Quantifying Delay Costs in India's Commercial Tribunal: An Econometric Evaluation of NCLT-IBC Performance

- *R Sundaramurti* [1]

"It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts."

Sherlock Holmes

[1] R Sundaramurti | BA LLB | MA Economics | A lawyer with economist's lens, I fuse data driven analysis with legal insights to shape accurate, evidence backed policies.

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Abstract

This study undertakes, to the best of the author's knowledge, the first attempt to generate an economic appraisal of the costs of delay in India's commercial insolvency system through an econometric evaluation of the performance of the National Company Law Tribunal (NCLT) under the Insolvency and Bankruptcy Code (IBC) framework.

Using a hand-constructed data set comprising 1149 Corporate Insolvency Resolution Process (CIRP) resolved matters (i.e., CIRPs that yielded resolution plans) between 2017 and 2025, and deconstructing 492 of these into CIRP timeline data points, supplemented by algorithmic extraction of NCLT orders and Insolvency and Bankruptcy Board of India (IBBI) disclosures, the author seeks to disaggregate total resolution into two constituent elements attributable to the Tribunal and market players, respectively.

The analysis reveals that nearly 65% of delay is directly attributable to the Tribunal (NCLT) and 35% to market players on account of creditor deliberations and bidder-side conduct. The study further employs threshold regression to identify a threshold inflection point of 2.97 years as critical, beyond which every additional day of delay results in discernible erosion upon creditor recoveries. Matters that exceed this inflection point suffer reduced recovery rates by up to 18–20 percentage points. This finding holds even after controlling for temporal variation, bench-level heterogeneity, and case-specific attributes.

Survival models disaggregated by bench reveal an additional pathology: procedural density—measured primarily through the accumulation of interlocutory applications—reduces the probability of timely resolution by approximately 22% with each successive filing, indicating that congestion is self-reinforcing.

Complementary firm-level panel regression indicates that the CIRP process primarily drives financial contraction rather than operational decline. This demonstrates that judicial capacity constraints impose measurable costs upon firms and the markets that sustain them.

Taken together, the study seeks to furnish an empirical foundation, alongside robust, replicable and specific targeted reforms aimed at ameliorating tribunal efficiency and abating pendency.

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Chapter 1: Introduction

The efficiency of commercial courts and tribunals is a cornerstone of robust economic growth and a favourable business environment. This principle is recognised globally and is particularly pertinent in emerging economies.[2] India, for instance, faces significant challenges arising from judicial delays, which are estimated to cost the nation approximately 1.5% of its GDP annually.[3] Such delays not only impede economic progress but also erode investor confidence and hinder credit enforcement mechanisms, underscoring the critical need for an in-depth analysis of judicial performance.[4]

In the specific context of insolvency law, the effectiveness of India's insolvency regime increasingly depends on the ability of the Insolvency and Bankruptcy Code, 2016 (IBC) to deliver timely, predictable, and economically meaningful outcomes. However, the experience of the past decade of the Code's operation reveals that persistent delays in the Corporate Insolvency Resolution Process (CIRP) remain a central concern. This raises fundamental questions about the sources of delay, economic implications, and the institutional capacity of the National Company Law Tribunal (NCLT), which serves as the Code's adjudicatory backbone. Prolonged timelines not only erode asset value and disrupt ongoing firm operations but also shape investor sentiment, creditor expectations, and the credibility of the broader enforcement architecture. At the same time, substantial variation in outcomes across NCLT benches, driven by differences in caseload, staffing, procedural practices, and operational efficiency, suggests that institutional frictions may be unevenly distributed across the system.

Against this backdrop, this study seeks to deepen the conceptualisation of "delay" beyond conventional statutory-overrun metrics and instead examine the direct and indirect economic consequences of delay. To this end, it evaluates the performance of NCLT benches through a combination of survival analysis and bench-level performance indicators. Together, these lines of inquiry aim to generate a more granular understanding of systemic bottlenecks within the IBC ecosystem and offer evidence-based insights into how institutional design and operational capacity can shape more effective insolvency outcomes in India.

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[2] Aratrika Deb & Vijay Kumar Singh, "A Comparative Analysis of Commercial Justice in G20 Countries with Special Reference to France, China and India", *SSRN Electronic Journal* (2024), DOI:10.2139/ssrn.4961622, (last visited November 2025).

[3] Sudipto Dey, "Cost of Pendency of Cases Could Be as High as 1.5% of GDP: Harish Narasappa," *Business Standard*, August 14, 2016, http://mybs.in/2TGrrWs.

[4] Karsten Müller, "Busy Bankruptcy Courts and the Cost of Credit," *Journal of Financial Economics* 143 (2021): 824, https://doi.org/10.1016/j.jfineco.2021.08.010.

Chapter 2: Background of the NCLT

India's judicial system has, for a considerable period, grappled with institutional case overload and backlogs, necessitating reforms aimed at streamlining the dispute resolution machinery. The establishment of specialised adjudicatory tribunals such as the NCLT was a concerted effort to address systemic inefficiencies within the court system.

The NCLT was constituted on 1 June 2016 under Section 408 of the Companies Act, 2013, supplanting previous specialised forums, namely the Company Law Board, Board for Industrial and Financial Reconstruction (BIFR), and Appellate Authority for Industrial and Financial Reconstruction (AAIFR), pursuant to the recommendations of the Justice Eradi Committee.[5] Initially, the Ministry of Corporate Affairs sanctioned the setting up of 11 benches, including the Principal Bench and additional benches in New Delhi, as well as benches in Ahmedabad, Allahabad, Bengaluru, Chennai, Guwahati, Hyderabad, Kolkata, Mumbai, and Chandigarh. Over time, additional benches were established in other cities to accommodate increasing caseloads and improve access to various jurisdictions. At present, the NCLT serves as the adjudicating authority for cases relating to company law and insolvency matters under the IBC, with appeals from the NCLT heard by the National Company Law Appellate Tribunal (NCLAT).

These specialised forums were conceived with a dual mandate: first, to accelerate the pace of adjudication, and second, to introduce domain-specific expertise in matters where civil courts lacked sufficient subjective acumen. Despite this intent, the NCLT and NCLAT have increasingly come under scrutiny due to perceived delays, which significantly affect the overall effectiveness of the IBC.[6]

2.1 Evolution of IBC

The Insolvency and Bankruptcy Code (IBC), enacted in 2016 upon the recommendation of the Bankruptcy Law Reforms Committee, sought to establish a time-bound insolvency resolution mechanism under the supervision of an Adjudicating Authority (i.e., the NCLT). The Code marked a significant paradigm shift in India's insolvency resolution framework, aiming to consolidate fragmented laws and establish a time-bound, market-driven process for corporate debt restructuring and liquidation.[7] It also signalled a shift from a debtor-in-control model to a creditor-in-control model. This legislative overhaul sought to improve

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[5] High Level Committee on Law Relating to Insolvency & Winding Up of Companies, *Report of the High Level Committee on Law Relating to Insolvency and Winding Up of Companies* (Gov't of India, Ministry of Law, Justice & Company Affairs, Dept. of Company Affairs, 2000).

[6] A Abhirami & T Rahul, "On the Effectiveness of Insolvency and Bankruptcy Code, 2016: Empirical Evidence From India," *Law and Business 20 (2022),* https://doi.org/10.2478/law-2022-0003

[7] Chandra Shekhar, "Bailing Businesses, Boosting Banks: The Evolution of Insolvency and Bankruptcy Law in India," *International Journal of Research Publication and Reviews* (2025): 4908, https://doi.org/10.55248/gengpi.6.0325.2101 (last visited Aug 2025)

recovery rates for creditors and enhance the overall ease of doing business by providing a more predictable and efficient mechanism for resolving financial distress,[8] while protecting the going concern of viable entities and maximising asset value.

2.2 Brief Overview of the CIRP Process Under the IBC

The CIRP process begins when a financial creditor, operational creditor, or the corporate debtor itself files an application before the NCLT seeking initiation of CIRP due to *inter alia* payment defaults.

Upon admission of the application, the NCLT declares a moratorium on all legal proceedings against the debtor, appoints an Interim Resolution Professional (IRP), and transfers management control of the corporate debtor to the IRP. The IRP then issues a public announcement, invites and verifies claims of creditors, and constitutes the Committee of Creditors (CoC), which either confirms the IRP as the Resolution Professional (RP) or appoints a new RP. The RP is responsible for conducting the debtor's business as a going concern, inviting resolution plans for restructuring and resolution, and examining submitted plans on a preliminary basis. Plans that comply with the Code's provisions are then evaluated by the CoC, which exercises its commercial wisdom in examining the plan's feasibility and viability, and determines whether the corporate debtor can be revived or should proceed to liquidation. A resolution plan that is approved by a 66% majority of the CoC is submitted to the NCLT for final approval. If no viable plan is approved within the prescribed timelines (180 days, extendable by 90 days with creditor approval, and subject to an outer limit of 330 days, including litigation delays), the CIRP concludes, and liquidation proceedings are initiated in respect of the corporate debtor.

The NCLT's role within the CIRP framework is intended to be largely supervisory: admitting cases, approving extensions, and ensuring that the approved resolution plan complies with statutory requirements. The apex Court has repeatedly emphasised the limited role to be played by the NCLT, particularly when it comes to evaluating resolution plans that have been approved by the CoC in their commercial wisdom.

Given this framework, the success of the IBC largely hinges on the operational efficiency of the NCLT and NCLAT, as delays within these tribunals can undermine the Code's objectives and exacerbate economic strain. Empirical research on debt recovery tribunals suggests that delays in judicial processes are not merely administrative hurdles but have a significant impact on credit markets and firm behaviour.[9]

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[8] Supra note 6

[9] Supra note 4

Chapter 3: Research Questions

This study is organised around three principal lines of enquiry, disaggregated into specific sub-questions that are examined empirically to understand key mechanisms and institutional dynamics within the framework.

The six research questions set out below aim to develop:

a) a clear conceptualisation of delay (in resolution timeframes of CIRP cases yielding resolution plans),

b) an evaluation of the economic consequences of such delay, and

c) an assessment of the NCLT's adjudicatory performance.

3.1 Defining Delay

Delays within the CIRP process have conventionally been measured using a simple metric—the number of days by which cases exceed the statutory timelines prescribed by the Code. However, this conventional approach obscures certain heterogeneous origins of delay and therefore fails to strike at the root of institutional pathologies that cause the delay. Temporal overruns may arise from tribunal-side constraints (e.g., bench capacity, work overload, case overload or adjournments) or from market-driven factors (e.g., creditor coordination, delays in submission of resolution plans, evaluating and arriving at consensus of the plan). A more granular conceptualisation of delay is therefore essential for an accurate diagnosis of systemic bottlenecks.

RQ1 - ***How should "delay" in the CIRP process be conceptualised beyond the conventional aggregate timeline-overrun measure, and how can it be decomposed between NCLT-driven procedural lags and delays arising from market participants?***

3.2 Economic Impact of Delay in IBC

Delays may diminish asset value, impair firm functioning, and weaken stakeholder confidence in the insolvency regime. To examine these channels, this study assesses both direct and indirect economic consequences of delay.

3.2.1 Resolution Time vs Recovery Rates (Direct Impact)

RQ2 - ***How do variations in CIRP resolution time influence recovery rates for creditors under the IBC framework?***

3.2.2 Firm Performance (Indirect Impact)

RQ3 - ***How are individual firms' performance metrics affected during and outside the resolution period?***

4.2.3 Market Confidence (Indirect Impact)

RQ4 - ***How do systemic delays in the IBC resolution process affect market confidence, particularly as reflected in foreign investor behaviour, and broader financial-sector risk perceptions?***

3.3 NCLT Performance

Institutional efficiency within the NCLT varies significantly across benches, influenced by factors such as workload and overall case management capacity. Understanding these differences provides insight into structural constraints shaping insolvency outcomes.

3.3.1 Survival Analysis of Bench Efficiency

RQ5 - ***What does survival analysis reveal about differences in case disposal efficiency between NCLT benches?***

3.3.2 Recovery Outcomes Across Benches

RQ6 - ***How do recovery outcomes vary across NCLT benches, and to what extent are these differences associated with bench idiosyncrasies?***

Chapter 4: Literature Review

This section critically examines existing literature on the performance of commercial tribunals, with a focus on empirical studies that quantify judicial delays and their economic consequences.

While some studies have analysed tribunal delays in India, particularly at the Income Tax Appellate Tribunal,[10] comprehensive econometric evaluations of the NCLT and NCLAT's performance, especially in relation to delay costs, remain limited. Existing research has established a correlation between judicial backlog and credit market development, demonstrating how delays adversely affect interest rate spreads and the overall cost of credit.[11] Furthermore, the efficacy of debt recovery legislation in India, including the IBC, has been widely analysed, with some studies undertaking empirical regulatory impact assessments to identify flaws in reducing non-performing assets.[12] Despite these efforts, the implementation of the IBC continues to face challenges, with researchers identifying bureaucratic hurdles, complexities in claims filing, and issues related to operational creditors' realisation as significant impediments to its intended efficacy.[13]

These challenges underscore the need for a detailed econometric analysis that quantifies the impact of delays within the NCLT and NCLAT on the insolvency resolution process and the broader economic landscape.[14] The present study seeks to address this gap by applying an econometric framework, building upon methodologies applied to other judicial fora to offer a comprehensive understanding of their impact on economic efficiency and investment.[15]

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[10] Pratik Datta et al., "Understanding Judicial Delay at the Income Tax Appellate Tribunal in India," *RePEc: Research Papers in Economics* (2017), https://ideas.repec.org/p/npf/wpaper/17-208.html, (last visited Oct 2025)

[11] Supra note 4

[12] Hiteshkumar Thakkar, Gaurang Rami & Pratik Parashar Sarmah, "Efficacy of Debt Recovery Legislation: An Indian Experience," *Artha Vijnana* 62 (2020): 38, https://www.researchgate.net/publication/358118288_Efficacy_of_Debt_Recovery_Legislation_An_Indian_Experience (last visited Oct 2025).

[13] Jivitesh Singh & Shauktika Shashwat, "Assessing Flaws In The Insolvency And Bankruptcy Code (Ibc) And Proposing Remedies For Enhanced Efficacy: Focus On Bureaucracy, Claims Filing, And The Connection Between Operational Creditors And Liquidation Value," *SSRN Electronic Journal* (2025), https://www.ijllr.com/post/assessing-flaws-in-the-ibc-and-proposing-remedies-for-enhanced-efficacy-focus-on-bureaucracy-claim, (last visited Nov 2025)

[14] Dhriti Mehra & Animesh Ranjan, "Analysis of the Stressed Asset Market Under IBC," *SSRN Electronic Journal* (2024), http://dx.doi.org/10.2139/ssrn.4871234 (last visited Oct 2025); Shivansh Mani Sharma, "Delays In Corporate Insolvency Resolution Process: Has the IBC Met Its Purpose?," Zenodo (CERN European Organization for Nuclear Research) (2022), 10.5281/zenodo.5893470, (last visited Aug 2025)

[15] Ulf von Lilienfeld-Toal et al., "The Distributive Impact of Reforms in Credit Enforcement: Evidence From Indian Debt Recovery Tribunals," *Econometrica* 80 (2012): 497, https://doi.org/10.3982/ECTA9038, (last visited Nov 2025)

4.1 Economic Impact of Judicial Delays

Judicial delays impose substantial social costs, eroding public confidence in the financial system and hindering the recovery of dues, thereby affecting overall economic stability.[16] Such delays manifest in increased operational costs for businesses, reduced foreign direct investment, and a general disincentive for commercial activity, ultimately retarding economic growth.[17] These inefficiencies also distort credit markets by increasing the risk premium associated with lending, particularly for small and medium-sized enterprises.[18] Moreover, delays contribute significantly to the erosion of asset value and complicate restructuring efforts for distressed companies, thereby diminishing creditor recoveries and overall economic output.[19] This, in turn, can lead to higher interest rates for borrowers and reduced access to capital, particularly in sectors reliant on efficient debt resolution.[20] Furthermore, the prolonged nature of judicial proceedings can exacerbate financial distress at the firm level, leading to a rise in non-performing assets for banks and undermining the stability of the financial system.[21] The cost of delay is not merely direct but also includes the opportunity cost of capital tied up in stalled litigation, as well as the broader chilling effect on investment decisions arising from systemic uncertainty.[22]

4.2 Existing Studies on Tribunal Performance

Existing studies on tribunal performance often rely on aggregate-level data, which can obscure the specific causes of delay within the judicial process.[23] For example, prevailing statistical approaches typically measure the total number of pending cases or aggregate disposal times, without isolating the extent of actual delay or attributing it to specific actors such as litigants, legal counsel, or the judiciary itself.[24] A study

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[16] Supra Note 12

[17] Supra note 4

[18] Supra note 15

[19] M. P. Ram Mohan & Balagopal Gopalakrishnan, "Effectiveness of the Resolution Process: Firm Outcomes in the Post-IBC Period," *SSRN Electronic Journal* (2023), http://dx.doi.org/10.2139/ssrn.4553179 (last visited Nov 2025); Supra note 7

[20] Supra Note 11; Prasanth Regy & Shubho Roy, "Understanding Judicial Delays in Debt Tribunals," *SSRN Electronic Journal* (2017), http://dx.doi.org/10.2139/ssrn.2983228, (last visited Oct 2025)

[21] Udichibarna Bose et al., "Does Bankruptcy Law Improve the Fate of Distressed Firms? The Role of Credit Channels," *Journal of Corporate Finance* 68 (2020):101836, https://doi.org/10.1016/j.jcorpfin.2020.101836, (last visited Nov 2025)

[22] Greta Falavigna & Roberto Ippoliti, "The Impact Of Institutional Performance On Payment Dynamics: Evidence From The Italian Manufacturing Industry," *Journal of Business Economics and Management* 21 (2020): 1285, https://doi.org/10.3846/jbem.2020.13195, (last visited Sep 2025)

[23] Supra Note 20

[24] Prasanth Regy & Shubho Roy, "Understanding Judicial Delays in Debt Tribunals."

commissioned by the IBBI in 2023 examines key performance metrics across the pre-, during- and post-resolution stages, including resolution expenses recovery and their relation to delay.[25] However, even this study does not provide an econometric evaluation of the recovery rates.

4.3 Gaps in Existing Research

While prior research has explored the correlation between socioeconomic factors and judicial pendency, it often stops short of establishing causal links and rarely delves into granular, case-level data to identify specific bottlenecks within specific tribunals like the NCLT.[26]

This study addresses key research gaps by providing an econometric assessment of delay costs in India's commercial justice system. It quantifies the economic burden of prolonged insolvency proceedings, evaluates bench-wise operational efficiency in relation to regional macroeconomic performance, and examines the credit-market impacts of the IBC beyond existing DRT-focused research.

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[25] Indian Institute of Management Ahmedabad*, Effectiveness of the Resolution Process: Firm Outcomes in the Post-IBC Period* (August 2023), Link

[26] Varsha Aithala, Rathan Sudheer & Nandana Sengupta, "Justice Delayed: A District-Wise Empirical Study on Indian Judiciary," *Journal of Indian Law & Society* 12 (2021): 106, Link, (Last visited Oct 2025).

Chapter 5: Defining Delay

5.1 The Conventional Approach to Measuring Delay and Its Limitations

The most intuitive and administratively convenient method employed to measure delay in judicial settings is to compare the actual time taken to resolve a case with that of the statutory timeline prescribed under the governing legislation. This approach yields a clean and reproducible metric that can be aggregated across cases, compared across time periods, and communicated to policymakers without requiring an elaborate methodological scaffolding that a more sophisticated framework may demand. Thus, it has become a dominant framework in official reports, parliamentary committee assessments and academic literature examining the tribunal performance in India. The same is also evident in the IBBI's periodic quarterly newsletter release, the Economic Survey's commentary on CIRP's timelines and numerous peer-reviewed studies, all of which anchor their analysis of delay on the 330-day outer limit prescribed by the IBC.

The difficulty with this approach, however, is that it conflates procedural compliance with economic optimality. A statutory timeline, however carefully designed, represents a legislative estimate of what a reasonable resolution process should entail. It does not capture the relationship between the temporal duration of the case and the value destruction caused by delay. In matters involving financial distress, where an enterprise under resolution may lose going concern value, shed human capital, experience asset deterioration, and incur administrative costs while simultaneously trying to survive the resolution process and attract an optimal bidder for financial restructuring to continue its business, the relevant question is not whether a statutory deadline has been exceeded, but whether the time elapsed has caused any measurable economic harm.

Any framework that treats statutory overruns as a sufficient proxy for the economic costs of delay is therefore likely to mischaracterise where the true burden of delay lies. It is for this reason that the present analysis departs from the statutory benchmark approach and instead conceptualises delay in relation to observed economic outcomes, specifically recovery rates realised by creditors across cases of varying duration.

5.2 Decomposing Delay: Attribution Between NCLT & Market Players

The second dimension of the analysis concerns the institutional attribution of delay, an issue that has received far less attention in the literature compared to the issue of the time taken for resolution. A recurring argument in reform-oriented assessments of the IBC ecosystem is that the NCLT and NCLAT are inefficient adjudicatory bodies whose procedural bottlenecks are the primary driver of CIRP timeline overrun. A recent report records average CIRP durations as approximately 867 days,[27] a figure frequently invoked across various publications as evidence of institutional under-performance.

This characterisation, while not entirely devoid of foundation, tends to treat the tribunal system as the sole reason for delay, as if the NCLT is responsible for all time lapsed in a CIRP. Such a framing overlooks a fundamental feature of the resolution process: the CIRP is not merely a judicial proceeding, but a market-driven process conducted by private actors under judicial supervision.

The various phases of the resolution process—including the constitution of a committee of creditors, due diligence of corporate debtor affairs, invitation and evaluation of resolution applications, negotiation with resolution applicants and securing the requisite majority approval from the CoC—are undertaken by private market participants. These actors operate under their own incentive architectures, informational constraints and transactional timelines, independent of the NCLT. The NCLT's role in the entire process is therefore primarily supervisory and dispositional rather than operational.

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[27] Indian Institute of Insolvency Professionals of ICAI (IIIPI), *Timely Turnaround: Bottlenecks in CIRP and Liquidation under IBC – Case Studies* (July 2024), https://www.iiipicai.in/wp-content/uploads/2024/08/TIMELY-TURNAROUND-BOTTLENECK-IN-CIRP-AND-LIQUIDATION-UNDER-IBC.pdf

Chapter 6: Data Collection

The primary data for this study was collected through the web scraping of two key sources: the National Company Law Tribunal (NCLT) website and the Insolvency and Bankruptcy Board of India (IBBI) portal.

6.1 Decomposing Delay

Data and Extraction: The primary data for this analysis was manually sourced from quarterly newsletters published on the IBBI's official website. The publication contains details of companies under *CIRP that yielded resolution plans*. For each such case, the date of commencement of CIRP and date of approval of the resolution plan by NCLT were extracted for the period **2017 to March 2025**.

In addition, an automated scraper was designed to download NCLT orders approving resolution plans from IBBI website based on Corporate Identity Numbers (CINs). This scraper systematically accessed each company's order repository, identified resolution-specific orders through text pattern matching in the remarks field, downloaded the corresponding PDF documents, and applied standardised naming conventions incorporating CIN, order date, and document type. The extracted PDF documents were subsequently processed using GPT-based natural language processing to identify CoC approval dates, enabling precise temporal analysis of resolution timelines.

This multi-stage data collection methodology ensured comprehensive coverage of both case procedural data and substantive resolution outcomes. Using CINs and the case numbers obtained from the IBBI website, filing dates for the corresponding cases were extracted from NCLT webpage using a Selenium-based web scraping framework.

Data Constraint: NCLT orders uploaded before 2021 are available on the tribunal's electronic portal predominantly in the form of scanned image files rather than machine-readable text documents, rendering systematic data extraction through automated methods unfeasible. Consequently, the stage-wise analysis is restricted to a sample of **498 cases** (pre-sanitising size: 500), for which structured order documents containing relevant approval dates could be retrieved and processed.

6.2 Resolution Time vs Recovery Rates

Data and Extraction: The empirical analysis for this research question is based on a company-level dataset constructed from the quarterly newsletters published by the IBBI. These newsletters constitute the most authoritative publicly available administrative record of insolvency outcomes under the IBC. The sample comprises all *CIRPs that culminated in the approval of a resolution plan* by the NCLT during the study period, from **the enactment of the IBC (i.e., 2017) code up to 31 March 2025**.

For each firm in the sample, the following data was extracted: the date of commencement of the CIRP and the date on which the resolution plan was approved by the NCLT. These variables were used to compute the duration of the resolution process and to analyse delays in value realisation under the statutory framework. Financial information was collected on the total admitted claims of creditors, disaggregated into claims of financial creditors and operational creditors, along with recoveries made under approved resolution plans, as reported in the IBBI newsletters. In addition, valuation metrics recorded during the CIRP were compiled, including the fair value and liquidation value of the corporate debtor as determined in accordance with the IBC and the applicable regulations.

The resulting dataset enables firm-level analysis of the relationship between procedural duration, valuation benchmarks, and realised recoveries in resolved CIRPs. By focusing exclusively on cases that resulted in approved resolution plans, the study isolates value outcomes under the resolution pathway of the IBC as distinct from liquidation outcomes, thereby allowing a clearer assessment of the effectiveness of the CIRP mechanism in preserving going-concern value.

Resolution time was computed for a total of 1171 companies from the date of commencement of CIRP, as per the NCLT order, to the date of approval of the resolution plan by NCLT. After excluding outliers, the total sample count stands at **1149 cases (Dataset 2)**.

For the subset of cases used in delay decomposition (498 companies), and after outlier sanitisation, 492 cases remain (Dataset 1). A separate analysis computes total resolution time from filing date to NCLT approval.

For the subset of companies for which filing dates were scrapped for decomposing delay (498 companies), **492 cases (Dataset 1)** remain after outlier sanitisation**.** A separate analysis computes the total time taken for resolution from the filing date to the date of resolution plan approval by the NCLT.

Data Constraints: Fair value and liquidation value were excluded from our analysis. These figures are determined only at the commencement of the CIRP, and their relevance diminishes substantially when compared with actual recovery outcomes, particularly in cases involving prolonged delays. Since these values are not updated when recoveries are realised or the resolution plan is approved, significant temporal gaps introduce distortions that undermine comparability and render them unsuitable for forming any meaningful relationship with recovery metrics.

6.3 Firm Performance

Data and Extraction: The impact of CIRP on firm performance is analysed by defining a timeline of "outside" and "during" CIRP model, which uses financial metrics such as *sales, expenses, employee cost, operating profit, depreciation, interest expense, net profit, equity, reserves, borrowings, trade payables, investments, inventory, trade receivables and cash*. These variables are taken for companies for which financial information is publicly available. These are inevitably listed public companies, whose data were extracted from the Screener website for the period **2013 to 2025**.

Data Constraint: Many resolution plans involve mergers, amalgamations, or sales as going concerns, resulting in the loss of firm-level identity. Detailed restructuring data is not publicly available, making it difficult to isolate firm-specific financials post-resolution. Additionally, incomplete financial disclosures for certain years complicate classification across CIRP phases. Data availability constraints further limit the sample to **82** listed firms.

6.4 Market Confidence

Data and Extraction: To evaluate market confidence and macro-financial conditions, this study compiles a structured annual panel **(2010-2024)** of seven macroeconomic and financial indicators: *bank deposit rates, net foreign direct investment inflows, 10-year government bond yields, real GDP growth, the Reserve Bank of India's repo rate, the CPI-based inflation rate, and the aggregate capital adequacy ratio (CAR) of scheduled commercial banks*. These variables are sourced from authoritative, publicly available datasets, including the Department for Promotion of Industry and Internal Trade (DPIIT) Annual FDI Reports, the Reserve Bank of India's Database on Indian Economy (DBIE), and the World Bank's World Development Indicators (WDI). This consolidated macro-financial dataset forms the empirical foundation for the PCA-based construction of the Macro Stress Index and subsequent econometric analysis.

6.5 Survival Analysis of Bench Efficiency

Data and Extraction: For NCLT case data, a Selenium-based web scraping framework was deployed to systematically extract comprehensive case-level information from bench-wise disposed and pending cases across specified date ranges. The scraper navigated through paginated search results, identifying pending cases and extracting detailed attributes, including filing dates, party names, case numbers, registration dates, listing history with associated order PDFs, interlocutory applications (IA/MA), and connected matters. The system incorporated robust error-handling mechanisms, including driver health checks, safe page-loading protocols, and periodic data persistence to ensure data integrity even during interruptions.

Data Constraint: Another significant constraint encountered during the process of scraping was the non-functioning of the official NCLT case status webpage, which contains the necessary data per bench—including disposal and pending data—as required for survival analysis. As a result, data could only be collected for two benches. *All case data from* **2020 to 2025** for the **NCLT Chennai Bench** and **NCLT Principal Bench, Delhi** was extracted and utilised for analysis.

6.6 Recovery Outcomes Across Benches

Data and Extraction: This analysis builds on the earlier dataset used for resolution time and recovery rates. Additional bench-wise information was obtained from the IBBI report titled "*Corporate Insolvency Resolution Processes Yielding Resolution Plans: as on 31st March 2025.*"

Chapter 7: Methodology

7.1 Quantifying Costs

This study evaluates the performance of the NCLT under the IBC framework along two principal dimensions:

(1) The systematic quantification of performance metrics, and how it impacts companies on a microeconomic unit level, studied through recovery rates and firm performance; and

(2) The macroeconomic assessment of tribunal efficiency, correlated with regional credit market development and the broader cost of capital, using regression analysis to isolate the impact of judicial performance on economic indicators, thereby signalling market confidence.

7.2 Decomposing Delay

To analyse the complete lifecycle of resolution proceedings, the study undertakes a ***stage-wise decomposition*** of CIRP timelines into four procedural milestones:

1. The date of filing of the insolvency application,
2. The date of admission by the NCLT,
3. The date of approval of the resolution plan by the CoC and
4. The date of NCLT's final order approving the resolution plan.

This four-stage structure applied to 498 cases enables the total time taken to be divided into segments that map onto the distinct institutional actors responsible for each phase.

7.3 Resolution Time vs Recovery Rates

To empirically establish the relationship between resolution timelines and economic outcomes, a multi-dimensional dataset tracking temporal and financial variables is constructed. This temporal and financial data enables the calculation of recovery rates (recovered amount as % of admitted claims by creditors) and the resolution duration across two datasets. The first one measures the duration from CIRP commencement per admission order by NCLT to the final approval of the resolution plan order by NCLT for 1149 cases. The second one measures the duration from filing date to final order for 492 cases.

Thereafter, ***Ordinary Least Squares regression is employed for both Dataset 1 and Dataset 2*** to model the relationship between resolution time and creditor recovery rates, while controlling for case characteristics, year-specific characteristics and bench-specific effects. The core specification tests whether extended resolution periods systematically reduce recovery rates.

7.4 Firm Performance

This component employs ***panel regression estimating for both fixed effects and random effects*** to examine the financial impact of the CIRP on firm-level outcomes. The analysis is based on an unbalanced panel dataset spanning 84 firms over 13 years. Tribunal-level data on firms undergoing CIRP is augmented with firm-level financial data extracted from company annual reports and publicly available financial databases, yielding up to 877 firm-year observations per variable. Variation in the number of observations across variables reflects differential data availability arising from the staggered entry and exit of firms into CIRP proceedings and gaps in publicly reported financial disclosures.

Fifteen firm-level financial variables are employed to assess firm outcomes across five dimensions: operational performance (sales, net profit, operating profit, employee cost, depreciation); debt and financing structure (interest expense, borrowings); equity and reserves (equity, reserves); liquidity and working capital (cash, trade receivables, trade payables, inventories); and asset base (total assets, investments). All variables are measured in levels or first differences of levels. Logarithmic transformations are not applied in the final models, as within-firm demeaning under the Fixed Effects estimator adequately addresses scale differences across firms.

The binary treatment variable $CIRP\_Active_{it}$ takes the value 1 if firm i is under active CIRP proceedings in year *t*, and 0 otherwise. This specification isolates within-firm changes in financial outcomes attributable to the insolvency resolution process rather than pre-existing distress conditions already embedded in pre-admission firm trajectories. Standard errors are clustered at the firm level across all specifications to account for within-firm serial correlation.

Several methodological limitations apply. Neither Fixed Effects nor Random Effects estimation resolves endogeneity arising from reverse causality or time-varying unobserved confounders; coefficients should be interpreted as conditional associations rather than causal effects. The unbalanced panel may introduce attrition bias if firms with missing data are systematically different from those with complete records. Pooling firms across industries assumes coefficient homogeneity across sectors, a strong restriction given structural differences in labour intensity, payable cycles, and asset composition in this sample. Finally, the binary CIRP indicator does not distinguish between phases of the resolution process (admission, plan approval, or liquidation), nor does it account for case duration or complexity, both of which may moderate the financial impact on firm outcomes.

7.5 Market Confidence

The model developed here hinges on analysing the impact of the IBC and its operations on market confidence, which is evaluated through a macroeconomic analytical framework combining ***Principal Component Analysis (PCA) with regression***.

Part I: The ***Macro Stress Index (MSI)*** is a composite, time-varying measure of macroeconomic conditions in India, constructed through PCA applied to seven underlying macro-financial indicators in 2010–2024. The index aims to synthesise information on monetary tightness, credit conditions, capital flows and real economic performance into a scalar quantity which permits comparisons of macroeconomic regimes.

Construction of the MSI addresses the selection and rationale, the full PCA loading matrix of all seven components, variance decomposition, communalities, and the annual MSI time series, along with a narrative tracking the index from the high-stress 2010–2016 era through the post-IBC decline and the 2020 nadir.

The PCA incorporates seven indicators capturing key dimensions of macro-financial conditions: the bank deposit rate as a proxy for liability costs and retail-segment monetary conditions; net FDI inflows reflecting external investor sentiment; the 10-year government bond yield representing long-term financial conditions; real GDP growth as an indicator of macroeconomic momentum; the RBI repo rate as the primary monetary policy lever factoring liquidity conditions of the economy; CPI inflation; and the aggregate Capital Adequacy Ratio (CAR) of scheduled commercial banks, signalling system-wide resilience and risk weighted assets. Together, these variables span the monetary transmission mechanism, external sector dynamics, and banking-system robustness, enabling the resulting index to capture both cyclical fluctuations and structural macro-financial stress.

Part II: After having constructed the MSI, the second analytical stage tests whether the decline in the index is attributable to structural and regime shifts in policy. Thus, the estimating equation takes MSI as a dependent variable and regresses it on two dummy variables (1) the institutional reform brought in, which is the IBC, (2) the COVID pandemic monetary shock.

Particular care is taken to flag that the COVID dummy negative sign reflects monetary accommodation rather than favourable conditions. This serves as a caveat that bears directly on how MSI should be used as a variable controlled for pre & post IBC enactment.

Part III: The diagnostics presents a two-regime characteristic (pre & post IBC enactment) with additional post-pandemic shock factored in and R squared taken to explain model fit.

7.6 Survival Analysis of Bench Efficiency

Given the absence of standardised performance metrics across India's commercial tribunal ecosystem, bench-level performance indicators for two benches are constructed, compiling annual data on case filing, disposal rates and institutional caseloads (IAs). To identify systematic performance differences across these two benches while accounting for case heterogeneity, survival analysis technique, the ***Cox proportional hazards model,*** is used. This approach estimates the probability of case disposal over time as a function of bench assignment, controlling for observable case characteristics. This enables the computation of a predictability factor of lifespan of cases instituted in a specific bench, which could serve as a model for other benches.

7.7 Recovery Outcomes Across Benches

A ***regression*** controlling for bench-wise heterogeneity is used. This is done to assess idiosyncratic patterns among different benches to identify if it has any statistical significance on the rate of recovery. This model seeks to establish a quantitative framework that can enable a comparison of the performance of different benches. With the dataset of CIRP cases yielding resolution plans mapped to specific benches, computation is done for heteroskedasticity among different benches and variance analysis in the pattern of recovery amongst different benches is undertaken.

Chapter 8: Econometric Model Specification

8.1 Decomposing Delay

A. Definitional Notation

The four procedural milestones for case i are defined as follows:

> $DoF_{(i)}$ = *Date of Filing of insolvency application*
>
> $DoC_{(i)}$ = *Date of Commencement of CIRP*
>
> $DoCoC_{(i)}$ = *Date of Approval of Resolution Plan by Committee of Creditors*
>
> $DoO_{(i)}$ = *Date of Final Order by NCLT approving the Resolution Plan*

B. Total CIRP Duration

The total elapsed time for case i from initiation to resolution is:

$$T\_total_{(i)} = DoO_{(i)} - DoF_{(i)}$$

C. Stage-Wise Decomposition

The total duration is decomposed into three mutually exclusive and exhaustive intervals:

Stage 1 Pre-Admission (NCLT Attributable):

$$T_{1(i)} = DoC_{(i)} - DoF_{(i)}$$

Stage 2 CIRP Operational Phase (Market Players):

$$T_{2(i)} = DoCoC_{(i)} - DoC_{(i)}$$

Stage 3 Post-CoC Approval (NCLT Attributable):

$$T_{3(i)} = DoO_{(i)} - DoCoC_{(i)}$$

The matter of arithmetic is as follows:

$$T\_total_{(i)} = T_{1(i)} + T_{2(i)} + T_{3(i)}$$

D. Attributed Delay: NCLT vs Market Players

Total delay is allocated between the two institutional actors as follows:

NCLT-Attributable Delay:

$$D\_NCLT_{(i)} = T_{1(i)} + T_{3(i)}$$

$$= (DoC_{i)} - DoF_{(i)}) + (DoO_{(i)} - DoCoC_{(i)})$$

Market Player-Attributable Delay:

$$D\_Market_{(i)} = T_{2(i)}$$

$$= DoCoC_{(i)} - DoC_{(i)}$$

These two quantities sum to total duration:

$$D\_NCLT_{(i)} + D\_Market_{(i)} = T\_total_{(i)}$$

E. Attribution Ratios

For any given case i, the proportional attribution is:

$$NCLT\ Attribution\ Share_{(i)} = D\_NCLT_{(i)} \ / \ T\_total_{(i)}$$

$$Market\ Attribution\ Share_{(i)} = D\_Market_{(i)} \ / \ T\_total_{(i)}$$

Averaged across the sample of n cases, the mean attribution ratios are:

$$\bar{a}\_NCLT = (1/n) \ \Sigma_i \ [\ D\_NCLT_{(i)} \ / \ T\_total_{(i)}\ ]$$

$$\bar{a}\_Market = (1/n) \ \Sigma_i \ [\ D\_Market_{(i)} \ / \ T\_total_{(i)}\ ]$$

F. Threshold Delay Formula: Economic Optimality Criterion

Distinct from the institutional attribution exercise, the economically meaningful threshold is derived from the relationship between resolution duration and recovery rate. Let:

$$RR_{(i)} = Recovery\ Rate\ for\ case\ i$$

$$= Value\ realised\ by\ creditors\ /\ Total\ admitted\ claims$$

$$\tau_{(i)} = Total\ resolution\ duration\ for\ case\ i\ (in\ years) = T\_total_{(i)} / 365$$

The threshold regression framework estimates the following piecewise specification:

$$RR_{(i)} = \alpha + \beta_1 \cdot \tau_{(i)} \cdot 1(\tau_{(i)} \leq \theta) + \beta_2 \cdot \tau_{(i)} \cdot 1(\tau_{(i)} > \theta) + \varepsilon_{(i)}$$

where θ is the threshold parameter estimated endogenously from the data, and 1(·) denotes the indicator function. The threshold θ is identified as the value that minimises the sum of squared residuals across all candidate split points:

$$\hat{\theta} = argmin\_\theta \ \Sigma_i \ [\ RR_{(i)} - f(\tau_{(i)}, \theta)\ ]^2$$

The estimated threshold from the sample is:

$$\hat{\theta} \approx 2.97\ years\ (approximately\ 1{,}084\ days)$$

The coefficient β_1 captures the marginal effect of duration on recovery for cases resolved within the threshold, found to be statistically insignificant in the sample, confirming that delay below this horizon does not meaningfully erode recovery for creditors. The coefficient β_2 captures the marginal effect beyond the threshold, found to be negative and statistically significant, confirming that duration beyond 2.97 years is associated with measurably lower creditor recovery rates.

The threshold θ thus operationalises the economically meaningful definition of delay adopted in this analysis. Economically significant delay for any case i is accordingly defined as:

$$\textit{Economically Significant Delay}_{(i)} = \max(0, \tau_{(i)} - \theta)$$

This formulation implies that cases resolved within 2.97 years, whatever their position relative to the statutory 180, 270 or 330-day window, are not classified as generating economically harmful delay, while cases exceeding this threshold are assessed based on how far their duration extends beyond the inflection point, at which value destruction becomes statistically detectable.

8.2 Resolution Time vs Recovery Rates and Recovery Outcomes across Benches

8.2.1 Dataset 1: 492 Samples

The empirical analysis employs an ***Ordinary Least Squares (OLS) regression*** framework to examine the relationship between CIRP duration and recovery outcomes across NCLT benches. The baseline specification takes the following form:

$$\log(1+\text{Recovery Rate}_i) = \beta_0 + \beta_1(\text{CIRP Duration} > 3\text{ Years})_i + \sum_j \alpha_j(\text{Year}_j) + \sum_k \gamma_k(\text{Bench}_k) + \varepsilon_i$$

where the dependent variable is the natural logarithm of the overall recovery rate for case i, transformed using log (1 + x) to accommodate zero recovery observations while preserving the percentage interpretation of coefficients as semi-elasticities. The primary explanatory variable is a binary indicator equal to 1 if the total CIRP duration exceeds three years (approximately 1,095 days) and 0 otherwise, capturing the threshold beyond which significant value erosion is hypothesised to occur. The three-year cutoff represents the 75th percentile of the duration distribution in the sample and serves as a meaningful demarcation between moderately delayed and severely prolonged proceedings.

The specification incorporates year effects to control for temporal shocks affecting all cases uniformly, such as macroeconomic conditions, regulatory amendments, or shifts in judicial interpretation. Bench-specific effects capture time-invariant institutional characteristics specific to each NCLT location, including local procedural efficiency, judicial expertise, caseload pressure, and administrative capacity. The error term ε_i represents unobserved case-specific factors influencing recovery outcomes.

To address potential heteroskedasticity arising from variance in case size, complexity, and firm characteristics, all standard errors are computed using the HC3 heteroskedasticity-consistent covariance estimator. This estimator is particularly robust in finite samples with leverage points and ensures valid inference even when residuals exhibit non-constant variance or deviations from normality. The specification prioritises causal-descriptive inference over predictive performance, focusing on the conditional association between resolution duration and recovery rates while acknowledging that unobserved firm distress and case complexity may jointly determine both outcomes.

8.2.2 Dataset 2: 1149 Samples

The determinants of recovery outcomes under the CIRP are estimated using an ***OLS regression model*** that relates the probability of achieving higher recovery to the timing of case completion and institutional heterogeneity across benches and years. The dependent variable, $Recovery_i$, represents the observed creditor recovery rate for CIRP case *i*. To capture the effect of procedural duration, two mutually exclusive duration dummies are introduced: $Middle_i$, which equals 1 for cases resolved between one and two years, and $Late_i$, which equals 1 for cases exceeding two years in duration. Cases resolved in under one year form the reference category, enabling interpretation of the coefficients as deviations from early-stage resolution performance. The specification further includes year effects ($Year_t$) to absorb macroeconomic and policy-cycle variation affecting all cases in a given year, and NCLT bench effects ($Bench_b$) to control for institutional, infrastructural, and adjudicatory differences across benches. Together, this specification isolates the marginal effect of CIRP duration on recovery likelihood while accounting for both temporal shocks and structural heterogeneity across tribunals. It is important to note that the model is subject to certain limitations. While the analysis of duration and recovery rates partially mitigates concerns of endogeneity—given that recovery outcomes are shaped by a legislative process—these concerns cannot be fully eliminated. Additionally, key variables such as firm size and sector are not publicly available for the dataset. Accordingly, the findings should not be interpreted as indicative of definitive causal relationships.

Model

$$Log\ Recovery_i = \beta_0 + \beta_1 \cdot Middle_i + \beta_2 \cdot Late_i + \Sigma_t\, \gamma_t \cdot Year_{t,i} + \Sigma^b\, \delta^b \cdot Bench^b{}_{,i} + \varepsilon_i$$

Where:

$Recovery_i$ = overall recovery rate

$Middle_i$ = 1 if CIRP duration 1–2 years

$Late_i$ = 1 if CIRP duration >2 years

Early stage (<1 year) is the reference category

$Year_{t,i}$ = year effects

$Bench_{b,i}$ = NCLT bench effects

8.3 Firm Performance

To examine the financial impact of CIRP on distressed firms, this study employs a ***panel regression framework*** estimating both ***Fixed Effects (FE) and Random Effects (RE) models*** for each of the 15 outcome variables. The general model specification takes the following form:

$$Yit = \alpha + \beta 1\ CIRP\_Activeit + \gamma Xit + ui + \varepsilon it$$

where Y_{it} is the financial outcome variable for firm i in year t; $CIRP\_Active_{it}$ is the binary treatment indicator defined above, with coefficient β_1 capturing within-firm changes in the outcome attributable to the insolvency resolution process; X_{it} is a vector of firm-level control variables; u_i is the unobserved firm-specific effect; and ε_{it} is the idiosyncratic error term.

The FE estimator treats u_i as a firm-specific intercept, eliminating all time-invariant unobserved heterogeneity through within-firm demeaning. The RE estimator treats u_i as a random draw from a distribution assumed to be uncorrelated with the regressors, yielding more efficient estimates when this assumption is valid. To determine the appropriate estimator for each variable, the Hausman (1978) specification test is applied. The null hypothesis of the test is that the unobserved firm effect is uncorrelated with the regressors, a condition under which RE is consistent and efficient. Rejection of the null ($p < 0.05$) indicates that firm-level heterogeneity is correlated with the regressor, rendering RE inconsistent and the FE estimator preferable.

Model selection is therefore performed on an empirical, variable-by-variable basis rather than imposed uniformly. Of the fifteen variables examined, the Hausman test favours the FE model for nine variables: interest expense, employee cost, trade receivables, total assets, reserves, sales, inventories, cash, and operating profit, and the RE model for the remaining six: trade payables, borrowings, net profit, investments, equity, and depreciation. This heterogeneity in preferred specifications reflects the differing degrees to which unobserved firm characteristics are correlated with individual financial variables and underscores the importance of empirical model selection in panel studies of financially distressed firms.

Model fit is assessed using the within-R^2, which measures the share of within-firm variation in the outcome explained by the regressors after removing firm fixed effects. Within-R^2 values across the 15 models range from near zero to 0.065 (interest expense), consistent with the expectation that unobserved time-varying factors, including macroeconomic conditions, sector-level shocks, and case-specific resolution dynamics, account for a substantial portion of within-firm variation in financial outcomes during CIRP.

8.4 Market Confidence

The baseline macro-attribution model is specified as (***PCA with regression***):

$$MSI_t = \alpha + \beta_1 \cdot IBC_t + \beta_2 \cdot COVID_t + \varepsilon_t$$

where MSI_t is the annual Macro Stress Index; IBC_t is a binary dummy equal to 1 for the years 2017–2024, capturing the post-IBC institutional regime; $COVID_t$ is a binary dummy equal to 1 for 2020–2021, capturing the extraordinary liquidity injection during the pandemic; α is the intercept, representing the mean MSI in the pre-IBC baseline period (2010–2016); and ε_t is the error term. The model identifies three macro regimes from the orthogonal dummies: the pre-IBC period (baseline), the post-IBC non-pandemic period, and the pandemic period, which layers an additional shock atop the post-IBC baseline.

8.5 Survival Analysis of Bench Efficiency

Case duration is modelled using a ***Cox Proportional Hazards*** framework. Let T_i denote the time to resolution for case i. The hazard function is specified as:

$$h_i(t \mid X_i) = h_0(t) \exp(\beta_1 IA_i + \beta_2 PB_i + Z_i' \gamma)$$

where:

$h_i(t \mid X_i)$ is the instantaneous hazard of resolution at time t;

$h_0(t)$ is the unspecified baseline hazard;

IA_i denotes the number of interlocutory applications;

PB_i is an indicator variable for the Principal Bench;

Z_i is a vector of additional control variables;

β_1, β_2, and γ are parameters to be estimated.

Estimation is conducted via partial likelihood, with right-censoring explicitly accommodated.

Chapter 9: Results

9.1 Decomposing Delays

In the present sample of approximately 500 cases, these ratios yield:

$\bar{a}\_NCLT \approx 0.65$ *(65 percent of total elapsed CIRP duration)*

$\bar{a}\_Market \approx 0.35$ *(35 percent of total elapsed CIRP duration)*

Bench-wise summary:

Bench	**# of Cases**	**Average of Total CIRP Duration (A)**	**Average of Pre CIRP Duration (B)**	**Average of Other Participants Processing Time (C)**	**Average of Post COC NCLT Adjudicating Time (D)**	**NCLT Duration (E=B+D)**	**NCLT Duration % (E/A)**	**Other Participants Duration % (C/A)**
Ahmedabad	31	1,103	505	306	292	797	72%	28%
Allahabad	20	1,115	371	478	267	638	57%	43%
Bengaluru	17	837	311	323	202	513	61%	39%
Chandigarh	25	1,030	247	386	397	644	63%	37%
Chennai	8	890	422	276	193	615	69%	31%
Cuttack	2	980	156	484	341	497	51%	49%
Guwahati	4	602	128	298	177	305	51%	50%
Hyderabad	52	948	334	368	246	580	61%	39%
Jaipur	9	1,149	286	464	399	685	60%	40%
Kochi	9	692	181	342	170	351	51%	49%
Kolkata	53	1,076	391	447	238	629	58%	42%
Madhya Pradesh	2	699	212	238	249	461	66%	34%

Mumbai	122	1,318	467	420	431	898	68%	32%
New Delhi	108	1,132	367	392	373	740	65%	35%
Principal Bench	36	1,241	243	451	548	791	64%	36%
Grand Total	**498**	**1,124**	**375**	**399**	**350**	**725**	**65%**	**35%**

9.2 Resolution time vs Recovery Rates & Recovery Outcomes across Benches

9.2.1 Dataset 1 - 492 Samples

The regression results reveal two principal empirical findings regarding the determinants of recovery outcomes in corporate insolvency proceedings. First, CIRP duration exerts a statistically significant negative effect on recovery rates. Second, substantial institutional heterogeneity exists across NCLT benches even after controlling for duration and temporal effects.

OLS Regression Model

Statistic	Value
Dependent Variable	log_Recovery
Model	OLS
Observations	490, 2 further outlier excluded
Df Model	21
Df Residuals	468
R-squared	0.071
Adjusted R-squared	0.029
F-statistic	4.772
Prob (F-statistic)	5.70e-11
Log-Likelihood	-728.14
AIC	1500
BIC	1593

Statistic	Value
Covariance Type	HC3

Test	Value
Durbin-Watson	2.055
Omnibus	23.291
Prob (Omnibus)	0.000
Jarque-Bera	25.362
Prob (JB)	3.11e-06
Skew	-0.542
Kurtosis	2.744
Condition Number	24.2

Variable	Coefficient	Std. Error	z-statistic	p-value	95% CI (Lower)	95% CI (Upper)
Intercept	3.3892***	0.275	12.338	0	2.851	3.928
Year 2018	−0.1855	0.192	−0.966	0.334	-0.562	0.191
Year 2019	−0.1417	0.196	−0.722	0.47	-0.527	0.243
Year 2020	0.0618	0.22	0.281	0.779	-0.369	0.493
Year 2021	−0.0640	0.242	−0.264	0.792	-0.538	0.411
Year 2022	0.1847	0.262	0.706	0.48	-0.328	0.697
Year 2023	−0.7789	1.296	−0.601	0.548	-3.319	1.762
Bench: Allahabad	−0.0226	0.286	−0.079	0.937	-0.583	0.538
Bench: Bengaluru	−0.1035	0.326	−0.318	0.751	-0.742	0.535
Bench: Chandigarh	−0.1022	0.262	−0.391	0.696	-0.615	0.411
Bench: Chennai	−0.3702	0.549	−0.675	0.5	-1.445	0.705
Bench: Cuttack	−0.0724	1.214	−0.060	0.952	-2.451	2.306
Bench: Guwahati	0.4764	0.362	1.315	0.189	-0.234	1.186
Bench: Hyderabad	−0.4904*	0.267	−1.837	0.066	-1.014	0.033
Bench: Jaipur	−0.0696	0.317	−0.220	0.826	-0.690	0.551
Bench: Kochi	0.109	0.337	0.324	0.746	-0.551	0.769

Bench: Kolkata	−0.4843*	0.266	−1.817	0.069	-1.007	0.038
Bench: Madhya Pradesh	0.9510***	0.295	3.226	0.001	0.373	1.529
Bench: Mumbai	−0.3728	0.237	−1.570	0.116	-0.838	0.093
Bench: New Delhi	−0.0817	0.24	−0.340	0.734	-0.552	0.388
Bench: Principal Bench	0.1081	0.291	0.372	0.71	-0.462	0.678
CIRP Duration > 3 Years (Dummy)	−0.2048*	0.118	−1.734	0.083	-0.436	0.027

- *Reference categories: Base Year, Reference Bench, and CIRP duration ≤ 3 years *** p < 0.01, ** p < 0.05, * p < 0.10*
- *Robust standard errors (HC3) reported*
- *Coefficients represent semi-elasticities due to log-transformed dependent variable*

9.2.2 Dataset 2: 1149 Samples:

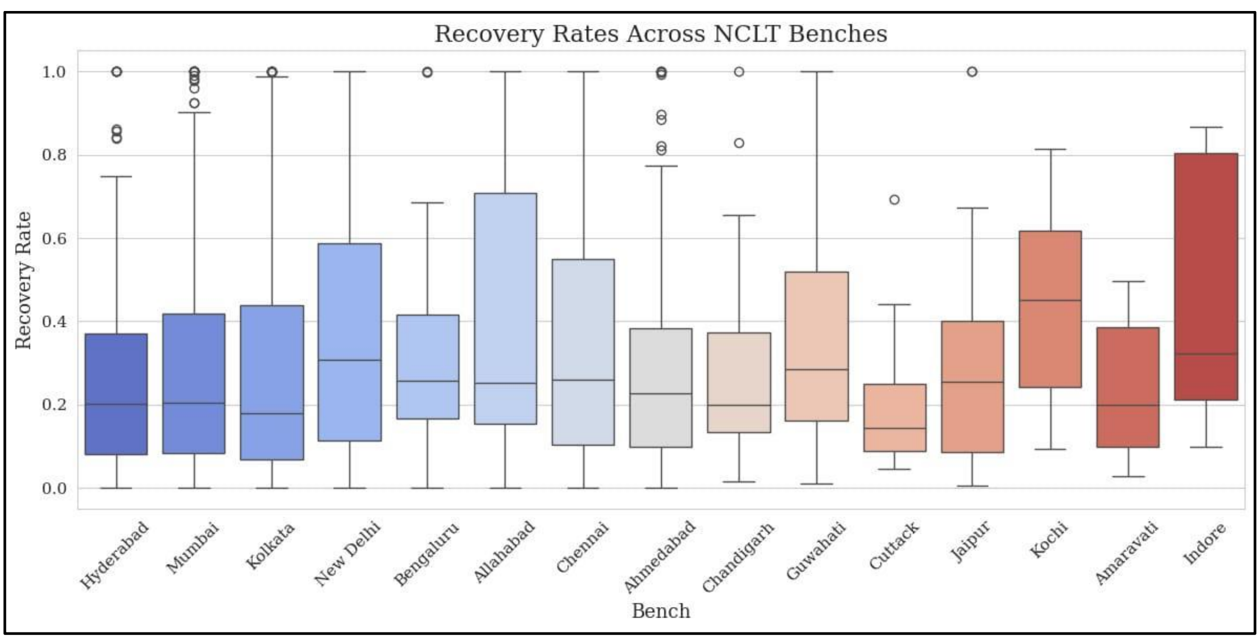
OLS Model (Regression)

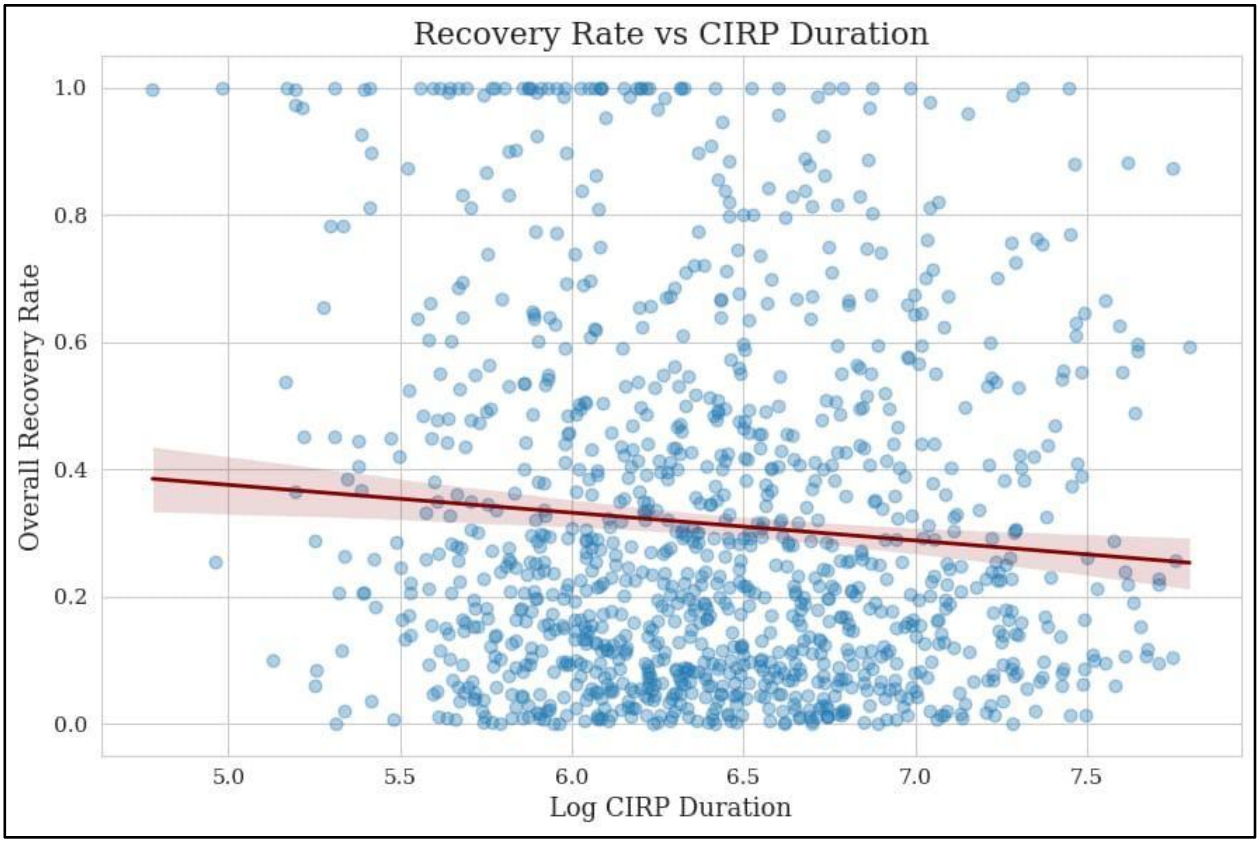
Variable	Coefficient	Std. Error	z-stat	p-value
Panel A: Duration Stage Effects (Reference: Early Stage ≤ 1 year)				
Intercept	0.4633***	0.043	10.870	0.000
Middle Stage (1–2 years)	−0.0690***	0.027	−2.598	0.009
Late Stage (> 2 years)	−0.0599**	0.028	−2.134	0.033
Panel B: Year Effects (Reference: Base Year)				
Year 2018	−0.0787**	0.038	−2.050	0.040

Variable	Coefficient	Std. Error	z-stat	p-value
Year 2019	−0.1380***	0.036	−3.798	0.000
Year 2020	−0.1273***	0.041	−3.075	0.002
Year 2021	−0.0911**	0.040	−2.304	0.021
Year 2022	−0.1153***	0.039	−2.934	0.003
Year 2023	−0.1163***	0.044	−2.634	0.008
Year 2024	−0.1039	0.095	−1.090	0.276
Panel C: NCLT Bench Effects (Reference: Principal Bench)				
Allahabad	0.0933	0.066	1.413	0.158
Amaravati	−0.0830	0.057	−1.457	0.145
Bengaluru	0.0080	0.054	0.148	0.882
Chandigarh	−0.0629	0.038	−1.636	0.102
Chennai	0.0450	0.042	1.063	0.288
Cuttack	−0.0788	0.067	−1.185	0.236
Guwahati	0.0290	0.076	0.382	0.703
Hyderabad	−0.0352	0.035	−1.011	0.312
Indore	0.1776	0.131	1.357	0.175
Jaipur	−0.0038	0.065	−0.058	0.954
Kochi	0.1571**	0.066	2.372	0.018

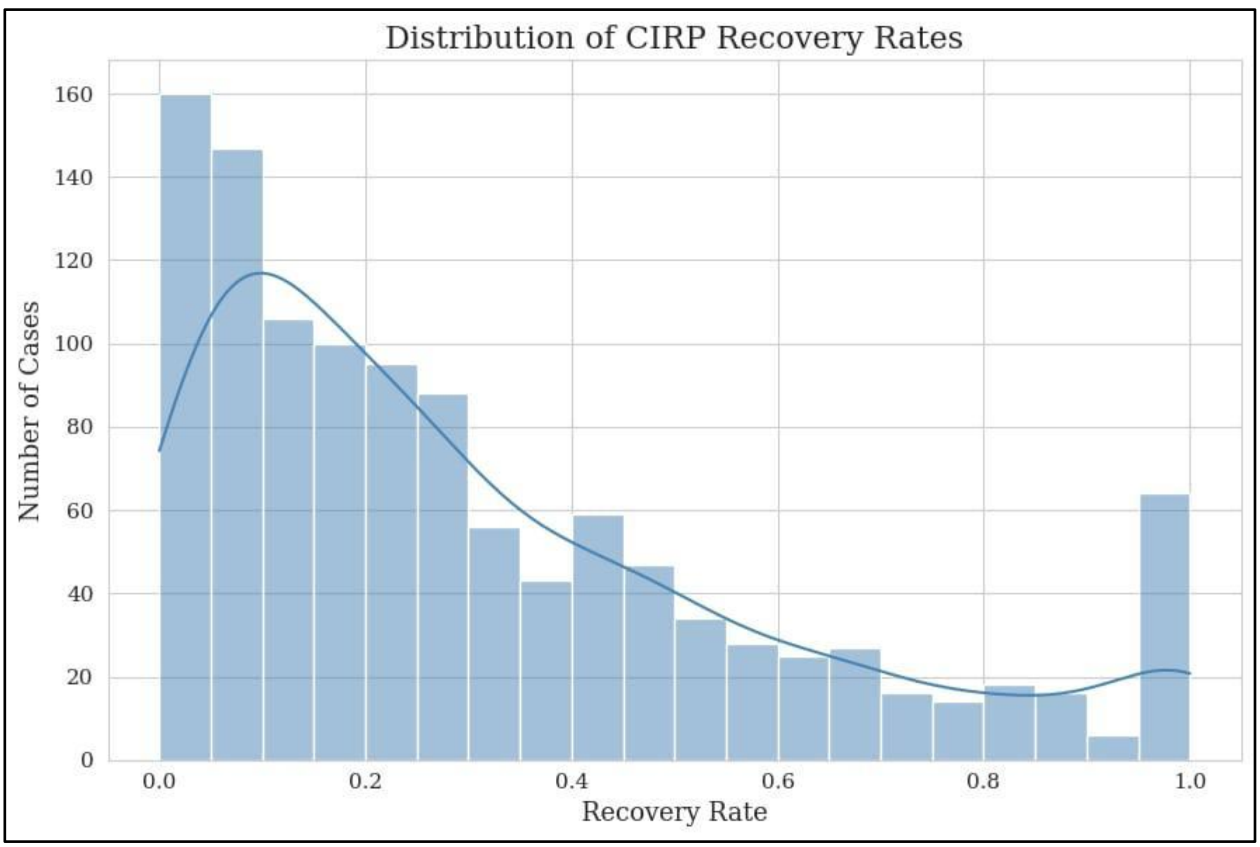
Variable	Coefficient	Std. Error	z-stat	p-value
Kolkata	−0.0260	0.034	−0.771	0.441
Mumbai	−0.0171	0.029	−0.588	0.556
New Delhi	0.0799**	0.032	2.522	0.012
Panel D: Model Diagnostics				
Observations	1,149			
R^2	0.063			
Adjusted R^2	0.044			
F-statistic	3.165 ($p < 0.001$)			

Notes: The dependent variable is the overall recovery rate under CIRP. The early stage (≤ 1 year) serves as the baseline category for duration; the base year and principal bench serve as reference categories for bench-specific effects. Standard errors are heteroskedasticity-robust (HC3). Observations: N = 1,149. ***p < 0.01; **p < 0.05; *p < 0.10.

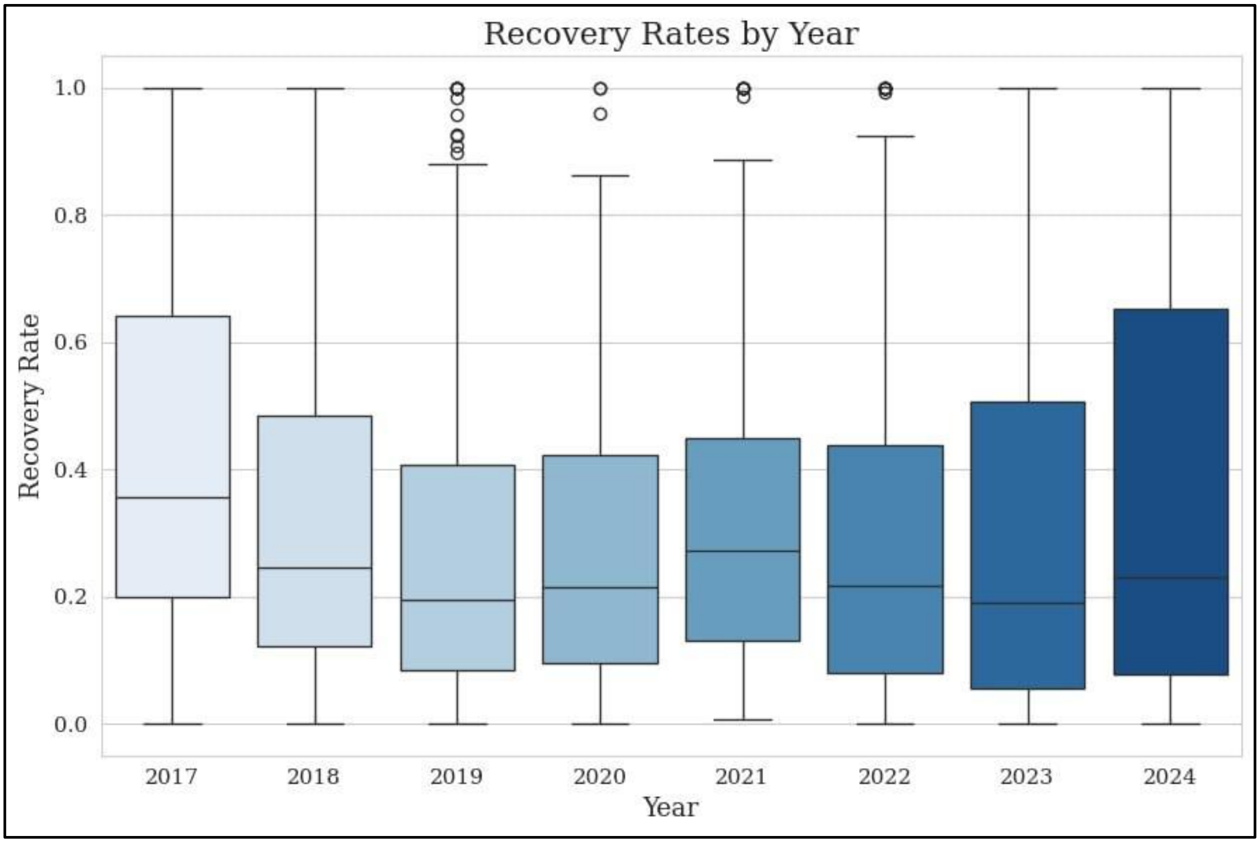




Recovery Rate vs CIRP Duration
Overall Recovery Rate
0.0
0.2
0.4
0.6
0.8
1.0
5.0
5.5
6.0
6.5
7.0
7.5
Log CIRP Duration



Distribution of CIRP Recovery Rates
Number of Cases
0
20
40
60
80
100
120
140
160
0.0
0.2
0.4
0.6
0.8
1.0
Recovery Rate



9.3 Firm Performance

Impact of CIRP on Firm Financial Outcomes; Random Effects Panel Regression

Variable	FE Coef	FE SE	FE P-Value	FE R^2 (Within)	RE Coef	RE SE	RE P-Value	RE R^2	Hausman P-Value	Model	Obs	Firms	Years
Trade payables	-0.3644**	0.1452	0.0123	0.0312	-0.3628***	0.1367	0.0081	0.0127	0.9736	**RE**	873	84	13
Interest expenses	-0.7016**	0.2832	0.0135	0.0652	-1.0408***	0.2588	0.0001	0.0514	0.0032***	**FE**	731	82	13

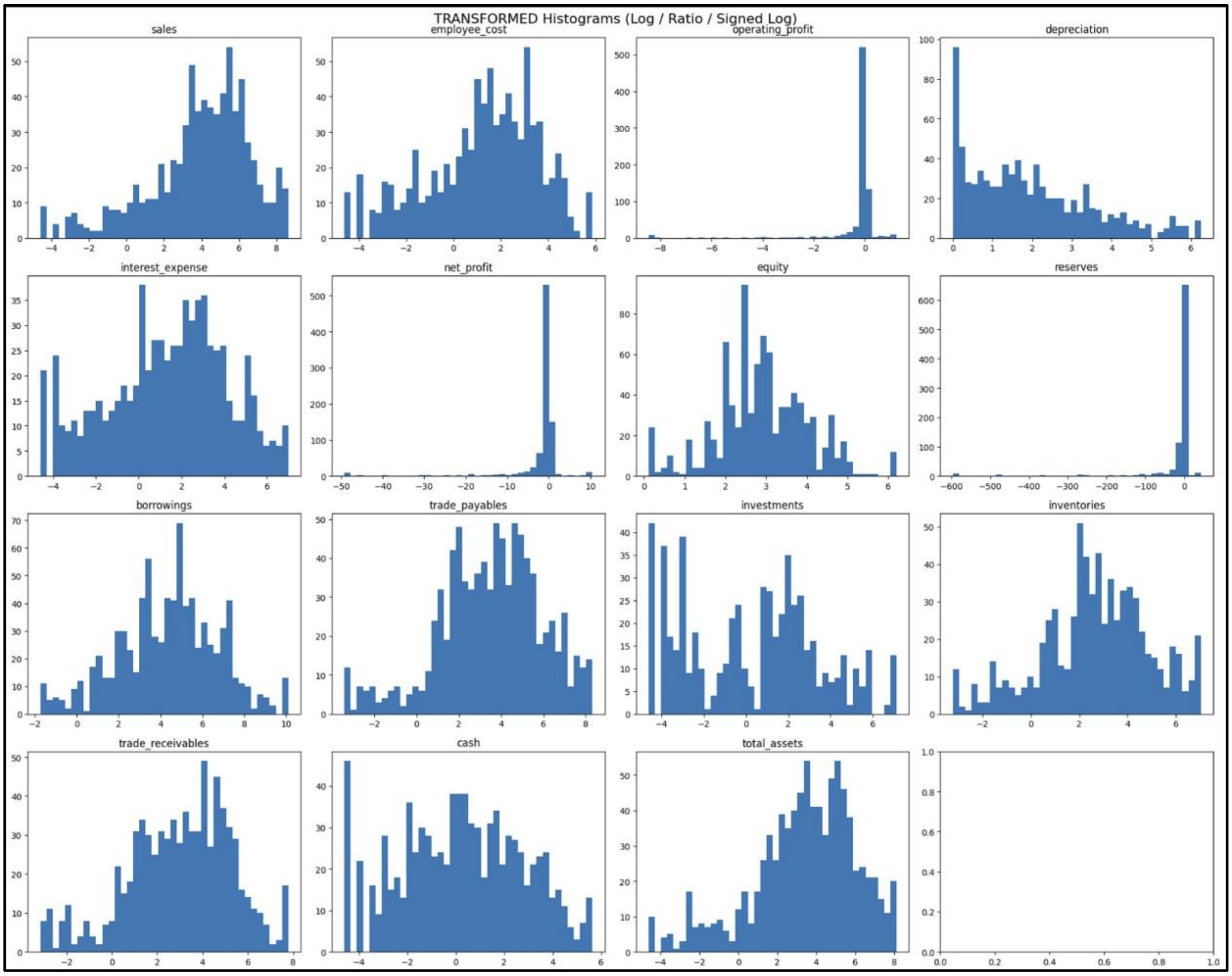
Variable	FE Coef	FE SE	FE P-Value	FE R^2 (Within)	RE Coef	RE SE	RE P-Value	RE R^2	Hausman P-Value	Model	Obs	Firms	Years
Employee cost	-0.2871**	0.1413	0.0426	0.0367	-0.5341***	0.1301	0.0000	0.0345	0.0000***	**FE**	816	83	13
Trade receivables	-0.3095*	0.1711	0.0709	0.0417	-0.6336***	0.1595	0.0001	0.0325	0.0000***	**FE**	769	81	13
Total assets	-0.2279*	0.1338	0.0889	0.0254	-0.5106***	0.1237	0.0000	0.0215	0.0000***	**FE**	877	84	13
Reserves	9.2947	5.9025	0.1157	-0.0083	-5.6943	4.0618	0.1613	0.0016	0.0005***	**FE**	872	84	13
Borrowings	-0.1496	0.0988	0.1304	0.0128	-0.1956*	0.1020	0.0554	0.0056	1.0000	**RE**	839	84	13
Sales	-0.3335	0.2281	0.1442	0.0345	-0.6991***	0.1993	0.0005	0.0234	0.0010***	**FE**	725	80	13
Net profits	0.5115	0.4443	0.2500	-0.0028	-0.8732*	0.5101	0.0873	0.0035	1.0000	**RE**	869	84	13
Investments	-0.3017	0.3011	0.3168	0.0141	-0.5148*	0.2779	0.0645	0.0119	0.0662*	**RE**	572	72	13
Inventories	-0.1021	0.1742	0.5580	0.0117	-0.3936**	0.1592	0.0137	0.0132	0.0000***	**FE**	711	79	13

Variable	FE Coef	FE SE	FE P-Value	FE R² (Within)	RE Coef	RE SE	RE P-Value	RE R²	Hausman P-Value	Model	Obs	Firms	Years
Cash	-0.0914	0.1726	0.5964	0.0090	-0.4649***	0.1634	0.0046	0.0213	0.0000***	**FE**	863	84	13
Operating profit	0.0288	0.0721	0.6893	-0.0015	-0.1198*	0.0695	0.0851	0.0034	0.0000***	**FE**	778	76	13
Equity	-0.0159	0.0826	0.8477	0.0004	0.0462	0.0637	0.4687	0.0006	0.2375	**RE**	875	84	13
Depreciation	-0.0112	0.1076	0.9174	0.0012	-0.2138*	0.1140	0.0612	0.0078	1.0000	**RE**	789	82	13

**** p<0.01 ** p<0.05 * p<0.1 Stars applied to FE Coef, RE Coef, and Hausman P-Value columns.*

Variable	Interpretation
Trade Payables	Higher trade payables significantly reduce the outcome (RE preferred); suggests supplier credit reliance signals liquidity stress.
Interest Expense	Rising interest costs within firms strongly erode the outcome (FE); highest within-R^2, confirming debt-servicing burden as a key driver.
Employee Cost	Significant negative within-firm effect (FE); wage and salary increases compress the outcome, reflecting margin pressure.
Trade Receivables	Marginally significant (FE, p<0.10); higher receivables within firms may signal aggressive credit extension or collection delays.

Variable	Interpretation
Total Assets	Marginally significant (FE, p<0.10); asset growth within firms does not proportionately improve the outcome, hinting at diminishing returns.
Reserves	Insignificant in both models but FE and RE coefficients are opposite in sign — a red flag for omitted variable bias; warrants further scrutiny.
Borrowings	Borderline insignificant (RE, p=0.055); mild negative cross-firm association suggests higher debt levels are weakly linked to worse outcomes.
Sales	Not significant within firms (FE, p=0.144); revenue changes alone do not reliably predict the outcome once firm effects are controlled.
Net Profit	Insignificant (RE, p=0.087); FE gives a positive and RE a negative estimate — high sensitivity to specification suggests omitted variable concerns.
Investments	Not significant (RE, p=0.064); limited sample coverage (572 obs) may reduce power; negative direction is consistent but imprecisely estimated.
Inventories	Insignificant within firms (FE, p=0.558); inventory accumulation shows no reliable within-firm effect on the outcome over time.
Cash	No significant within-firm effect (FE, p=0.596); cash holdings do not explain time-series variation in the outcome within individual firms.
Operating Profit	Completely insignificant within firms (FE, p=0.689); operating performance changes do not drive within-firm variation in the dependent variable.
Equity	No significant effect in either model; equity levels appear unrelated to the outcome both within and across firms.
Depreciation	Insignificant (RE, p=0.061); depreciation charges show no meaningful relationship with the outcome across firms.



9.4 Market Confidence

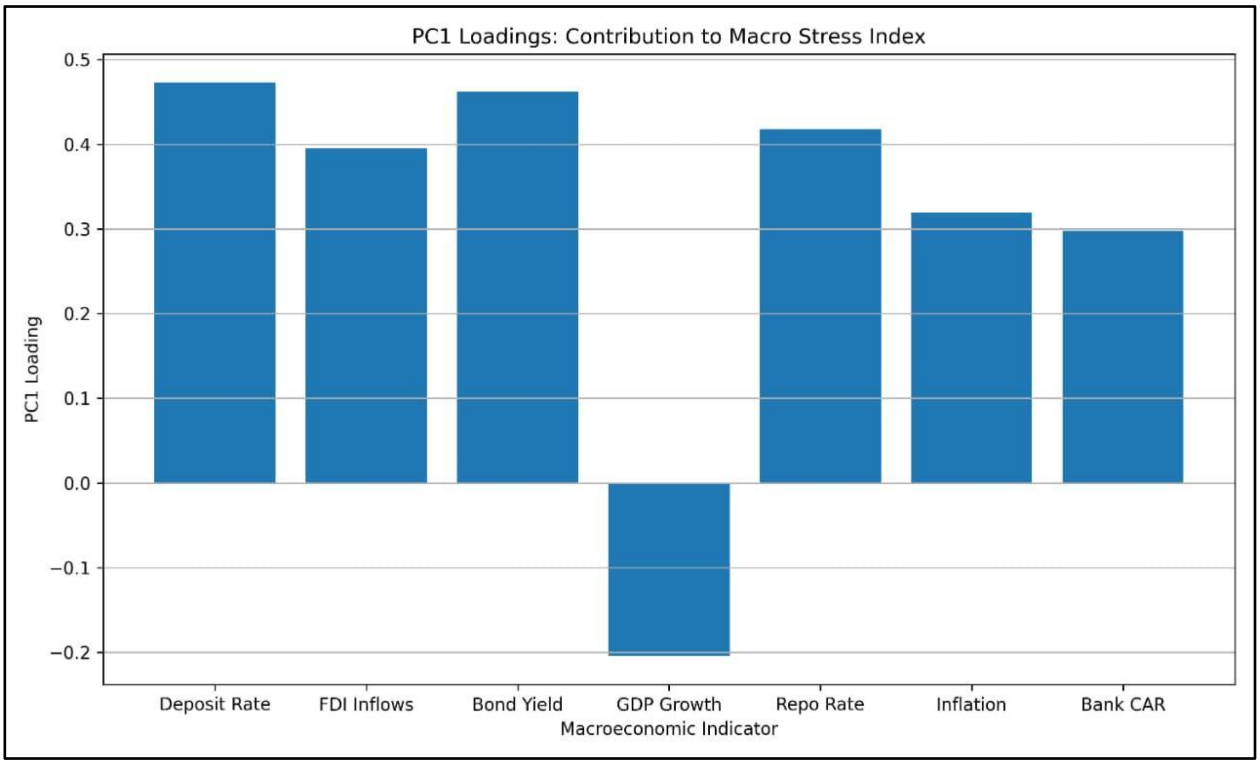
9.4.1 PCA Structure: Loadings Across Seven Components

PCA decomposes the variance-covariance matrix of the seven standardised indicators into orthogonal principal components ranked by the share of total variance they explain. The table below showcases the full loading matrix across all seven components.

PCA Loadings (PC1 – PC7)

Indicator	PC1	PC2	PC3	PC4	PC5	PC6	PC7
Deposit	0.4728	−0.1131	0.0424	−0.1171	−0.3984	0.6304	−0.4382
FDI	0.3950	0.3520	0.1668	0.4952	0.5777	0.3077	0.1367

Bond	0.4625	−0.2038	−0.0270	−0.2458	−0.1766	0.0224	0.8073
GDP	−0.2040	−0.3079	0.8387	−0.2813	0.2353	0.1578	0.0287
Repo	0.4174	−0.1461	−0.2143	−0.5232	0.5460	−0.2958	−0.3148
Inflation	0.3192	−0.5619	0.1826	0.5544	−0.1277	−0.4450	−0.1653
CAR	0.2981	0.6245	0.4325	−0.1427	−0.3265	−0.4438	−0.1012



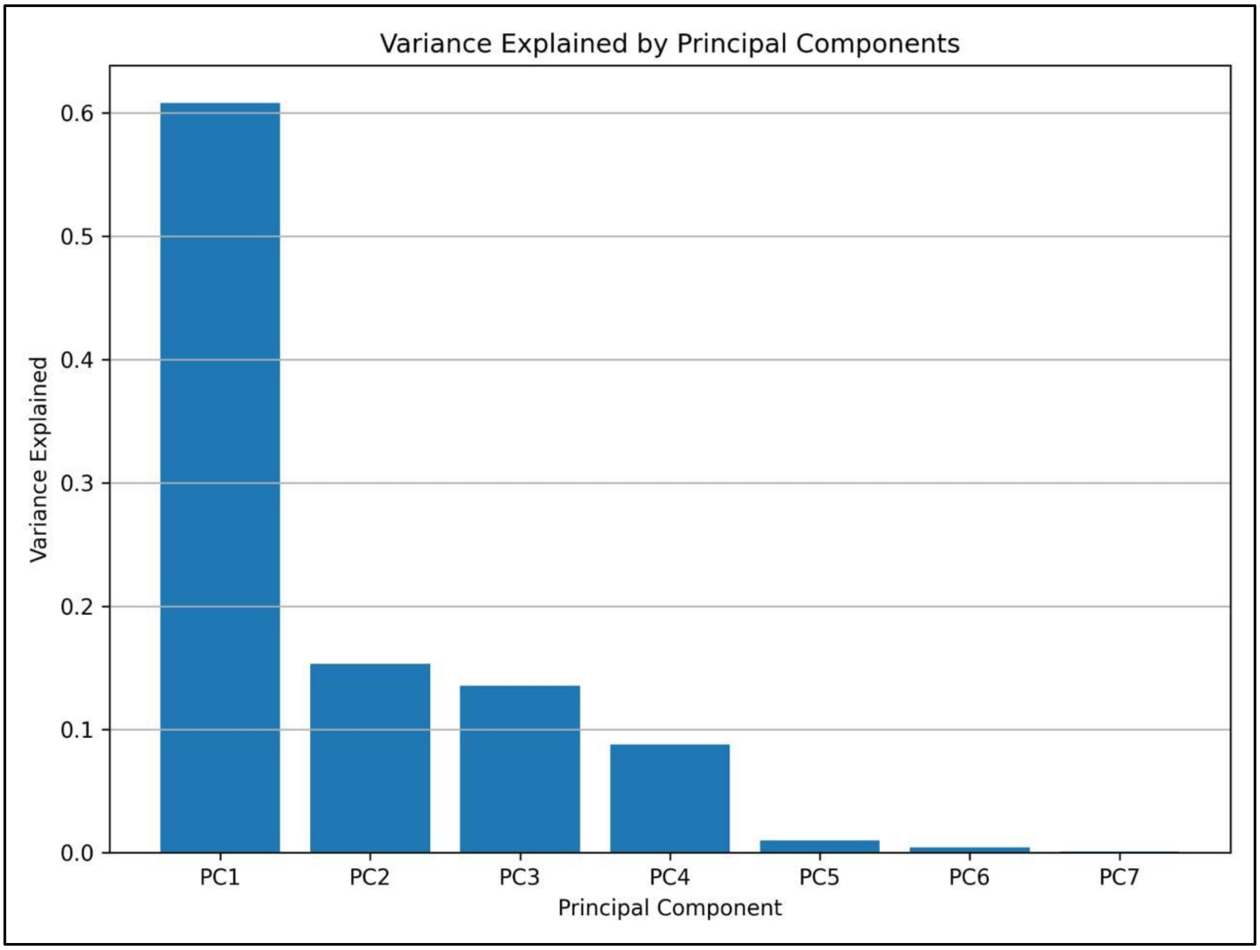
9.4.2 Variance Decomposition

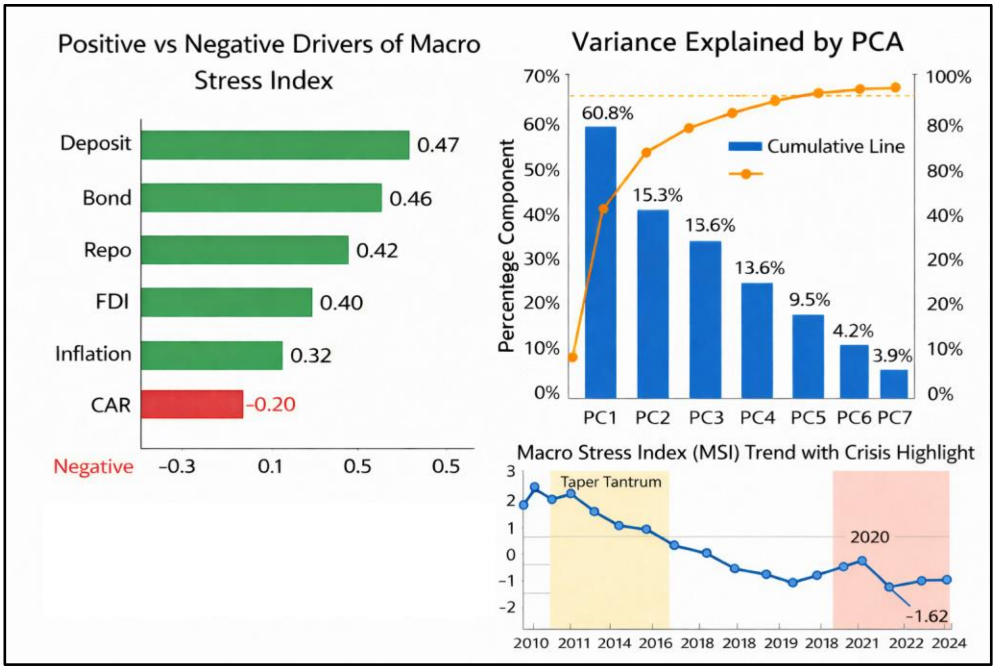
The table below shows the proportion of total variance attributed to each principal component.

Variance Explained by Principal Component

Component	Variance Explained
PC1	60.81%
PC2	15.32%

PC3	13.57%
PC4	8.77%
PC5	0.98%
PC6	0.44%
PC7	0.11%





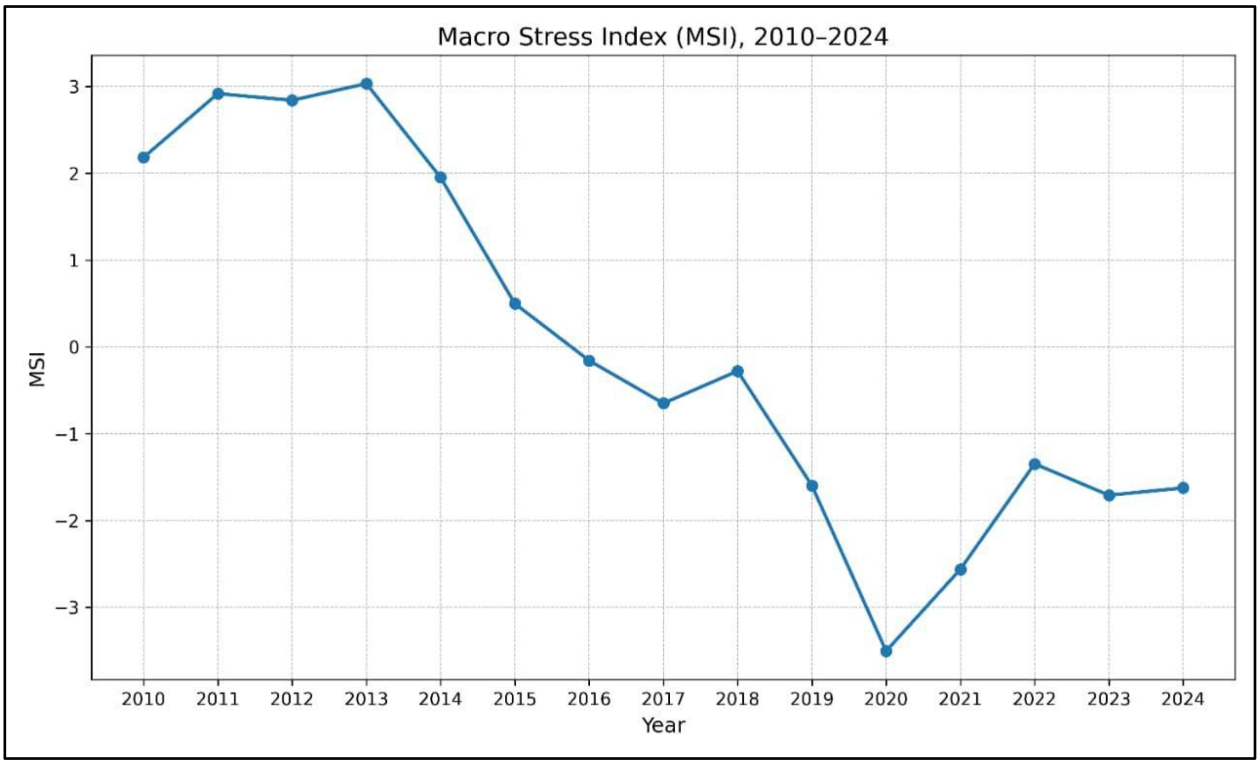
9.4.3 The Macro Stress Index: Time Series

The MSI for each calendar year is computed as the first principal component score, i.e., the linear projection of the standardised indicator values onto the PC1 loading vector. Higher MSI values denote tighter financial conditions and elevated macro stress; lower and particularly negative values reflect easier conditions and reduced systemic stress.

Macro Stress Index by Year (2010–2024)

Year	MSI Value
2010	2.1829
2011	2.9170
2012	2.8399
2013	3.0323
2014	1.9509
2015	0.4984
2016	−0.1570

2017	−0.6497
2018	−0.2782
2019	−1.5954
2020	−3.5026
2021	−2.5608
2022	−1.3464
2023	−1.7077
2024	−1.6237



9.4.4 Estimated Regression Results

The table below reports the OLS estimates, t-statistics, and p-values from estimating the macro-attribution model on the 15-year panel (2010–2024).

OLS Regression Results MSI on IBC and COVID Dummies

Variable	Coefficient	Std. Error	t-statistic	p-value	95% CI
Constant (Pre-IBC Mean)	1.8949	0.373	5.08	0.000	[1.082 , 2.708]
IBC Dummy (2017–2024)	−3.0951	0.549	−5.64	0.000	[-4.291 , -1.899]
COVID Dummy (2020–2021)	−1.8315	0.806	−2.27	0.042	[-3.587 , -0.076]

$R^2 = 0.817$ | Adj. $R^2 = 0.786$ | F-statistic = 26.77 ($p < 0.001$)

Metric	Value
R-squared	0.817
Adjusted R^2	0.786
F-statistic	26.77
Prob (F-stat)	3.77e-05
Observations	15
Durbin-Watson	1.227

9.4.5 Macro Regime Taxonomy (2010–2024)

Period	Macro Regime	Predicted MSI
2010–2016	Pre-IBC: High Stress	1.895
2017–2019	Post-IBC: Structural Improvement	−1.200
2020–2021	COVID Liquidity Shock	−3.032
2022–2024	Partial Normalisation	−1.200 (base)

9.5 Survival Analysis of Bench Efficiency

9.5.1 Effect of Procedural Intensity (Interlocutory Applications)

Metric	Value
Observations	8,653
Events (Disposed)	1,361
Concordance (IA Model)	0.6747
Concordance (Bench Model)	0.6893
Partial AIC (Bench Model)	21,854.17

Covariate	Coef	Hazard Ratio (exp(coef))	Std. Error	95% CI (Coef)	95% CI (HR)	z-stat	p-value	-log2(p)
IA_Count	-0.2471	**0.7811**	0.0185	[-0.2833 , -0.2108]	[0.7533 , 0.8100]	-13.3441	0.00	132.5185
Principal Bench	-0.6572	**0.5183**	0.0560	[-0.7669 , -0.5474]	[0.4645 , 0.5784]	-11.7375	0.00	103.2677

The estimated coefficient on interlocutory applications is negative and highly statistically significant. The estimated hazard ratio associated with IA_i is approximately:

$$\exp(\beta_1) \approx 0.78, \; p < 0.005$$

with a 95 per cent confidence interval of approximately [0.75, 0.81].

This implies:

$$\partial \ln h_i(t) / \partial IA_i = \beta_1 < 0$$

so that each additional interlocutory application reduces the hazard of resolution by approximately 22 per cent at any point in time, holding other covariates constant.

Given the multiplicative structure of the Cox model, the hazard after k additional applications is:

$$h_i(t \mid IA_i + k) = h_i(t \mid IA_i) \times \exp(\beta_1 k)$$

so that procedural delay compounds exponentially as interlocutory filings accumulate.

9.5.2 Bench-Level Effects (Principal Bench)

The coefficient on the Principal Bench indicator is also negative and highly statistically significant. The estimated hazard ratio is:

$$\exp(\beta_2) \approx 0.52, \ p < 0.005$$

with a 95 per cent confidence interval of approximately [0.46, 0.58].

This implies that, conditional on the same procedural complexity and survival history, cases at the Principal Bench face approximately a 48 per cent lower instantaneous probability of resolution relative to the omitted reference bench.

Formally:

$$h_i^{PB}(t) / h_i^{Ref}(t) = \exp(\beta_2) \approx 0.52$$

holding IA_i and other controls constant.

Chapter 10: Interpretation and Discussion

10.1 Decomposing Delays

10.1.1 An Empirically Derived Threshold for Economically Meaningful Delay

The empirical findings from the analysis of the sample data are instructive in this regard. When recovery rates are plotted against resolution duration, a distinct pattern emerges for cases that are resolved within approximately three years (2.97). The recovery rates do not exhibit a statistically significant downward trend as duration increases within the three-year timeframe. This is a finding of considerable importance as it suggests that the commonly assumed relationship between delay and value—that every additional day of delay in CIRP results in value erosion—may be overstated, at least within this temporal range. In the early stages of the resolution process, the institutional framework of IBC—the moratorium, the appointment of resolution professionals, and the replacement of incumbent management—may serve as a value-preserving function by arresting the deterioration occurring under distressed management. It is therefore plausible that resolution durations of up to roughly three years do not cause any kind of structural deterioration that manifests in significantly reduced recovery rates. This interpretation, however, must be qualified by firm-specific characteristics such as sector, asset composition, and initial financial condition.

Beyond the three-year horizon, however, the picture changes materially. The data seems to indicate that recovery rates decline in an economically meaningful way for cases resolved after this threshold. The estimated inflection point of 2.97 years or roughly 1084 days thus represents a functional threshold beyond which additional delays is associated with a demonstrably negative effect on creditors' recovery rates.

On this basis, the study proposes that the notion of "delay" should be defined in economic terms—anchored in these observed outcomes—rather than solely by reference to statutory timelines.

Two important qualifications must be noted:

1. Heterogeneity of firms: The estimated threshold applies to the sample as a whole. Firms entering CIRP in conditions of severe financial distress, fragmented structure, eroded assets and going concern risks may exhibit threshold effects at a considerably shorter duration. For such cases, a more refined analysis incorporating factors such as initial financial conditions, sector, and debt structure would be necessary to capture such variation.
2. Scope of measured costs: The 2.97-year threshold captures the effect of CIRP duration on recovery rate as a primary outcome. It does not fully account for the range of costs associated with extended resolution, including carrying costs borne by creditors, deadweight losses of asset idling, reputation and market signalling effects impacting potential bidders' sentiments and broader systemic costs on credit markets when resolution uncertainty is elevated for extended periods.

A more complete assessment of these indirect costs would likely lower the threshold, which may strengthen the argument for resolving the ongoing insolvency sooner.

10.1.2 Decomposition of Delays: Attribution

The decomposition of delay yields a notable result: approximately 65% of total CIRP duration is attributable to delays within the NCLT's procedural domain, while the remaining 35% reflects time consumed by market participants in the resolution planning process.

This finding warrants careful interpretation. The tribunal operates under severe source constraints, such as volume relative to bench strength, and also sees a significant number of interlocutory applications being filed by multiple parties. Moreover, delays at key stages—such as admission and plan approval—may partly arise from strategic behaviour or procedural actions by stakeholders, including unsuccessful resolution applicants or the erstwhile management of the corporate debtor. These delays would not be attributable to the tribunal per se, and such cases are adversely affected by the proposed resolution rather than from administrative inertia.

Nonetheless, the 65:35 attribution ratio raises an important policy question. Where delay is generated by market participants engaged primarily in the legitimate commercial task of constructing and negotiating a resolution plan, the appropriate course of action for the NCLT is to facilitate and accelerate the realisation of that process and not to add its own procedural delays on top of it. The policy imperative, therefore, is for NCLT to use its supervisory authority, actively and strategically, especially to compress its contribution to delays, particularly at the plan approval stage, where the substantial commercial tasks have already been completed by market players who are the interested parties. This would help ensure that whatever value has survived the market-side process is not further eroded during the tribunal's adjudication process.

10.2 Resolution Time vs Recovery Rates & Recovery Outcomes across Benches

10.2.1 Dataset 1: 492 Samples

10.2.1.1 Impact of Prolonged CIRP Duration

The coefficient of the CIRP duration dummy is negative and statistically significant at the 10% level. Given the log-linear specification, this estimate implies that cases extending beyond three years are associated with approximately 18 to 20% lower creditor recovery rates compared to cases resolved within a three-year threshold period or inflection point, keeping year and bench constant. This finding provides empirical support for the hypothesis that extended insolvency proceedings generate substantial value erosion, which is consistent with theoretical predictions regarding administrative cost, operational disruption and deterioration during periods of prolonged uncertainty.[28] [29]

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[28] Namrata Kalwani & Prakash Sharma, "The Insolvency and Bankruptcy Code (IBC) and its Impact on the Indian Economy: A Quantitative and Qualitative Analysis," *International Journal of Advanced Research in Commerce, Management & Social Science* 8 (2025): 194, https://www.inspirajournals.com/uploads/Issues/1339908281.pdf, (Last visited Nov 2025)

[29] Nishanthini Ravichandra Rao & Jayendra Kasture, "Sectoral Insights into Corporate Insolvency: A Comprehensive Analysis of Corporate Insolvency Resolution Process (CIRP) Outcomes in India," *International*

The economic magnitude of this result is considerable. For instance, in a typical case with a baseline recovery rate of 40%, a three-year delay would be associated with the reduction of approximately 20% of 40% recovery. Aggregated across the universe of delays, these deadweight losses are likely to go into hundreds of crores in recovery annually.

However, this relationship should be viewed cautiously as an observed association rather than evidence of causation, because the time to resolution is influenced by unobserved factors such as case complexity, the severity of the firm's distress, and stakeholders' strategic actions.

10.2.1.2 Bench-Level Performance Heterogeneity

Estimates reveal some variation in recovery outcomes across a few different benches. While most benches are operating at an optimum level, they do not reflect any institutional differences. Reference is made to "Dataset 2" below, which has a dataset constructed with a larger sample size per bench, which enables a more meaningful and comprehensive analysis.

10.2.1.3 Temporal Trends in Recovery Outcomes

Year effects are uniformly statistically insignificant across all years in the sample, indicating no systematic improvement or deterioration in recovery rates over time after controlling for bench-level heterogeneity and duration effects. This null finding suggests that aggregate temporal trends, whether arising from learning effects, regulatory refinements, or macroeconomic conditions, have not generated measurable shifts in average recovery outcomes during the sample period. Instead, cross-sectional variation across benches appears to be the dominant source of heterogeneity in the insolvency resolution framework.

10.2.2 Dataset 2: 1149 Samples

10.2.2.1 The Stage-Wise Recovery Penalty

10.2.2.1.1 Baseline Recovery and the Cost of Delay

The intercept of 0.4633, statistically significant at all conventional thresholds ($p<0.001$), indicates that the baseline recovery for cases that are resolved within the first year of the insolvency process is around 46.33 % of admitted claims of creditors. This figure represents the average recoverable fraction for enterprises undergoing resolution within this time frame and may be interpreted as an empirical benchmark for recovery performance under the Code.

The coefficient of cases resolved between one and two years (middle stage) is -0.069 ($p=0.009$), which is significant at 1% level. This indicates that firms whose resolution period stretches into the second year after commencement suffer a recovery rate penalty of approximately 6.90 percentage points relative to cases

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Journal of Law and Management 68 (2026): 345, https://www.emerald.com/ijlma/article-abstract/68/2/345/1250463/Sectoral-insights-into-corporate-insolvency-a?redirectedFrom=fulltext, (Last visited Nov 2025) resolved within one year. The coefficient for cases exceeding two years (late stage) after commencement is -0.0599 (p=0.033), which is significant at 5% level, representing a penalty of approximately 5.99 percentage points relative to earlier resolution. The combined direction of both coefficients suggests that delay at every stage beyond a year following commencement is associated with systematically lower recovery outcomes.

At this juncture, it is important to note that the dataset for 1149 cases does not take into consideration the time from filing to admission/commencement of CIRP. Keeping this in mind, we compute the average time period from filing to commencement of CIRP to be around 375 days or approximately a year, relying upon the 492-case sample average of pre-CIRP duration.

10.2.2.1.2 Bench-Level Performance Heterogeneity

Two NCLT benches register statistically significant positive coefficients in the model: Kochi (+15.71 pp, p = 0.018) and New Delhi (+7.99 pp, p = 0.012). These findings, while superficially encouraging, carry deeper implications for the cost analysis.

The Kochi bench's performance of approximately 15.71 percentage points over the reference bench is a significant positive institutional effect in the model. It may reflect a combination of factors: a more concentrated case portfolio weighted toward operationally recoverable mid-market firms, a bench composition with lower caseload pressure relative to the principal bench, and potentially a resolution professional ecosystem with greater familiarity with sectoral asset profiles in the Kerala economic geography. The New Delhi bench's +7.99 pp premium reflects its handling of several high-profile cases, compressing effective resolution timelines and preserving enterprise value.

The inverse of this finding is the implicit cost of bench allocation for firms admitted at lower-performing benches. A corporate debtor admitted to a bench with zero or negative coefficient faces, by construction, a recovery outcome at or below the reference bench baseline, further compounding the duration-stage and year-effect penalties already documented. This spatial dimension of delay cost is qualitatively distinct from the temporal penalties: it is not a function of how long a case takes, but of where it is heard. This is an institutionally arbitrary determinant of firm-value outcomes that no amount of creditor due diligence or resolution-applicant bidding strategy can fully offset.

The bench heterogeneity findings therefore carry a distinct policy implication: the total firm-performance cost of CIRP delay cannot be addressed solely through timeline compression measures. An equally important lever is institutional harmonisation, ensuring that the procedural, informational, and adjudicatory infrastructure at every NCLT bench approaches the standard exemplified by the best-performing benches. Until such harmonisation is achieved, the geography of insolvency registration will continue to influence recovery outcomes, effectively imposing an uneven and implicit cost on creditors.

10.2.2.2 Non-Monotonicity: A Structural Artefact, Not a Contradiction

A discerning reader may observe that the late-stage penalty (-5.99 pp) is numerically smaller than the middle-stage penalty (-6.90 pp). This apparent non-monotonicity is not an anomaly in the data but reflects underlying structural factors. First, cases that persist into the late stage are likely to be disproportionately composed of larger and more complex insolvency, such as capital-intensive manufacturing, with larger asset bases. Such firms would thus have a relatively higher residual liquidation floor even after a protracted delay. In such cases, the resolution applicants' bid would reflect a minimum floor dictated by asset quality rather than mere time efficiency. Second, a censoring effect may be at play: firms pushing through to late-stage resolution may already have engaged in informal restructuring or sold some assets beforehand, preserving a part of their value.

However, neither of the effects alters the result. Both coefficients remain negative and statistically significant. Therefore, it is safe to conclude that early resolutions maximise recovery and any delay, whether moderate or substantial, entails significant losses for creditors.

10.2.2.2.1 Per-Case and Aggregate Loss Estimates

Substituting the estimated coefficients:

L(C, Middle) = 0.0690 × C ₹ 6.90 crore per ₹100 crore of admitted claims

L(C, Late) = 0.0599 × C ₹ 5.99 crore per ₹100 crore of admitted claims

The function is deliberately linear in C. This follows directly from the OLS model specification, in which the recovery rate, not the rupee recovery, is modelled as the dependent variable. A one-unit increase in C therefore produces a proportional, not diminishing, increase in the absolute loss. The linearity implies that the per ₹100 crore loss rate λ_s is constant across all claim sizes:

$\lambda_s = L(C, s) / C = |\beta_s|$ Loss per ₹100 crore = $|\beta_s| \times 100$

10.2.2.2.2 Loss Function Parameters by Duration Stage

Stage	β_s	Significance	Loss per ₹100 Cr (λ_s)	Effective Recovery Rate	Baseline Recovery
Early (< 1 yr)	0.00 (base)	—	**₹ 0.00 crore**	46.33%	46.33%

Middle (1–2 yrs)	−0.0690	***	**₹ 6.90 crore**	39.43%	46.33%
Late (> 2 yrs)	−0.0599	**	**₹ 5.99 crore**	40.34%	46.33%

$\lambda_s = |\beta_s| \times 100$, expressing the rupee loss per ₹100 crore of admitted claims. Effective recovery rate = Intercept + β_s = 0.4633 + β_s; *** $p < 0.01$; ** $p < 0.05$.

10.2.2.2.3 The Extended Loss Function L(C, s, t) with Year Compounding

The basic function L(C, s) abstracts from the year in which the case was admitted. The regression, however, reveals significant negative year effects (γ_t) for 2018 through 2023, each representing an additional recovery-rate depression attributable to macroeconomic conditions prevailing in that cohort year. The extended loss function incorporating this temporal dimension is:

$$L(C, s, t) = (|\beta_s| + |\gamma_t|) \times C$$ where γ_t is the year effect for admission year t

This formulation captures the compounding of institutional delay costs (captured by β_s) with macroeconomic headwinds (captured by γ_t). A middle-stage case admitted in 2019, the worst-performing cohort year incurs:

$$L(C, \text{Middle}, 2019) = (0.069 + 0.138) \times C = 0.207 \times C$$ ₹ 20.70 crore per ₹100 crore of admitted claims

This figure, ₹20.70 crore per ₹100 crore, represents the estimate of creditor loss attributable to the combination of delay beyond one year, relative to the normative baseline of early-stage resolution in a favourable year.

10.2.2.2.4 The Full Institutional Loss Function L(C, s, t, b) with Bench Adjustment

Where the NCLT bench to which the case is assigned has a statistically significant bench effect (δ_b), the loss function may be further extended to incorporate the spatial dimension of institutional quality:

$$L(C, s, t, b) = (|\beta_s| + |\gamma_t| - \delta_b) \times C$$ $\delta_b > 0$ for Kochi and New Delhi benches (significant positive effects)

The bench adjustment term δ_b enters the loss function with a negative sign because a positive bench coefficient reduces the loss cases at better-performing benches by partially offsetting the stage and year penalties. For the two statistically significant benches, the adjustments are: Kochi bench: δ_b = 0.1571, reducing the per-₹100-crore loss by ₹15.71 crore; New Delhi bench: δ_b = 0.0799, reducing the loss by ₹7.99 crore. For all other benches with non-significant coefficients, δ_b = 0 and the full stage-plus-year penalty applies.

10.2.2.2.5 Scaled Loss Estimates: L(C, s) at Representative Claim Sizes

The table below applies the basic loss function to four representative admitted-claims values: ₹100 crore (the unit anchor), ₹250 crore (the approximate sample mean used in prior literature), ₹500 crore (a mid-market NCLT case), and ₹1,000 crore (a large-ticket insolvency).

L(C, s) at Representative Admitted Claim Values (₹ crore):

Admitted Claims (C)	Early Stage L = 0	Middle Stage L(C) = 0.069 × C	Late Stage L(C) = 0.0599 × C
₹ 100 crore	₹ 0	**₹ 6.90 crore**	₹ 5.99 crore
₹ 250 crore	₹ 0	**₹ 17.25 crore**	₹ 14.98 crore
₹ 500 crore	₹ 0	**₹ 34.50 crore**	₹ 29.95 crore
₹ 1,000 crore	₹ 0	**₹ 69.00 crore**	₹ 59.90 crore

Middle loss = 0.069 × C; Late loss = 0.0599 × C; All values in ₹ crore. Per-₹100-crore rate is constant across all rows by construction.

The linearity of the loss function ensures that these estimates scale without residual: a ₹1,000 crore case suffers exactly ten times the absolute loss of a ₹100 crore case under identical stage and year conditions. This property makes the function directly applicable to judicial and policy contexts where admitted-claims values vary orders of magnitude across cases from micro-enterprise insolvencies to financial sector behemoths.

10.3 Firm Performance

The panel regression results across 15 financial variables—each estimated using both Fixed Effects (FE) and Random Effects (RE) models—are discussed below. The Hausman test determined the preferred specification: a significant Hausman p-value (< 0.05) favours FE; an insignificant result supports RE. The Hausman test results indicate that unobserved firm-level heterogeneity is correlated with the regressors for the majority of variables, making FE the appropriate choice in nine of 15 cases. RE was retained for six variables, where firm-specific effects are assumed to be uncorrelated with the predictors.

FE preferred: (9 variables) - Interest expense, Employee cost, Trade receivables, Total assets, Reserves, Sales, Inventories, Cash and Operating profit.

• RE preferred: (6 variables) - Trade payables, Borrowings, Net profit, Investments, Equity and Depreciation

10.3.1 Statistically Significant Variables

The following variables show a statistically significant relationship with the dependent variable under their preferred model.

1) **Trade payables** (RE): $p = 0.0081$ - A one-unit increase in trade payables is associated with a decrease of 0.3628 in the dependent variable. Trade payables emerge as the most robust signal of operational stress among the variables analysed. Elevated payables relative to peer firms typically indicate challenges in settling supplier obligations on time, which restricts procurement flexibility and can escalate into supply-chain frictions, symptoms commonly associated with early-stage operational distress. The negative coefficient further reinforces this interpretation: greater reliance on supplier credit is associated with deteriorating firm performance, likely reflecting tightening liquidity conditions or prolonged payment delays that weaken operational stability.

2) **Interest expense** (FE): $p = 0.0135$ - is the single strongest predictor in the dataset (within-$R^2 = 0.065$), confirming that rising debt-servicing costs within firms are the primary financial mechanism eroding the dependent variable. This is consistent with the classical debt overhang hypothesis: escalating interest obligations crowd out resources available for operational recovery, with marginal returns on firm activity increasingly accruing to creditors. The FE estimate (−0.702) is considerably lower in magnitude than the RE estimate (−1.041), indicating that RE overstates the effect by conflating firm-level leverage heterogeneity with within-firm debt cost dynamics.[30]

3) **Employee cost** (FE) : $p = 0.0426$ - A significant negative within-firm effect (coef = −0.2871), suggesting that wage escalation without commensurate productivity or revenue gains compresses the dependent variable, a pattern consistent with labour hoarding or structural cost rigidity during financial stress.

4) **Trade receivables** (FE) : $p = 0.0709$ (marginal) - Marginally significant at 10%. Within firms, higher trade receivables are negatively associated (coef = −0.3095), potentially reflecting weakening collection efficiency or aggressive credit extension to sustain volumes, both of which may precede adverse outcomes.

[30] Tanveer Ahmad Khan, "Impact of IBC on Credit Networks and Firm Performance: An Analysis of Pre- and Post-IBC Era," IES Working Paper, n.d., https://www.ies.gov.in/pdfs/Paper-on-IBC-Final.pdf, (last visited Nov 2025)

5) **Total assets** (FE): $p = 0.0889$ (marginal) - Total assets are also marginally significant at 10% and exhibit a negative within-firm association, counterintuitively suggesting that asset growth in distressed firms may reflect debt-financed accumulation of non-productive assets rather than genuine investment.

10.3.2 Statistically Insignificant Variables

The following variables do not show a significant within-firm (FE) or between-firm (RE) relationship with the dependent variable under their preferred model. This does not mean they are unimportant; low within-variation or multicollinearity may attenuate estimates.

1) **Reserves** (FE, $p = 0.116$) - Not significant despite the Hausman divergence noted above. Exhibit a sign reversal across specifications (FE: +9.295; RE: −5.694), both insignificant, signalling severe omitted variable bias and warranting caution in interpretation

2) **Borrowings** (RE, $p = 0.055$) - Borderline insignificant; a mild negative association with the outcome suggesting it is the cost of debt, not its stock, that drives outcomes.

3) **Sales** (FE, $p = 0.144$) - Sales is not significant within firms once fixed effects are absorbed, implying that revenue fluctuations per se do not independently drive the outcome, and the causal mechanism operates through cost and working capital channels rather than the top line.

4) **Net profit** (RE, $p = 0.087$) - This is similarly specification-sensitive (FE positive, RE negative) and insignificant in both models, likely due to distortion from non-recurring restructuring gains or write-offs common in distressed firms.

5) **Investments** (RE, $p = 0.065$) - They are borderline negative across firms, possibly capturing the drag from underperforming subsidiaries or financial investments, particularly in group company structures.

6) Despite the economic importance of liquidity, **Cash** (FE, $\beta = -0.091$, $p = 0.596$), **Inventories** (FE, $\beta = -0.102$, $p = 0.558$), and **Operating profit** (FE, $\beta = +0.029$, $p = 0.689$) are entirely insignificant within firms. The highly significant Hausman tests for all three ($p \approx 0.000$) confirm that their cross-sectional variation is endogenous to unobserved firm characteristics, but once these are controlled, within-firm changes in cash stocks, inventory levels, and accrual-based operating earnings provide no predictive signal. This points to a decoupling between balance-sheet liquidity measures and actual financial outcomes within firms, suggesting that the relevant liquidity mechanism operates through payables and receivables cycles (working capital turnover) rather than stock positions.

Equity and **depreciation** are insignificant in all specifications ($p > 0.46$ and $p > 0.06$, respectively), consistent with book equity being a poor proxy for the firm's actual financial cushion in distress contexts, and with depreciation being a predetermined non-cash charge that does not directly affect cash-flow-sensitive outcomes.

10.3.3 Interpretation Caveats

Several caveats apply across these results. First, all coefficients represent conditional associations; causal identification requires instrumental variable approaches not employed here. Second, within-R^2 values are uniformly low (max 0.065), indicating that unobserved time-varying factors such as macroeconomic shocks, management changes, and regulatory events account for the majority of within-firm variation. Third, the pooled panel assumes coefficient homogeneity across industries, which is a strong assumption given the structural differences in payable cycles, labour intensity, and asset composition across sectors. Fourth, when the sample is restricted to surviving firms, survivorship bias may attenuate the estimated effects. Fifth, the sign reversals for reserves and net profit across FE and RE specifications indicate omitted variable concerns that render these estimates unreliable without further investigation. Finally, the dataset is limited to firms with publicly available information, which may constrain the depth and completeness of the analysis.

10.4 Market Confidence

10.4.1 PCA Loading

PC1 carries the largest loadings uniformly positive except for GDP growth on deposit rates (+0.4728), bond yields (+0.4625), repo rate (+0.4174), FDI (+0.395), inflation (+0.3192), and CAR (+0.2981), with GDP loading at −0.204. Such a pattern identifies PC1 as the dominant tightening stress factor: thereby exhibiting conditioning in which borrowing costs are high, inflation is elevated, and capital markets are under strain. PC2 is primarily driven by CAR (+0.6245) and inflation (-0.5619), capturing a dimension that contrasts banking systems' resilience with respect to price pressures.

10.4.2 Variance Decomposition

PC1 alone accounts for 60.8% of total variance, confirming that a single dominant macro-financial factor underlies the co-movement of seven indicators. PC2 and PC3 together contribute a further 28.8%. The cumulative variance explained by the first four components reaches 98.4%, thus validating the use of the first principal component score as MSI.

10.4.3 Communalities

All communality values equal unity, confirming that the PCA extraction is exhaustive: the seven-component solution accounts for the entirety of each indicator's variance. While communalities approaching 1.0 are mathematically guaranteed when the number of components equals the number of variables, this property assures that no systematic information embedded in any single indicator has been discarded in the construction of the MSI

10.4.4 Macro Stress Index:

The MSI exhibits a pronounced downward trend over the sample period. Values were consistently above 1.9 from 2010 to 2014, a period which is characterised by double-digit inflation, elevated policy rates, and subdued FDI inflows. A transitional phase between 2015 and 2016 shows stress declining towards zero. From 2017 onwards the index turns persistently negative, reaching its nadir of −3.50 in 2020 during the peak of the COVID-19 monetary easing episode, before partially normalising in the 2022–2024 period to approximately 1.5.

10.4.5 Regression Results: Interpretation of Individual Coefficients

10.4.5.1 Intercept: The Pre-IBC Macro Baseline (α = 1.8949)

The intercept captures the predicted MSI in the omitted reference category, in the pre-IBC period from 2010 to 2016 when both dummies are set to zero. The estimated value of 1.895 is highly statistically significant ($t = 5.08$; $p < 0.001$), confirming that macro-financial conditions during the pre-IBC era were characterised by genuine, above-average stress. The precise match between the regression intercept (1.895) and the arithmetic mean of MSI over 2010–2016 validates the specification and confirms internal consistency.

Economically, this period corresponds to the following: the post-global financial crisis tightening cycle; the 2013 taper tantrum, which triggered capital outflows and currency depreciation; sustained double-digit CPI inflation necessitating elevated repo rates; and compressed FDI inflows relative to later years. The MSI thus correctly identifies 2010–2016 as a period of structurally tight macro-financial conditions.

10.4.5.2 IBC Dummy: Structural Macro-Regime Shift ($\beta_1 = -3.095$)

The IBC dummy coefficient of −3.0951 ($t = -5.64$; $p < 0.001$) constitutes the economically significant finding in the regression. It captures the step-change in the MSI associated with the post-IBC institutional regime relative to the pre-IBC regime baseline. The implied post-IBC non-pandemic predicted MSI is:

$$\boldsymbol{MSI_{eot-}{}^{IBc} = 1.895 + (-3.095) \approx -1.200}$$

The sample mean of the MSI over the post-IBC period (2017–2024) is −1.658, confirming that the regression model closely captures the observed data. The magnitude of this shift, a decline of over three standard units in the macro stress index, represents a substantial improvement in macroeconomic conditions coincident with the institutional reform.

However, it is analytically essential to distinguish between correlation and causation in this context. The IBC was introduced in December 2016 during a broader macroeconomic convergence: inflation had been tamed through the Flexible Inflation Targeting framework adopted in 2016; the repo rate had declined from its cyclical peak of 8.0% in 2014–2015 to 6.25% by late 2016; FDI inflows were strengthening; and the banking system had undergone partial balance-sheet repair. The IBC dummy therefore captures an institutional regime change that coincided with, and arguably reinforced, a favourable macro cycle. The coefficient should be interpreted as measuring the average difference in macro conditions between the two regimes, not as a reduced-form causal estimate of the IBC's independent effect on macroeconomic stress.

10.4.5.3 COVID Dummy: Pandemic Liquidity Shock ($\beta_2 = -1.832$)

The COVID dummy coefficient of −1.8315 ($t = -2.27$; $p = 0.042$) captures the additional macro-financial shock during the pandemic years of 2020 and 2021. Importantly, this coefficient is negative, implying that the pandemic episode was associated with a further reduction in the MSI, i.e., a decline in conventionally measured macro-financial stress, rather than an increase. The predicted MSI during the pandemic period is:

$$MSI^{covI}{}_{D} = 1.895 + (-3.095) + (-1.832) \approx -3.032$$

This predicted value closely corresponds to the observed MSI of −3.5026 in 2020, validating the model. The apparently counterintuitive negative sign is explained by the construction of the MSI itself: the index is driven primarily by monetary tightness variables (deposit rates, bond yields, repo rates, and inflation) that plummeted during the pandemic in response to the RBI's extraordinary accommodation, the repo rate was cut to a historic low of 4.0%, CPI inflation momentarily eased on supply-side bases, and bond yields were compressed through quantitative operations. The MSI's low values in 2020–2021 thus reflect unprecedented monetary accommodation, not macroeconomic health.

This distinction carries analytical significance for the CIRP recovery attribution analysis: low MSI values in 2020–2021 do not correspond to favourable conditions for insolvency resolution. Rather, they reflect a collapse in the monetary variables that dominate the MSI's construction, masking simultaneous deterioration in real activity (negative GDP growth in 2020), elevated corporate distress, and constrained FDI. Consequently, interpreting the negative pandemic-period MSI as "easy" macro conditions for IBC proceedings would be misleading; the appropriate control for recovery analysis must account for the decoupling between the MSI's monetary dimension and real-economy conditions in 2020–2021.

10.4.5.4 Three-Regime Characterisation

The taxonomy reveals a monotonically declining stress trajectory punctuated by an extraordinary negative shock in 2020–2021. The post-2022 partial normalisation with MSI stabilising around −1.5 is consistent with the RBI's post-pandemic tightening cycle, which restored the repo rate from 4.0% to 6.5% between 2022 and 2023, thereby unwinding a portion of the monetary accommodation that had depressed the index. At this juncture we must notice the partial coincidence of MSI from the shock in 2020-2021 to normal levels and thereafter stabilizing with that of IBC non-optimal performance as well affecting perceptions of confidence on the framework.

10.5 Survival analysis of bench efficiency

10.5.1 Procedural Congestion and Compounding Delay:

The large magnitude of β_1 implies that interlocutory applications are a dominant driver of insolvency case duration. Because hazards enter multiplicatively, even modest increases in procedural filings tend to lead to sharply lower resolution hazards. For example, the implied hazard after k additional applications is:

$\exp(\beta_1 k)$ which yields rapid exponential decay in resolution speed as k increases. This structure implies that high-IA cases become endogenously locked into long durations, reflecting systemic congestion rather than marginal delay effects.

10.5.2 Institutional Heterogeneity Across Benches

The Principal Bench coefficient captures residual institutional heterogeneity after controlling for procedural complexity. The persistence of a large negative bench effect suggests that case duration is shaped not only by party-driven procedural behaviour but also by bench-specific institutional roles, workload composition, and supervisory responsibilities.

Given the Principal Bench's concentration of constitutionally significant and precedent-setting matters, the lower hazard of resolution is best interpreted as reflecting structural case complexity and institutional function rather than judicial inefficiency.

10.5.3 Joint Determination of Pendency

Taken together, the results imply that NCLT pendency is jointly determined by procedural intensity and institutional assignment. The hazard structure can be written as:

$$h_i(t) = h_0(t) \exp(\beta_1 IA_i + \beta_2 PB_i)$$

so that both party-driven procedural choices and bench-level institutional characteristics enter multiplicatively in shaping expected case duration.

This joint structure constitutes the core empirical contribution of the analysis: pendency emerges from the interaction of endogenous litigation strategy and structural tribunal heterogeneity.

Chapter 11: Policy Recommendations

This study examines the insolvency and bankruptcy framework as an interconnected system involving multiple market-level players—creditors, debtors, firms and tribunals—whose actions collectively generate outcomes that extend beyond their immediate institutional roles. In economic theory, this is often called the "Butterfly effect," where seemingly unrelated actions and players effect changes beyond their immediate control. The economy is a complex system in which rational agents act according to their best perceived value of utility within a mosaic of firms, lenders, creditors, and potential investors, operating under regulatory frameworks such as the IBC (2016), whose institutions and actors influence broader economic outcomes.

Within this framework, "Delay in Tribunals" emerges as a critical variable. Rather than treating delay as a purely normative or administrative concern—and moving beyond the term's negative connotation—the study adopts a data-centric approach to evaluate its consequences. It interrogates foundational questions: What constitutes delay? Is it merely a deviation from statutory timelines, or should it be understood in terms of measurable economic harm? To what extent is the institution at fault (NCLT)? Is delay quantifiable based on the number of cases heard and disposed of? By analysing CIRP cases through econometric methods, this study demonstrates that delay has quantifiable effects on recovery rates, firm performance, and broader macro-financial conditions. The policy recommendations that follow are structured across five pillars, reflecting these empirical insights.

11.1 Pillar I: Temporal Discipline Recovery Rates and Time Delay

Amend the IBC to reflect the 1084-day (approx. 3 years) inflection point as a statutory outer limit for completion of CIRP.

Section 12 of the IBC currently prescribes an outer limit of 330 days, which has proven neither realistic nor consistently enforceable based on the past decade's experience. The study identifies an inflection point of 1084 days beyond which there accrues a loss to the recovery rate. Accordingly, the 2.97-year or 1084-day threshold should be codified as a non-extendable outer boundary. Further,

- Amend Section 12(3) to require affirmative CoC resolution with 75% vote for any extension, with valid reasons.
- Include the findings of this study in such a way that the RP can come up with a value function to be estimated case by case as delay occurs beyond the period, such that the same is disclosed in resolution documents that the creditors are made aware of.
- Introduce a mandatory case-management conference at Day 200 of CIRP, modelled on the Commercial Courts Act, 2015 framework, to forecast likely resolution timelines and identify bottlenecks early.

11.2 Pillar II: CIRP Impacts on Firm-Level Outcomes

Introduce a Pre-Pack Insolvency Framework for MSME and Mid-Cap Debtors

The Pre-Packaged Insolvency Resolution Process (PPIRP) introduced in 2021 for MSMEs has seen limited uptake due to eligibility constraints and creditor coordination failures. Given heterogeneity in firm outcomes, a tiered resolution architecture should replace the current binary CIRP-liquidation structure.

- Tier I – Small size (Fast Track): Debtors with admitted claims below ₹XX crore –mandatory pre-pack (debtor-creditor negotiated base plan) with 90-day outer limit, creditor-approved base plan filed at the point of NCLT application for admission.
- Tier II – Mid-size (Standard CIRP): Debtors with admitted claims – ₹XX crore–₹YY crore current CIRP with the 1084-day hard stop and stage-wise ceilings.
- Tier III – Large size (Complex CIRP): Debtors exceeding ₹YY crore admitted claims – dedicated multi-member bench with sector specialist technical members, extended evidence-gathering, but no dilution of resolution timeline.

Sectoral Insolvency Protocols for Asset-Heavy Industries

The low R^2 of the recovery model, combined with sector-level dispersion, indicates the creation of sector-specific CIRP protocols for infrastructure, real estate, and financial services sectors where standard liquidation values are deeply distorted by regulatory constraints on asset transfer.

- Establish sector-specialist panels under IBBI for real estate and power sector CIRPs, with standardised information memoranda templates reducing information asymmetry between Resolution Applicants and the CoC.

11.3 Pillar III: Macrofinancial Outcomes and Market Confidence

The PCA-based Macro Stress Index reveals that the IBC's macrofinancial signal is real and measurable markets internalise procedural certainty and recovery predictability when pricing credit risk and cross-border investment. The DiD (difference in difference) structural break at IBC enactment confirms that improvements in procedural certainty enhance investor confidence, which persistent delay has systematically eroded over time. The econometric model's cross-equation correlations between MCI and credit aggregates establish that delay is not a localised judicial problem but a macroeconomic one as well.

Institutionalise the Macro Stress Index or similar ones as a Policy Instrument

- The PCA-constructed MSI should be adopted by IBBI and the Ministry of Corporate Affairs (MCA) as an official leading indicator of IBC system health, published quarterly alongside the IBBI Quarterly Newsletter FDI inflows into sectors with high CIRP activity.

- The RBI's Financial Stability Report should incorporate NCLT delay metrics as a systemic risk variable alongside gross NPA ratios.

Reform the Credit Transmission Chain to Incentivise CIRP Resolution

Bank credit expansion determined under this study is sensitive to CIRP resolution confidence. Banks' internal credit appraisals models must be reformed to reward timely CIRP engagement.

- RBI should amend the Prudential Framework for Resolution of Stressed Assets (June 2019) to grant banks credit for firms which yielded CIRP outcomes.
- Introduce a Resolution Incentive Mechanism (RIM), permitting accelerated write-back of provisions and creating a direct financial incentive for banks to support timely resolution over liquidation.

11.4 Pillar IV: Institutional Reform of the IBC Architecture

The IBC's institutional design is structurally sound but is operationally compromised by three systemic failures: (i) the NCLT's failure to enforce timelines; (ii) IBBI's limited supervisory reach over CoC behaviour; and (iii) the absence of a feedback loop between NCLT outcomes and norms.

Restructure NCLT Wing as a Dedicated Insolvency Court Separate from Company Law

The NCLT presently exercises jurisdiction over corporate insolvency (IBC), company law (Companies Act, 2013), mergers and amalgamations, class action suits, and winding up. This jurisdictional overloading is the principal institutional cause of the 65% NCLT-induced delay identified in the capstone analysis. The functional separation of insolvency adjudication from corporate law adjudication is a structural imperative.

- Establish a dedicated National Insolvency Tribunal (NIT) with exclusive CIRP jurisdiction by amending Part II of the IBC, leaving residual company law matters with a reclassified NCLT.

Curtail Interlocutory Application (IA) Proliferation

The binary outcome models confirm that the number of IA filings is a statistically significant predictor of liquidation over resolution; each additional IA filing increases the probability of liquidation by a measurable margin. The IA proliferation problem is the single most tractable source of NCLT-induced delay, susceptible to procedural intervention without constitutional amendment.

- Introduce a cost-award mechanism: Where an IA is dismissed as frivolous or dilatory, the NCLT may impose costs directly on the applicant entity (or its counsel).

11.5 Pillar V: Bench Rationalisation Survival Predictability Across NCLT Benches

The Cox survival model's most alarming finding is not any single bench's performance but the fact of heterogeneity itself. Where a corporate debtor's probability of resolution versus liquidation varies systematically by the geographical location of filing rather than by the merits of the case, the insolvency framework violates its foundational promise of procedural equality. The NCLT's legitimacy depends on outcome predictability, which in turn requires structural harmonisation across benches.

Deploy Cross-Bench Transfer Mechanism for Complex CIRPs

The Delhi Bench's anomalously high recovery coefficient likely reflects sector concentration effects (infrastructure, power sector) rather than superior adjudication capacity per se. Conversely, the Hyderabad and Kolkata bench penalties may reflect caseload-capacity mismatches rather than inherent adjudicative failure. A cross-bench transfer mechanism would equitably distribute complex CIRPs.

- Empower the NCLT to set up a special bench and to transfer any CIRP involving admitted claims exceeding ₹XX crore, by capacity, sector specialisation, and caseload on application or by suo moto.
- Standardise the cause list scheduling system across all benches to ensure uniform hearing frequency for CIRP.

Where logistical or jurisdictional constraints impede case transfers, subject-matter experts from the designated benches may, with judicial approval, provide on-site or virtual assistance at the primary case location when needed to ensure continuity, procedural efficiency, and expeditious adjudication without disrupting jurisdictional integrity.

Chapter 12: Conclusion

This study provides a comprehensive, data-driven economic appraisal of delays within India's corporate insolvency resolution framework and, in doing so, advances both the conceptual and empirical understanding of judicial performance under the Insolvency and Bankruptcy Code (IBC). By moving beyond statutory time overruns and anchoring the analysis in observed economic outcomes, it establishes that not all delay is economically harmful. Instead, the costs of delay become substantial and measurable only beyond a clearly identifiable threshold. The empirically estimated inflection point of approximately 2.97 years (1,084 days) thus redefines "delay" in functional terms, marking the horizon beyond which additional time in CIRP consistently erodes recovery rates, undermines value preservation, and inflicts system-wide economic loss.

The Insolvency and Bankruptcy Code stands as one of India's most consequential economic legislations of the twenty-first century. For the first time, corporate distress law was decisively re-centred around creditor rights, time-bound resolution, and market-based valuation, displacing a historically debtor-oriented and delay-tolerant regime. The econometric evidence assembled in this study confirms that the IBC's promise is real and measurable. Its enactment coincides with a clear structural break in India's macro-financial conditions: investor confidence improved, recovery rates in timely CIRP proceedings exceeded pre-IBC benchmarks, and key macroeconomic correlates, including foreign capital inflows, credit conditions, and financial-sector resilience, responded meaningfully to improvements in insolvency outcomes. Procedural certainty and recoverability, the evidence shows, are internalised by markets and priced into capital allocation, risk premia, and investment decisions.

At the same time, the analysis establishes with equal clarity that delay constitutes an existential threat for the IBC. Beyond the 1,084-day threshold, recovery erosion accelerates sharply, with each additional day of delay estimated to reduce recoveries by approximately 0.0104 percentage points. Prolonged resolution thus undermines the very confidence premium that the IBC was designed to generate. Crucially, delay is not monolithic. Through a novel decomposition, the study demonstrates that delay is jointly produced by institutional and market actors: while approximately 35% of elapsed time is attributable to market-side activities such as creditor coordination and plan negotiations, a materially larger share—around 65%—arises within the NCLT's procedural domain. This finding does not indict the tribunal as institutionally flawed; rather, it highlights the cumulative effects of capacity constraints, procedural density, and interlocutory litigation. Survival analysis further reveals that procedural congestion compounds non-linearly and that bench-level institutional roles generate materially different outcomes for otherwise comparable firms, undermining procedural equality.

The costs of delay extend well beyond creditor recoveries. Firm-level analysis shows that CIRP transmits stress primarily through financial contraction rather than operational collapse, with debt servicing costs, working-capital frictions, and labour-cost rigidity emerging as the dominant channels. At the macro level, the Macro Stress Index illustrates that insolvency performance feeds directly into systemic financial conditions. These gains, however, are fragile: persistent delay and institutional heterogeneity threaten to erode the IBC's initial macro-financial dividends.

Taken together, these findings underscore that insolvency reform cannot be reduced to tighter statutory timelines alone. Effective reform must address structural sources of delay—procedural congestion, bench-level heterogeneity, and misaligned incentives across market participants—while accounting for sectoral complexity and firm-level heterogeneity. The policy pillars advanced in this study are, in the fullest sense, evidence-based. Their adoption would move India's insolvency architecture from its present state of promise-and-attrition to one of durable systemic efficiency, an outcome worthy of the legislative vision that animated the IBC in 2016 and essential to supporting India's broader growth and investment trajectory.