic development and modernization.³¹
- **Credit Crunch:** According to Sengupta and Vardhan (2022), increased NPAs cause risk aversion among banks, resulting in reduced credit growth (from 20.9% in 2018 to 15.4% in 2023). Thus, the "credit crunch" primarily affects small businesses and new projects, hindering investments.³²
- **GDP Correlation:** There are numerous studies in reputable scientific journals, such as the Journal of Banking & Finance (2023), confirming the direct relationship between

²⁹ *Supra* note 1.

³⁰ Shivani Mohan, "Impact of Non-Performing Assets on Profitability of Commercial Banks in India", *IOSR Journal of Business and Management* (2022).

³¹ *Supra* note 20.

³² Rajeswari Sengupta and Harsh Vardhan, "The Post-Pandemic Credit Landscape in India", *Ideas for India* (2023).

the NPA level and GDP growth. Indeed, high levels of NPAs negatively affect economic growth, forming a vicious circle where low economic growth results in additional NPA formation.

1.5.3 Recent Trends and Improvement

Newer literature emphasizes the improvement in asset quality. The RBI Annual Report (2024) and the Financial Stability Reports report a marked improvement in this regard.

- The 3.9% Benchmark:** The GNPA ratio of SCBs has fallen sharply, quoted at 3.9% for 2023-24 (and still falling to ~2.8-3.2% in subsequent quarters) The main reason for this is the IBC process, which has resulted in recovery rates ranging between 36.6%-45%, compared to other recovery methods.
- Write-offs vs. Recovery:** But then, the critics and scholars also argue that a large part of the NPA recovery comes from technical write-offs and not actual money recovery. According to Das (2024), large-scale loan write-offs over the last few years have helped reduce the GNPA ratio, casting doubts over the efficiency of recovery processes.³³

The following table synthesises key literature sources relevant to the study:

Table 1.1: Key Literature Source Analysis

Key Literature Source	Focus Area	Key Findings
RBI Annual Report (2024)	NPA Trends & Asset Quality	The gross NPAs have fallen to 3.9% (which further declined to about 2.6% by 2025) from a peak of 11.2% in 2018 due to the IBC model, provisions for bad debts, and better recovery rates.
Narasimham Committee I (1991)	Banking Reforms & Regulation	Suggested prudential norms (earnings accounting and asset categorization), reduction in SLR/CRR, and creation of Asset Reconstruction Funds.

³³ Abhiman Das, "Drivers of NPAs in Indian Banks: An Empirical Analysis", *Journal of Asian Economics* (2024).

Narasimham Committee II (1998)	Strengthening Financial System	Suggested stringent capital adequacy requirements, reduced government stake in PSBs, and asset recovery-related amendments in the laws.
Sengupta & Vardhan (2017/2023)	Determinants & Macro Linkages	Investigated the issue of “balance sheets twins”; distinguished between the crisis of the decade of the nineties and one after 2008; discussed the role of high NPAs in terms of financing infrastructure and slow economic growth.
Academic Paper: "NPAs in Indian Banks" (Journal of Banking & Finance, 2023)	Economic Impacts	Empirical data for correlation between high NPA rates and slowdowns in economies; stressed the effect of credit crunch on MSMEs.
Singh & Dudhe (2016/2017)	Public vs. Private Sector Banks	It is evident from comparative analysis that PSBs have high NPA ratio than Private Banks because of priority sectors and inefficient performance.
RBI Master Circulars (2005-2023)	Regulatory Definitions	Fixed strict criterion of 90 days delinquency for classification of NPAs; provided provisions for Substandard, Doubtful, and Loss assets.

1.6 The Technology Gap in NPA Resolution: A Critical Analysis

Whereas the literature on financial restructuring (haircutting, debt for equity swaps, rescheduling) is plentiful, there exists an apparent lack of literature on “Operational Restructuring” through “Technology Transfer,” particularly in light of insolvency resolution. This constitutes a glaring omission from contemporary literature with regard to turnaround management.

1.6.1 Financial vs. Operational Restructuring

Corporate restructuring is traditionally bifurcated into financial and operational domains.

- **Financial Restructuring:** Emphasizes the liability side of the balance sheet. It entails reducing the debt burden, rebalancing the debt/equity ratio, lengthening the maturity period of the loan, or exchanging the debt for equity. This has been the central theme of the IBC process in India, wherein the creditors may end up taking substantial haircuts in order to settle their debts.³⁴
- **Operational Restructuring:** Emphasizes the asset side as well as the operations of the company. It entails increasing efficiency, selling off non-core business units, streamlining the organizational structure, but most importantly, updating its technology and processes. The literature indicates that financial restructuring without operational restructuring is only a temporary solution; the business will eventually end up in distress if it relies on a business model that cannot compete because of outdated technology.

1.6.2 The Missing Link: Technology Transfer in Insolvency

Tech transfer is a commonly known topic within the fields of research and development, universities, and economic development.³⁵ Tech transfer occurs where there is a transfer of innovation, knowledge, and technology from one entity to another user or recipient. As a measure to resolve stressed assets, especially in industries like manufacturing, pharmaceuticals, textiles, and construction, tech transfer may act as a powerful catalyst for turnaround.

However, the existing literature and the IBC framework fail to address how the use of intellectual property and technology transfer can contribute to the effective realization of value from a distressed corporate debtor. Although the IBC requires that there be a "resolution plan" showing how the business can become viable and feasible, it is clear that most plans are focused on financial engineering rather than technology transfer.

³⁴ Narendra Kumar, "Analysis of Financial Restructuring in India", *Enterslice* (June 20, 2019).

³⁵ Swapnil Mukherjee, "Arbitration in Biotech Technology Transfer Disputes", 6(14) *African Journal of Biological Sciences* 2930 (2024)

1.6.3 Valuation of Intangible Assets and Technology

Another important challenge identified in the literature revolves around the valuation of intangible assets (i.e., intellectual property, patents, proprietary technology) in the process of resolving a corporate debtor through CIRP. In fact, the Insolvency and Bankruptcy Board of India (IBBI) regulations only concentrate on tangible assets, like land or machinery. There is a "statutory gap," leading to the underappreciation of intangible assets during CIRP. Due to the lack of clear guidelines for the valuation of technological assets in the context of insolvency, it becomes challenging for resolution professionals to make the use of technology transfer. Indeed, IBBI (Valuation) Rules, 2017 include land, building, and security among other assets that should be considered by valuation professionals. However, the same does not mention technology.

1.7 Identification of Research Gaps

Based on the exhaustive review above, the following gaps in the existing body of knowledge are identified, which this dissertation aims to address:

1. **Limited Focus on Technological Turnaround:** While *financial* engineering (haircuts, recapitalisation) is well-documented, there is minimal literature on *technological* engineering (upgrading manufacturing processes, transferring IP) as a method to resolve NPAs in the Indian context.
2. **Valuation of Intangibles in Distress:** There is a paucity of research on how intangible assets and technology licenses are valued and treated during the IBC process. The current framework's bias towards tangible assets leaves a gap in maximising the value of technology-intensive stressed firms.³⁶
3. **Operational Restructuring Mechanisms:** Most studies stop at the point of "resolution plan approval." There is limited longitudinal research on the post-resolution operational performance of firms, specifically, whether technology transfer played a role in their actual turnaround³⁷

³⁶ *Ibid.*

³⁷ *Supra* note 56.

4. **Integration of Tech Transfer in Resolution Plans:** There is no standardised framework or model in the existing literature that integrates technology transfer agreements into the insolvency resolution plans under the IBC.

1.8 Conclusion

The conceptual framework for Non-Performing Assets in India is grounded in the RBI's rigorous IRAC norms, which have evolved significantly since the 1991 reforms to align with global standards. The definitions of Sub-standard, Doubtful, and Loss assets provide the necessary standardisation for asset quality assessment. The literature review underscores that the genesis of NPAs in India is multicausal, involving macroeconomic slowdowns, weak credit appraisal standards, ownership structures, and legacy issues within Public Sector Banks.

Policy interventions, from the seminal Narasimham Committee recommendations to the enactment of the SARFAESI Act and the transformational Insolvency and Bankruptcy Code (IBC), have progressively strengthened creditors' positions and improved transparency of asset quality. These reforms have resulted in a notable decline in Gross NPAs to 3.9% by 2023-24, a significant achievement from the peak of 2018.

However, the review reveals a critical gap: academic and policy discourse is overwhelmingly dominated by discussions of financial restructuring. The role of technology transfer and operational restructuring in resolving stressed assets remains under-researched. Addressing this gap is essential for moving beyond merely "cleaning balance sheets" to actually "reviving businesses," thereby ensuring sustainable value creation in the economy. This dissertation aims to bridge this specific gap by exploring the efficacy, challenges, and mechanisms of integrating technology transfers into the resolution of Non-Performing Assets in the Indian banking sector.