The Effect of Insolvency Law on Corporate Borrowing: Insights from India

Abstract

With the enactment of the Insolvency and Bankruptcy Code (IBC) in 2016, India unified its fragmented insolvency frameworks into a single comprehensive law that prioritizes asset maximization and time-bound resolution. This reform set a new benchmark for efficiency and effectiveness in insolvency processes. Using a panel dataset of Indian and non-Indian firms from 2011-2020, we examine the impact of the IBC on debt financing for publicly listed Indian firms. Following implementation, we found that total debt, long-term debt, and short-term debt all increased, while borrowing costs decreased. Additionally, a sub-sample analysis reveals that the reform has a significant effect on industries that produce intangible products (non-financial services). As a result of the IBC, we found that Indian firms were able to access more credit, and their debt financing costs were reduced. The results of this study are consistent with theoretical credit literature, showing that regulatory reforms, such as the IBC, strengthen financial systems by improving creditor protection and increasing loan recovery rates, giving creditors an incentive to offer loans at lower interest rates. Our conclusions offer valuable insights for policymakers, highlighting the importance of robust insolvency system to boost credit availability and support economic growth.

Keywords: bankruptcy law, debt financing, capital structure, firm performance

1. Introduction

A robust financial system with efficient frameworks and regulations is one of the critical elements of a growth-oriented country. Reforms in the financial sector promote efficient allocation of resources, boost financial inclusion, mitigate business risk, and contribute to a more resilient and enduring economy. Previous research studies have shown that regulatory and policy reforms enhance financial development that leads to economic growth of the countries (McKinnon, 1973; Fry, 1988; Sbeti & Moosa, 2012; Rousseau & Sylla, 1999; Beck et al., 2008; King & Levine, 1993). According to Levine (1997) financial development mobilises savings, fosters technological innovation and enhances the risk-taking capacity of investors.

Indian financial markets underwent significant changes in the 1990s with the opening of the economy, which ushered in a period of liberalization and deregulation and marked the end of the licence raj era[1]. The Indian government needed well-established financial policies and integrated institutions, which would increase productivity, and investment and ensure both microeconomic and macroeconomic stability for all stakeholders. Since then, the government of India has made notable progress in reforming the Indian financial system by introducing new policies and regulations on par with international financial laws. Currently, India is the fifth-largest economy in nominal GDP (Gross Domestic Product) terms and the third largest by GDP purchasing power parity[2]. Over the next 10-15 years, India is expected to rank among the top three economic powers in the world[3]. In a report by Goldman Sachs, it is estimated that India will become the world's second largest economy by 2075.

Given such ambitious plans, it is important to determine if the reforms and frameworks established during the last decade have been successful and if their targets have been met. Based on this concept, this research investigates the impact of Indian Insolvency and Bankruptcy Code (IBC) on corporate borrowings.

[1] *The 'Licence Raj' involved an elaborate system of regulations and licences associated with setting up and running Indian businesses in India between 1951 and 1991.The Government opted for a licensing system so that it could maintain control over industries as per the Industries Development and Regulation Act, 1951. With the liberalisation policy introduced in 1991, the licence raj was dismantled.*

[2] *https://www.investopedia.com/articles/investing/043015/fundamentals-how-india-makes-its-money.asp*

[3] *https://www.ibef.org/economy/indian-economy-overview*

Based on this concept, this research investigates the impact of Indian Insolvency and Bankruptcy Code (IBC) on corporate borrowings.

The impact of insolvency law on credit markets and firms' behaviour has been increasingly studied recently. Porta et al. (1997) using a cross-section of countries, demonstrate that countries with more legal protection for investors have larger financial, and practical frameworks and reforms are critical for efficient financial markets. They further document the positive effect of bankruptcy policy on development of credit markets. In their study, Berkowitz et al. (2003) using data from 49 countries state that effective enforcement of reform leads to better economic growth and quality of reforms is an indicator of robust economic systems. Furthermore, Djankov et al. (2008) investigate cross-country determinants of private credit, using new data on legal creditor rights and private and public credit registries in 129 countries. They confirm in their study that improvement in creditors' rights facilitates the development of credit markets and has an implication on the level of total private credit. Thus, after the reform, credit markets have stronger credit protection and more credit supply.

Qian & Strahan (2007) examine loan-level data in 48 countries to show that stronger creditors' rights lead to longer maturities, lower interest costs and concentrated ownership. Furthermore, Bergoeing et al. (2002) document that a robust bankruptcy regime and stronger creditors' rights enable faster insolvency resolution in Chile. In the following, investors and banks are willing to take risks leading to opportunities for entrepreneurship and innovation. Essentially, an effective insolvency regime protects creditors' rights while preventing premature liquidations of viable firms.

A majority of existing studies have focused on impact of bankruptcy law in international markets, this essay addresses this gap by investigating the efficiency of Indian bankruptcy reform in the Indian market. The dynamic economic landscape of India, characterized by rapid technological advancements and changing market dynamics, creates a unique environment for studying insolvency. Compared to other markets explored in the literature, examining insolvency in India can reveal distinct patterns, contributing to a more nuanced understanding of the interactions between legal frameworks and economic contexts. Considering India's mix of traditional and modern sectors, insolvency scenarios can be complicated. Taking a closer look at insolvency in India gives us a unique opportunity to discover how the effectiveness of insolvency reforms varies across different sectors. A study of insolvency in India provides valuable lessons for policymakers and legislators worldwide about how various institutional

factors interact with insolvency reforms. An analysis of the outcomes and challenges of insolvency reforms in India further provide insight into designing effective legal frameworks in other developing economies. Additionally, India's growing integration into the global economy complicates cross-border insolvency proceedings. The study of Indian insolvency policy and its interaction with international frameworks can contribute to the understanding of cross-border insolvency.

The Insolvency and Bankruptcy Code (IBC) was established in 2016 to provide a framework for administering insolvency, bankruptcy and restructuring in businesses and organizations. It is considered a landmark reform in the Indian financial system as it is a single reform to deal with corporates, partnership firms and individuals. The key objectives of the IBC reform were to have smooth functioning of a credit market in an economy, resolve debts promptly, and create a conducive environment for local and foreign companies to do business in India by offering them an effective exit route. Due to the IBC policy, a timeline for debt resolution has been established, reassuring creditors about their financial recovery. This essay focuses on investigating the efficiency of Indian bankruptcy reform in the Indian market.

Our study provides a perspective on causal effect of creditors' protection on companies' debt financing policies. By empirically testing data for ten years from 2011 to 2020 for Indian and non-Indian companies, before and after the reform, we explore effectiveness of the IBC on credit supply to firms, firms' debt financing and cost of debt financing. Following (Araujo et al., 2012) study on bankruptcy law, we employ difference-in-difference method on various contractual debt variables. After filtering data and removing missing values, there are 1,924 companies in total, with 1,736 firms from India, 51 from Pakistan, 95 from Sri Lanka, and 42 from Bangladesh.

The findings reveal that there is a notable increase in total debt, long-term debt, and trade credit available to Indian firms after the IBC reform. Additionally, we observe that cost of debt has decreased, indicating improved affordability and accessibility of financing. The results led to several important conclusions. To begin with, the findings indicate that firms have greater access to external credit after the implementation of the IBC policy. There is an increase of approximately 18% in total debt, 27% in long term debt and 30% in trade credit in the Indian firms post-IBC. This indicates that the Indian bankruptcy reform has a positive impact on the supply of credit (Qian & Strahan, 2007 and Bae & Goyal, 2009).

Furthermore, after the establishment of the IBC policy, we find that there is an increase in long-term debt with no significant changes in short-term debt. This suggests that the new reform has benefited more to long-term debtholders, as they experience much higher risk than short-term debtholders. The IBC framework gives them extra protection; hence they are more confident and more willing to lend to the firms after the reform. The increase in long term debt suggests stronger creditors' rights after the bankruptcy law as the creditors have a higher chance of recovering debt if the debtors become insolvent, which is consistent with previous theoretical literature on credit (Hart & Moore, 1994; Bose et al., 2021; Townsend, 1979).

To gain a deeper understanding of the effect of the IBC reform, we examine industries with both tangible and intangible products separately. The study finds a notable surge in credit supply to non-financial services (intangible) industries, along with a simultaneous reduction in lending costs post-IBC. The findings further underscore the positive impact of the IBC on improving access and affordability to credit for non-financial services organizations. Furthermore, we examine the heterogeneous effects of the IBC reform on various firm-specific variables including size, leverage, profitability, and riskiness. Specifically, there has been a notable increase in credit for small-sized firms, low-leverage firms, high-profitability firms, and high-risk firms. In addition, we observe a rise in trade credit for higher-risk firms after the implementation of the IBC policy.

For robustness, we replicate our empirical analysis by assuming the reform occurred in 2014 and 2015 rather than 2016. The results from these earlier hypothetical implementation years can be compared with the actual implementation year of 2016, allowing us to determine whether the observed effects are truly attributable to the IBC reform or whether they may be influenced by external macroeconomic factors. The results show significant effects in 2016 than in previous years, confirming that the observed impacts are not caused by other external factors but are a consequence of the IBC law.

The results of our study are in accordance with the findings of Bose et al. (2021). In their study, they observed that the IBC policy enhanced the "credit channels" for financially distressed firms, leading to an increase in the supply of credit and a significant decrease in the cost of debt, compared to non-distressed firms (Gopalan et al., 2012; Rodano et al., 2016; Vig, 2013).

Based on this research, we contribute by suggesting that credit channels have similarly improved for publicly listed Indian companies, resulting in a substantial reduction in debt costs. Thus, our study complements Bose et al (2021) investigation of the impact of the IBC on the access to credit and performance of financially distressed firms using a difference-in-differences (hereafter DID) approach. However, we differ from Bose at al. in following ways: First, Bose et al. (2021) employed a DID method to examine the influence of the IBC reform on "credit channels" of distressed firms as compared to non-distressed firms. We have chosen a different DID setting with Indian public listed companies as treatment firms and individual firms from Pakistan, Sri Lanka and Bangladesh as control firms. It results in a stronger DID setting because the control firms represent entities that are not subject to the Insolvency and Bankruptcy Code (IBC). Second, we extend our analysis to understand how the IBC affects the industries with intangible (non-financial services) products. We conduct this investigation by creating two distinct groups: a treatment group that consisted of non-financial services companies, and a control group that consisted of manufacturing companies. According to our knowledge, this is the first paper to examine the effects of the IBC reform on non-financial services companies.

Overall, our findings contribute to understanding how the IBC law has enhanced creditors' rights and built trust in the Indian bankruptcy system, facilitating credit to Indian firms. By synthesizing the existing body of knowledge, we provide a basis for understanding how firms' financing decisions are influenced, as well as the impact of the IBC reform on capital structure. Finally, our findings indicate positive impact of the IBC reform on lenders willingness to lend, businesses ability to access external finance, and firms borrowing capacities. Our paper relates to previous studies that document that the legal protection of creditors and efficient enforcement of debt play an important role in the development of credit markets (Djankov et al., 2008; Jappelli & Pagano, 2002; Pagano & Jappelli, 1993).

This paper contributes to the large and growing literature on the importance of legal systems and institutions, such as bankruptcy law, by providing robust evidence on the effectiveness of Indian bankruptcy reform. In addition, this essay adds to existing studies by investigating the causal effect of creditor protection on external financing and corporate borrowings. Since political, economic, and social contexts of developing countries are different from developed

countries, this study gives a new perspective to policymakers who want to understand the contribution of efficient reforms and laws in developing economies.

The remainder of the paper proceeds as follows. The rest of the paper proceeds as follows. Section 2 provides a background of the IBC reform. Section 3 presents the literature review and section 4 provides data and the estimation technique. Section 5 reports and discusses the results. Finally, Section 5 concludes.

2. Background of the Reform

Prior to 2016, India had multiple laws dealing with the issues of insolvency, bankruptcy, and debt default. Insolvency and bankruptcy of companies were dealt with a lot of statutory guidelines that included the Sick Industrial Companies Act, 1985, the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002, the Recovery of Debt Due to Banks and Financial Institutions Act, 1993, and the Companies Act, 2013. Individual solvency issues were governed by the Presidential Towns Insolvency Act, 1909, and the Provisional Insolvency Act, 1920, which are almost 100 years old. A lack of comprehensive law for liquidation and debt recovery left India far behind other countries regarding insolvency and bankruptcy issues. Furthermore, a weak judiciary system, lack of consistency and delayed processing increased distrust among creditors and led to a substantial increase in the number of non-performing assets (NPAs).

Following the opening of the economy and liberalization in India, it was essential to establish frameworks that would encourage economic growth and ease the exit procedures for companies operating and investing in India. It became necessary to have a single, well-defined law for dealing with insolvency and bankruptcy issues in the 2010s. The Insolvency and Bankruptcy Code (IBC) was established in 2016 to provide a framework for administering insolvency, bankruptcy and restructuring in businesses and organizations. It is considered a landmark reform in the Indian financial system as it is a single reform to deal with corporates, partnership firms and individuals[4]. The key objectives of the (IBC) reform were to have smooth functioning of a credit market in an economy, resolve debts promptly, and create a conducive environment for local and foreign companies to do business in India by offering them an effective exit route. Due to the establishment of the IBC reform, a timeline for debt resolution has been established, reassuring creditors about their financial recovery. Insolvency and Bankruptcy Code's

environment is based on four pillars -insolvency professionals, information utility, adjunction, and regulation. Under the code, a new supervisory authority is established, a timeline for resolving insolvency issues for companies is mandated, and institution for Information Utility (IU) is formed. The resolution process must be completed within 180 days (extendable by 90 days), with an outer time limit of 330 days to compensate for the time lost in legal proceedings[5]. Furthermore, the code is governed by one chain of authority without interference from civil courts related to insolvency. It facilitates the prompt resolution of debts and helps speed up the collection process. To adjudicate insolvency cases related to companies and individuals, the National Reform Tribunal (NCLT) and Debt Recovery Tribunal (DRT) forums are established, respectively. One of the significant problems in the Indian Banking system was the ongoing increase in non-performing assets (NPAs), leading to a t*win Balance Sheet* problem where both the banks and the corporates were struggling under the stress of bad loans. The bankruptcy and Insolvency code aimed to resolve this issue by releasing stressed assets and rescuing insolvent firms. Following Berkowitz, Pistor and Richard (2000), it is expected that effective enforcement will lead to better economic growth and effective systems in India.

India's Insolvency and Bankruptcy Code (IBC) was enacted in 2016, marking the first time ever that a reform addressed bankruptcy and insolvency issues comprehensively. Prior to the IBC, bankruptcy processes for firms were highly fragmented. It is important to note that the enactment of the Indian Insolvency and Bankruptcy Code (IBC) marked a significant change from a previous adversarial legal system that favoured debtors.

There were several acts governing creditors and debtors' powers in the pre-IBC era, resulting in ambiguity and jurisdictional challenges as well as inconsistent legal outcomes. In addition to streamlining this process, the IBC reform provides a cohesive framework where creditors and debtors work collaboratively under the guidance of the National Company Reform Tribunal (NCLT), fostering equity and fairness. Additionally, the shift from a debtor-in-possession model to a creditor-driven resolution approach was a paradigm shift. Under the guidance of the NCLT, creditors and debtors operate within a framework of equity and fairness to ensure economic value is preserved.

[4]*The Journey of Insolvency & Bankruptcy Code.https://www.mondaq.com/advicecentre/content/3750/The-Journey-of-Insolvency-Bankruptcy-Code*

[5]*https://ibbi.gov.in/uploads/whatsnew/e42fddce80e99d28b683a7e21c81110e.pdf*

The IBC reform aimed to resolve this issue by releasing stressed assets and rescuing insolvent firms. Post-enactment, the reform has been strengthened further by various amendments. A recent amendment in the reform in April 2021 introduced a new ordinance for the insolvency resolution process for micro, small, and medium enterprises (MSMEs). The pre-packaged insolvency resolution process (PIRP) has extended the resolution time beyond 330 days in exceptional cases, including any time lost because of legal proceedings[6].
The code has moved from the 'debtor-in-possession' model to the 'creditor-in-control' model. It has corporate insolvency resolution process (CIRP) that ends up with a resolution plan of rehabilitating the failing corporate debtors (CD) or commencement of liquidation of the CD.

Furthermore, the reform distinguishes between the CIRP process that operational and financial creditors can file. Financial creditors such as banks and financial institutions can initiate insolvency when a default of 10 million rupees or more. An operational creditor can initiate insolvency only if there is a case of default of its operational debt.

From the creditors' perspective, an efficient insolvency law enables debtors to move the capital from inefficient businesses to more efficient ones. This is consistent with the studies by (Hart & Moore, 1994) and (Rodano et al., 2016) who propound that effective bankruptcy reform secures the preservation of borrowers' repayment incentives besides rescuing insolvent firms. Before the reform, insolvency proceedings could take as much as 4.3 years to close. However, the Code has reduced the time to 330 days, including any extension of time and any exclusion of time on account of legal proceedings. As of June 2021, the Code has rescued 396 CDs through resolution plans, one-third of which were in deep distress.

Around three-fourths of distressed assets were rescued on the Code in value terms. The resolution plans recovered more than 174% of the realizable value of these CDs. In seven years since implementing the IBC reform, scheduled commercial banks have recovered 45.5 per cent of claims. This is the highest compared to recovery under other modes or legislations[7]. Cost of resolution of Corporate Insolvency Resolution Process (CIRP) has reduced tremendously to an average of 0.52% of the resolution value.

[6]*https://www.bloombergquint.com/reform-and-policy/economic-survey-2021-recoveries-under-ibc-highest-among-all-debt-recovery-methods*

This is a significant improvement compared to the cost before the reform, where the total cost was as high as 9 per cent of the estate value of the company as per the World Bank Group's Doing Business Reports. The outcomes of the Code have been recognized globally, reflected by the improvement in the annual ranking of India in ease of resolving insolvency indicators internationally. India's rank increased from 117 in 2017 to 47 in 2020 in 'Ease of Resolving Insolvency[8].

As discussed previously, the IBC law in India is composed of four pillars to achieve an effective resolution of insolvency and bankruptcy cases, as well as promote transparency, accountability, and the rights of creditors. Figure 1 summarizes the four key pillars of the Indian bankruptcy code, along with their respective duties and roles.

[7]*https://ibbi.gov.in/01-10-2021/index.html*

[8]*https://www.phdcci.in/wp-content/uploads/2019/10/India-jumps-14-spots-in-Ease-of-Doing-Business-rankings-2020-ranks-63rd-out-of-190-countries.pd*

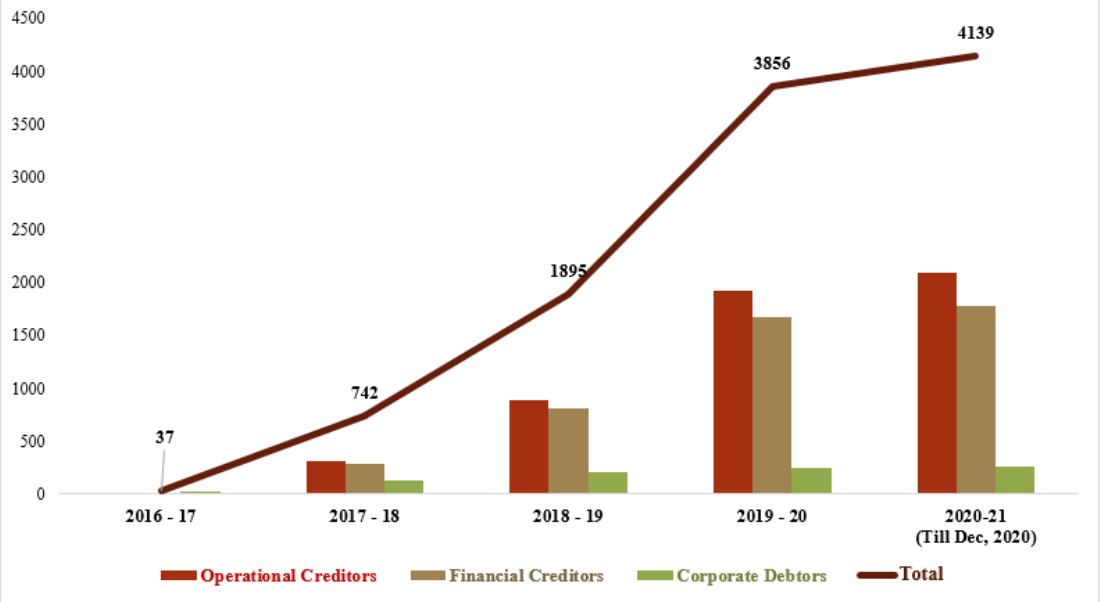
Figure 1

Pillars of Indian Bankruptcy Code

Pillar	Responsibilities
NCLT (National Companies LawTribunal)- *Adjudicating authority for resolution processes of companies*	• Adjudicating authority for resolution processes of companies. • Approves the initiation of the resolution process. • Appoints insolvency professionals (IPs). • Approves the final decisions of creditors regarding the resolution process.
Insolvency and Bankruptcy Board (Board)- *A 10-member committee comprising representatives from RBI, Ministries of Finance, Corporate Affairs, and Laws.*	• Registers and regulates Insolvency Professional Agencies (IPAs), IPs, and Information Utilities (IUs). • Governs the conduct of insolvency and bankruptcy resolution processes by prescribing regulations and guidelines. Insolvency Professional Agency (IPA) • Registered entity responsible for the professional development of IPs. • Conducts examinations to certify insolvency professionals. • Enforces a code of conduct for IPs as per their by-law.
Insolvency Professionals (IP)- *Specialized professionals enrolled as members in an IPA and registered with the Board.*	• Administers the resolution process for distressed companies. • Manages the assets of the debtor during the resolution process. • Provides essential information to creditors to aid their decision-making.
Information Utilities (IU)- *Registered entities responsible for collecting, collating, authenticating, and disseminating financial information.*	• Gathers financial and operational data from creditors and corporate debtors. • Maintains records of corporate debtors' assets, liabilities, defaults, and discharges.

Figure 2

Applicant wise distribution of Initiation of CIRPs (Corporate Insolvency Resolution Process)

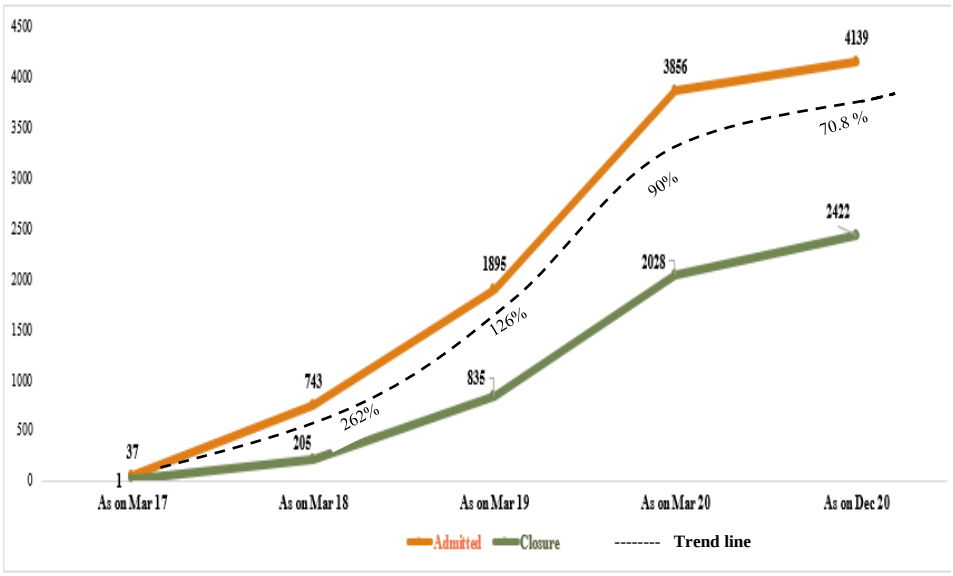


Source: https://www.ibbi.gov.in/

Figure 2 illustrates an increase in CIRP initiation by creditors of all types, including operational, financial, and corporate creditors after the IBC reform. This indicates active participation by lenders in bankruptcy proceedings. Figure 3 shows the number of CIRP admitted and closed after the IBC. There is an increase in the number of both admitted and closed CIRP. The trend line shows that the gap between closed CIRP and admitted CIRP has reduced from March 2017 Dec 2020, indicating the effectiveness of the IBC law. In addition, following the establishment of the IBC reform in 2016, there is an increase in the number of new businesses registered in India as shown in figure 4, which is evidence of entrepreneurial activity, innovation, and economic growth in the country.

Figure 3

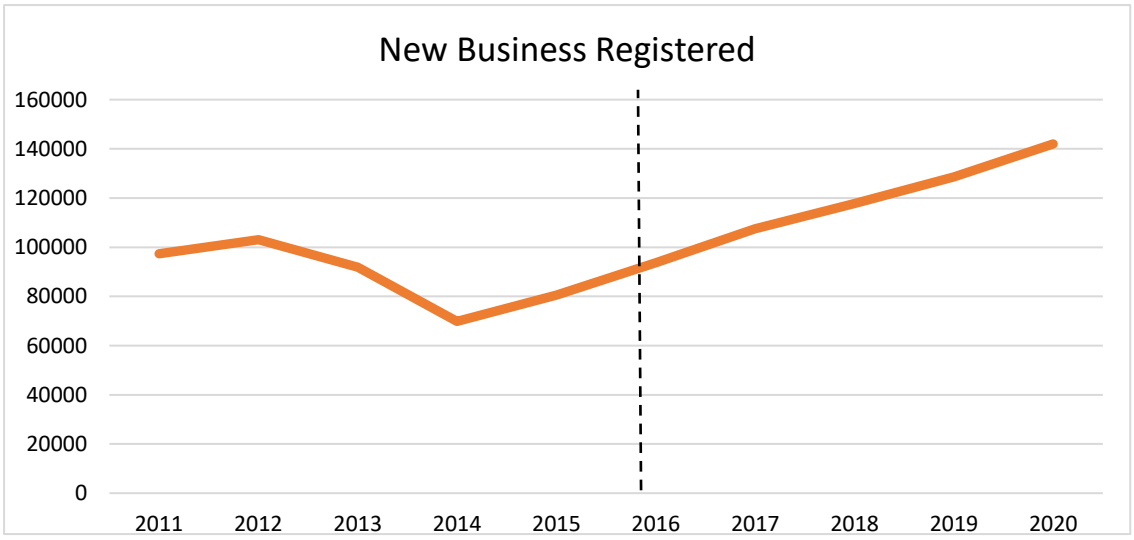
CIRP (Corporate Insolvency Resolution Process) Admitted and Closed Cumulatively



Source: https://www.ibbi.gov.in

Figure 4

New business Registered



Source: https://databank.worldbank.org/source/world-development-indicators

3. Literature review & Hypothesis Development

3.1. Impact of insolvency laws on creditors' protection and supply of credit

Porta et al. (1997) stresses the importance of financial systems and legal environments, such as bankruptcy law in general, that lead to the development of credit markets while promoting financial growth. In the past, most of the studies on creditors' rights have been done on the idea of a creditors protection index as proposed by (La Porta et al., 1998). They emphasise the importance of creditor protection and the efficiency of debt enforcement in supporting credit markets and suggested that better creditor protection increases debt supply. (Djankov et al., 2006) support the study by LLSV and further studied the effect of information on credit markets. They conclude that more substantial and improved creditor rights are correlated with a higher level of private credit. In another study, (Djankov et al., 2008) examine legal systems in 88 countries and how they handled insolvent companies. They report an increase in debt recovery across different countries when there is an efficient approach to debt enforcement, measured by time, cash flow, and asset disposition. However, the authors observe that insolvency regulatory institutions in developing countries underperform due to two main reasons. First, bankruptcy court procedures are often inefficient (expensive and too lengthy), and secondly, secured creditors' rights are rarely protected. (Davydenko & Franks, 2008) conclude that low legal protection of creditors results in lower rates of recovery for creditors.

Furthermore, (Hasan et al., 2016) studied bankruptcy reforms in 11 major economies (including three emerging markets: Brazil, China and Russia) from 2001–to 2009 and observe that the reforms strengthen creditors' rights and more significant issuance of long-term debt. (Acharya et al., 2011) compare firms' leverage in stronger creditor rights countries with that of firms in weaker creditor rights countries. The researchers found that firms in stronger creditors rights countries use lower leverage to reduce the risk of inefficient liquidation. Thus, it seems reasonable to argue that the IBC would provide better creditors rights and would encourage creditors protection and credit supply in the Indian market.

On a micro level, there is evidence of the formalization of power theories of creditors and information theories about the borrower. The power theory suggests that the power of creditors and lending information are the two main determinants of how much credit a

financial institution would extend to individuals and firms (Townsend, 1979; Aghion & Bolton, 1992)
In strong creditors' rights markets where the creditors can force repayment, grab collateral or take control of the firm, they are more willing to extend credit (Hart & Moore, 1994; Hart & Moore, 1998).

Along the same lines, when the creditors have information about the borrowers, credit history or other lenders, they extend more credit. Several researchers formalize these information theories of credit Jaffee & Russell, 1976: Stiglitz & Weiss 1981). Additionally, Jappelli & Pagano (2002) and Sapienza (2002) state that credit registries, which include information on credit histories and credit indebtedness of firms, can influence credit availability. Several studies suggest that the establishment of laws lead to credit protection and increase credit availability. Therefore, we hypothesise that:

H1: The amount of total debt increases after the establishment of the IBC reform.

3.2. Impact of insolvency laws on debt financing

After examining the total debt supply, we look at the maturity structure of firms' debt borrowing. Bianco et al. (2002) Pinneiro & Cabral (1999) note that differences in judicial efficiency and legal protection affect the amount of lending, credit constraints, and the terms at which loans are made. Esty et al. (2003) investigate the relationship between legal risk and debt structure based on an internationally syndicated project loan sample. They find that lenders create a concentration of lending syndicates in countries with creditor rights protection and law enforcement. Esty et al. (2003) conclude that creditor rights protection and law enforcement affect the willingness of foreign banks to lend to domestic projects. Davydenko & Franks (2008) examine small firms in France, Germany, and the United Kingdom to check the differences in creditors' rights and banks' lending practices. The authors note that banks adapt their reorganization and lending practices to mitigate the effects of bankruptcy law, which decrease costs. (Giannetti, 2003)) echo this by using a database of unlisted companies from Europe and conclude that firms in countries with good creditor

rights have better, more accessible access to loans to finance investments and easier for firms which invest in intangible assets (research & development). Tirole & Bénabou, (2010) in his study, suggest that strengthening creditors' rights increases the firm's liquidation value. Additionally, Haselmann et al.(2010) in their study covering Central and Eastern Europe economies, show that banks increase loan supply when there is an improvement in creditors' rights. Their empirical studies have shown that insolvency reforms increase creditor protection and debt enforcement which positively influence the size of the debt market. Also, creditor rights protection ensures access to long-term debt for firms. Gopalan et al. (2012) and Vig (2013) report that reducing creditors' enforcement costs leads to firms increasing long-term debt and decreasing their short-term debt proportions. (Beck et al., 2008) examined the causal link between SMEs and economic development and find that institutional developments facilitated SMEs' access to finance and alleviated their growth constraints. Giannetti (2003) in her study, states that in countries with good creditor protection, it is easier for firms investing in intangible assets to obtain loans. In addition, maturity and lender number are related to creditors' ability to enforce repayment (Bolton & Scharfstein,1996; Diamond, 2004; Gertner & Scharfstein, 1991).

A study by Qian & Strahan(2007) and Bae & Goyal (2009) looked at the effect of creditor rights on loan contract characteristics (such as price, size, maturity, and interest rates). It indicates that better creditor protection reduces spreads with loans having longer maturities and lower interest rates.

Improvements in law may encourage firms to shift away from short-term debt arrangements from multiple lenders and towards long-term debt arrangements with fewer lenders. The short-term-debt-from-multiple-lender solution may have costs, such as restricting the firm's ability to renegotiate better terms when its credit quality improves (Roberts & Sufi, 2008) or exposing the firm to rollover risk. He & Xiong (2012) document that a decrease in enforcement cost make firms increase (decrease) the amount of long-term (short-term) debt in their financing mix and reduce the number of lenders from which they borrow.

Summarising the discussions so far, we can see the importance of debt financing and creditor protection laws cross various industries and broader economic sectors. It is common for developed economies to have strong legal systems that define clear creditor rights and avenues of redress for creditors. In contrast, some developing economies, particularly those in Asia and

Africa, have weaker creditor protection reforms. The importance of debt financing and understanding creditor protection reforms in India extends across various industries, ownership structures, and the broader economy. The creditor protection reforms play an essential role in ensuring fair dealings for companies The result is that financial institutions lend to companies, promoting entrepreneurship and economic diversity in the process. Small businesses are particularly vulnerable, and creditor protection reforms ensure fair dealings. A creditor protection reform contributes to financial stability. A robust legal framework encourages foreign and domestic investment, which is crucial for an economy like India, which is growing rapidly. By enhancing legal frameworks, foreign investors can feel more confident and invest more. The strengthening of legal frameworks can enhance investor confidence and attract more foreign investment.

Debt financing can provide capital for family-owned businesses without diluting family control. There is a special relevance to this in India, where many businesses are run by families. Strong creditor protection reforms are essential for family-owned businesses to secure external financing while protecting family assets. Lenders and owners benefit from it because it provides an added layer of security. A key benefit of debt financing is that it provides quick injections of capital without dilution to equity in technology and start-up companies. As a result, these industries can maintain flexibility and control over their intellectual property.

The following is expected that the Indian credit market will benefit from more robust credit protection and credit supply following the IBC reform and we posit the following hypothesis:

H2: The amount of long-term debt increases after the establishment of the IBC reform.
H3: The amount of short-term debt increases after the establishment of the IBC reform.
H4: The amount of trade credit increases after the establishment of the IBC reform.

3.3. Impact of insolvency reforms on lending costs

Further, we investigate the impact of the IBC reform on cost of borrowing for firms. Studies show that insolvency reform reduces the indirect cost of bankruptcy (Sautner & Vladimirov, 2018), affect how debt is distributed (Vig, 2013), and reduces the cost of borrowing (Scott &

Terence, n.d.).These results agree with past theoretical observations about creditor protection increasing ex-ante efficiency (Rajan & Zingales, 1995); Armour et al., 2015) and thus higher firm financial leverage (Kraus & Litzenberger, 1973), as it reduces agency costs of debt and debt inequalities (Jensen & Meckling, 1976). Additionally, Gopalan et al., (2012) and Vig (2013) state that reforms lead to better lending procedures, leading to a reduction in the cost of borrowing. Summarising the discussions so far, we expect that the IBC reform will reduce the cost of borrowing and propose the following hypothesis.

H5: There is a decrease in cost of debt after the establishment of the IBC reform.

3.4. Trade-off and Pecking Order Theory

Moreover, we discuss capital structure theories to understand how institutional changes, specifically changes in bankruptcy reform, affect financing decisions for firms and why firms choose to have debt in their capital structure.

Modigliani & Miller (1958) irrelevance theory was the first attempt to explain capital structure issues. They argue that in perfect markets, the capital structure of a company does not matter because the value of the company depends on its earnings power and its underlying assets[9]. M&M's theorem makes two propositions: proposition one asserts that when there are no taxes, capital structure has no bearing on a company's value. In an identical business, the value would remain the same, regardless of the type of financing used to finance the assets. A firm's value is determined by its expected earnings in the future[10].

However, in 1963, Modigliani and Miller revised the irrelevance theory, and the second proposition claims that when there are taxes, financial leverage boosts a firm's value while reducing its overall cost of capital[11].

[9] *Franco Modigliani and Merton H. Miller. "The Cost of Capital, Corporation Finance and the Theory of Investment," Page 264 https://gvpesquisa.fgv.br/sites/gvpesquisa.fgv.br/files/arquivos/terra__the_cost_of_capital_corporation_finance.pdf*

[10] *Franco Modigliani and Merton H. Miller. "The Cost of Capital, Corporation Finance and the Theory of Investment," Page 268. https://gvpesquisa.fgv.br/sites/gvpesquisa.fgv.br/files/arquivos/terra__the_cost_of_capital_corporation_finance.pdf*

[11] *Franco Modigliani and Merton H. Miller. "The Cost of Capital, Corporation Finance and the Theory of Investment," Page 271.*

They further identify the benefits of debt in the capital structure including tax shields (savings) resulting from the deduction of interest expenses from a firm's pre-tax income, the reduction of agency costs in the event of a liquidation, resulting in losses such as salary, reputation, and perquisites for managers, as well as a need to generate cash flow to pay interest.

There are two primary theories within the literature on capital structure that explain how a company uses leverage: the pecking order theory and the trade-off theory. The trade-off theory asserts that companies balance the benefits of debt achieved through tax savings and the reduction of managerial agency costs when searching for the optimal capital structure (Bradley et al.1984; Kraus & Litzenberger, 1973; Myers, 1977). This includes bankruptcy costs and the agency costs between shareholders and bondholders when trying to determine the optimal capital structure. The pecking order theory presumes that there is no optimal capital structure and that capital structure decisions are determined by the costs of adverse selection between the firm and outside investors (Myers & Majluf, 1984). Furthermore, the management attempts to reduce capital markets' asymmetry costs when financing its operations.

3.4.1. Trade-off Theory

The static trade-off theory is a financial theory that extends on the M& M theory and states that to have optimal capital structure, it is crucial to weigh the benefits and costs of debt financing, holding a firm’s assets and investment plans constant (Myers & Majluf, 1984).It emphasises on minimizing the cost of capital by having an appropriate mix of debt and equity financing. Companies use debt and equity as part of their financing, and one of the main advantages of debt financing is its tax benefits. However, one of the main disadvantages of debt financing is the cost of debt, which is the interest or return. As debt levels increase, the cost of capital can be minimized, but at some point, debt's cost outweighs equity's cost, so increasing debt cannot reduce the overall cost of capital. Consequently, leverage increases creditor risk, which increases their required return and the cost of capital. Companies usually combine debt financing with equity financing to minimize their average cost of capital. A higher level of debt also puts investors' and shareholders' financial positions at risk. Based on the static trade-off theory, firms have different capital structures. Companies with a larger proportion of tangible assets will have a higher debt ratio. Firms with higher risk will have

less debt in their capital structure due to the uncertainty in generating income to utilize their tax shields. In conclusion, the trade-off theory proposes that firms strive for a balance between debt and equity to achieve an optimal capital structure. In the wake of the IBC code, there is a legal process for resolving financial distress, so firms may feel more comfortable using debt as part of their capital structure. This could lead to optimal level of debt in the capital structure.

3.4.2. The Pecking order Theory

Another important empirical theory inconsistent with the static trade-off theory is the pecking order theory developed by (Myers & Majluf, 1984). Due to asymmetry of information between managers and investors regarding the investment opportunities of a company, its shares may be undervalued compared with what they would have been valued if managers had disclosed information to the market regarding the company's investment opportunities. As a result, the issuance of new shares may cause dilution of ownership, Thus, managers prefer to fund new investments through internal sources (retained earnings) first, then external sources (debt), and finally equity. As a result, firms that are profitable and generate high earnings for retention use fewer debts in their capital structure, since they can finance their investments with retained earnings. The level of debt and the firm's profitability (profitability) are predicted to be negatively correlated.

One of the most important aspects of capital formation is the trade-off between return and risk. Financial management is aimed at maximizing the wealth of owners and increase the value of the stock and companies aim to achieve a trade-off between risk and return and determine an efficient financing combination to maximise the value of its share (Myers & Majluf, 1984). Pecking order theory (Myers and Majluf, 1984), trade-off theory and M&M theory explain debt structure and financial choices. However, there is no optimal theory that explains the total impact of debt structure on financial performance (Martinez et al., 2019). With reduced bankruptcy costs and a clear resolution process after the IBC reform, debt may contribute more to capital structure than equity. Although firms prefer internal financing over external financing, however they prefer debt over equity when external financing is required. Based on the capital structure theories, we propose that after the IBC reform firms take more debt to maintain an optimal capital structure.

Next, we examine the existing literature on the relationship between and various firm-specific variables, such as size, profitability, risk, and liquidity. Additionally, we examine the literature in relation to the use of debt in companies that have tangible assets as well as intangible assets.

3.5. Variation in Capital structure across Industries

Numerous factors contribute to the variation in debt structures across a wide range of industries, such as the type of business, the capital-intensive nature of the industry, and the economy. The classification of industries has been considered as a factor influencing capital structure in other empirical studies (Errunza, 1979;Stonehill & Stitzel, 1969). A difference in leverage can also be seen between an industry with tangible assets and one with intangible assets[12].

Trade-off theory and agency theory predict a positive relationship between fixed capital and debt in tangible industries. As Myers & Majluf (1984) and (Scott &Terence,, n.d.) state that fixed assets provide collateral for outside capital, thereby reducing the conflict between shareholders and creditors. Based on this, it has been demonstrated that financial leverage and tangibility of assets are positively correlated (Rajan & Zingales, 1995). Furthermore, tangibility implies lower financial distress costs (they provide collateral in case of bankruptcy) and lower agency costs between shareholders and bondholders (due to reduced risk shifting).

Several studies, among which we highlight (Marsh ,1982; Titman & Wessels, 1988;Munro, 1996; Gaud et al., 2005) found empirical evidence that a company's fixed assets level is positively correlated with its debt level.

Thus, companies with many tangible assets are less likely to default and can accumulate more debt. (Rajan & Zingales, 1995). Moreover, industries with tangible assets may have a higher debt requirement than industries that deal primarily with intangible goods, such as software development or advertising, where capital requirements may be lower. According to (Lee & Lee, 2019), industries with more intangible assets have lower levels of leverage.

[12]How Much Debt Is Right for Your Company? https://hbr.org/1982/07/how-much-debt-is-right-for-your-company[4]

https://gvpesquisa.fgv.br/sites/gvpesquisa.fgv.br/files/arquivos/terra_-_the_cost_of_capital_corporation_finance.pdf[3]

Creditors view them as riskier because intangible assets are difficult to value, and they have a potential to lose value. Rajan & Zingales (1995) demonstrated that financial leverage and assets' tangibility are positively correlated.

Consequently, creditors lend to industries with tangible assets because they are backed by collateral and are safe. A loan can be recovered by seizing and selling tangible assets in case of default. Manufacturers, construction companies, and transportation companies primarily focused on tangible goods invest significant amounts in plant property, and equipment and have a higher level of leverage due to the collateral value of its assets, which can serve as a guarantee for loans. Due to this, defaulting companies are not forced into bankruptcy, and creditors can seize their assets instead. In their studies (Van Der Wijst, 1989 and Welsh et al., 1982) noted that the manufacturing industry is capital intensive and requires large investments in fixed assets made with both debt and equity. (Gibson, 2002) found that in Australia, short-term debt was more evident in the wholesale-trade and retail-trade sectors, but there was a lower reliance of such debt in the services sectors. According to (Berger & Ofek, 1995) debt financing is positively correlated with the size of a biotechnology company. A firm with high levels of liquid assets and tangible assets with high collateral value is likely to use trade credit (Lu-Andrews & Yu, 2014)) as trade credit is less expensive than bank loans because of the liquidation advantage of these assets. Therefore, such a company is less likely to suffer financial distress than a company with an elevated level of intangible assets. Within the manufacturing sector, Bowen et al. (1982) and Bradley et al. (1984) found that drug, instrument, electronic, and food industries have consistently low leverage, whereas paper, textile, mill products, steel, airline, and cement industries have consistently high leverage. Furthermore, utilities are more heavily geared than non-utilities Similarly, Boateng (2004) reviewed international joint ventures and found that industries such as textiles, building and construction, mining and exploration have greater debt in their capital structure than automobiles, agriculture, food, and transportation. In addition, long-term debt was found to be affected by industry, especially manufacturing, retail trade, transportation, and storage, as well as finance and insurance.

On the other side of the spectrum, pecking order theory suggests that tangibility is negatively correlated to leverage as firms with more tangible assets have less information asymmetry, resulting in lower equity costs (Frank & Goyal, 2008). As a result, equity financing is more attractive Debt plays a less important disciplinary role in firms with large tangible assets,

which implies a negative relationship between tangibility and debt (Grossman and Hart, 1982, Titman and Wessels, 1988). As a result of the reduction in information asymmetry in firms with more tangible assets, tangibility has a negative effect on leverage (Frank & Goyal, 2008). Grossman and Hart (1982), Jensen (1986), and Stulz (1990) claim that conflicts between shareholders and managers can negatively affect debt and fixed capital levels. Nonetheless, it is important to note that the relationship between leverage and the type of assets held by a company is more complex than just tangibility. Most of the empirical literature has documented, a positive relationship between tangibility and leverage (Antoniou et al., 2008)et al., 2008, Fan et al., 2012;Frank and Goyal, 2009; Rajan and Zingales, 1995)

Both the agency theory and trade-off theory suggest that tangible assets are important and positively determining capital structure. On the one hand, because tangible assets can be used as collaterals (thus lowering the creditor's risk of suffering such agency costs of debt), a high fraction of tangible assets allows firms obtain external finance easily resulting in a high leverage (Titman and Wessels, 1988; Sbeti and Moosa, 2012). Moreover, the tangibility of the firm's assets is closely associated with agency costs of debt and the costs of financial funds (Myers, 1977; Booth et al., 2001). In the same line of arguments, Jensen and Meckling (1976) affirm that if firms do not have collaterals for their debt, moral hazard and hence agency costs of debt increase (La Rocca et al., 2009).Jensen and Meckling (1976) affirm that if firms do not have collaterals for their debt, moral hazard and hence agency costs of debt increase (La Rocca et al., 2009).

In addition, firms unable to provide collaterals will have to pay higher interest or will be forced to issue equity instead of debt (Scott 1977). Tangible assets are more valuable on the market than intangible assets in the case of bankruptcy, and so bondholders will demand lower risk premiums. Tangible assets can also mitigate concerns over insider resource expropriation. Moreover, the use of collateral plays a more important role in countries where creditor protection is relatively weak (La Porta et al., 1998) and it is commonly accepted that emerging countries are in this weak creditor protection group

Summarising the discussions so far, we can imply that there is a need for credit for both manufacturing and non-financial services industries to support their operations and growth. Sectors such as manufacturing or energy may require substantial capital investment, resulting

in higher debt levels.The service sector includes services like IT and Technology, energy sector, education, logistics, export and import, Media, health care, telecommunication, storage and communication, hotel Industries, legal and reform industry, business services, etc. It appears, that creditors are more willing to extend credit to manufacturing industries than to non-financial services industries. A primary reason for this preference is the fact that manufacturing businesses tend to possess tangible assets that can serve as collateral for credit. It would also be interesting to assess whether the IBC reform has boosted confidence among creditors, resulting in them extending credit to industries other than manufacturing. A close examination of the outcomes resulting from the implementation of the IBC reform can provide valuable insights into the ability of the reform to strengthen creditors' confidence in the market. It is particularly noteworthy since non-financial service sectors may not possess as much tangible collateral as manufacturing industries. Consequently, if the IBC reform has indeed influenced creditors' perceptions positively, we may see a shift in their willingness to provide credit to non-financial service industries. Hence, we propose the following hypothesis:

H6: After the IBC reform, there is an increase in debt in non-financial services industries.
H6a- After the IBC reform, there is a decrease in cost of debt in non-financial services industries

3.63. Impact of firm-specific characteristics on debt

Relationship between firm size and leverage

According to (Barclay & Smith, 1995), a firm's size affects its capital structure for two reasons: first, fixed issuance costs for public issues are high, resulting in economies of scale that favor large firms. Second, large companies are more likely to have foreign operations, so they use foreign debt to manage their currency exposure. This is in line with the trade-off theory which suggests that size is positively related to leverage, since bigger firms have lower default rates, thereby reducing financial distress costs (Rajan and Zingales, 1995, Titman and Wessels, 1988, Warner, 1977). Due to better access to capital markets, large companies have more debt than small companies since they are considered "too big to fail.". Debt financing is

preferred by large firms due to their high debt capacity (Bevan & Danbolt, 2002). Similarly, Antoniou et al.(2008) validated these findings and concluded that leverage ratios are positively correlated with firm size.

However, the pecking order theory asserts that size negatively impacts leverage, as large firms tend to experience less information asymmetry, therefore making equity less expensive and long-term capital needs likely to be met by equity issues (Fama and Jensen, 1983). Similarly, (Hizaji et al., 2006) examined determinants of capital structure and concluded that firm size and leverage were negatively correlated. Due to the relative affordability of debt financing compared to equity financing, small firms rely upon debt financing (Graham & Harvey, 2001). However, small firms lack track records, making them riskier for capital providers (Berger & Ofek, 1995). Although smaller, less liquid firms have relatively less access to debt markets, they can still obtain external funds from banks, associated firms, and trade credit.

Relationship between profitability and debt

According to the trade-off theory, profitability positively impacts leverage. In profitable firms, financial distress costs are low, the tax shield benefits are greater, and managerial agency costs are lower since firms with higher cash flows tend to take on more debt to monitor managers more closely to ensure appropriate use of free cash flow. (Rajan & Zingales, 1995) concluded that leverage and profitability are positively correlated. In their study, Mesquita & Lara (2003) found that short-term debt and leverage were positively correlated; however, long-term debt and leverage were inversely correlated with profitability. Thus, the static trade-off theory suggests that profitability and financial leverage are positively correlated.

On the contrary, the pecking order theory suggests that profitability reduces leverage because large profits result in more internal resources to finance projects, thereby requiring less debt funding (Myers & Majluf, 1984). Furthermore, they found an inverse relationship between profitability and leverage. According to Um (2001), firms with higher profitability have a higher debt capacity and, therefore, can have a greater tax shield. Research has shown that

firm performance or profitability is negatively affected by debt level (Kester, 1986; Titman & Wessels, 1988; Titman & Wessels, 1988; Booth et al., 2001; Fama & French, 2002). Increased debt levels can result in greater financial distress, reducing the capacity of the firm to invest in new projects and technologies that can generate revenue. Increasing interest payments can also increase costs, reducing the company's profitability and there is negative relationship between leverage and profitability (Antoniou et al., 2008, Kester, 1986; Booth et al. ,2001; Frank and Goyal, 2009; Rajan and Zingales, 1995; Titman and Wessels, 1988)

Relationship between liquidity and debt

There is no clear indication of how liquidity and leverage are related. According to trade-off theory, firms with high liquidities have incentives to use more debt to discipline and monitor their managers. Meanwhile, a firm could use less debt to reduce agency costs between shareholders and bondholders since shareholders can expropriate liquid assets more easily. The risk of financial distress is negatively correlated with leverage due to the increased volatility of earnings of firms with higher leverage (Bancel et al., 2005; Frank & Goyal, 2007; Harris & Raviv, 1991). However, pecking order theory suggests that risk positively relates to leverage, as firms with volatile earnings are subject to more adverse selection (Frank & Goyal, 2009).

As bankruptcy reform provides an orderly way to reorganize businesses' finances and repay their debts, it would be interesting to investigate whether firms that were previously having difficulty obtaining loans could benefit from it. As a result of bankruptcy protection, businesses that were previously deemed too risky or burdened with excessive debt may be able to receive credit. Companies can reach more favorable repayment terms with creditors and extend the repayment schedule to better manage their debt. Additionally, after the IBC reform creditors benefit from a well-established legal framework for debt resolution since they know they can recover their funds even if the borrower runs into financial troubles. Firms can borrow at lower interest rates or on better terms, which makes borrowing more accessible and affordable. To investigate how bankruptcy reform affects the heterogeneity of firms and the composition of their debt, particularly in terms of long-term obligations and short-term obligations, We divided our sample into different heterogeneous groups: large and small firms; high-leveraged or low-leveraged firms; high or low-profitable firms; and high-risk and low-risk firms.

4. Data and methodology

4.1. Data

The sample consists of public listed Indian and non-Indian companies from 2011 to 2020. Financial firms are excluded from the dataset as their financial policies are different from the firms in other sectors. Companies in India are classified in the treatment group, while companies in Pakistan, Sri Lanka, Nepal, and Bangladesh are in the control group. It is a powerful and clean approach to evaluate the impact of a legal reform to use the "difference-in-differences" (DID) approach than Bose et al. The following are reasons why it is a clean setting: In our study, we have clearly differentiated between the treatment group (Indian companies) and the control group (companies from Pakistan, Sri Lanka, and Bangladesh). Having a clean separation ensures that any differences in outcomes are attributed to the treatment (legal reform) and not to other confounding factors. The companies from Pakistan, Sri Lanka, and Bangladesh make up the control group There is a homogeneity in the control group, and they represent a powerful geopolitical bloc in the international policy forums. The validity of the control group is ensured by the similarity in characteristics such as industry, size, market conditions The choice of the control group assumes that they are not directly affected by the same legal reform, contributing to the DID model setting's cleanliness. We are studying the effect of the reform before and after the reform for both the treatment group and control group. This helps us analyse how specifically the legal changes impacted Indian companies compared to the control group. The DID approach eliminates common time trends and factors that may affect both groups in similar ways. In other words, any observed difference in outcome can be attributed more confidently to the legal reform and not to external factors. Specifically, it helps in assessing how Indian companies were affected by the legal change in relation to their counterparts in neighbouring countries. Comparing changes between control and treatment groups over time allows you to isolate the impact of the legal reform. In summary, the DID fixed effects approach is significant because it allows for causal inferences about how the legal reform affects Indian companies while taking potential confounding factors into account. This method is useful for assessing the effectiveness of reforms and understanding their broader implications.

Data for Indian companies is collected from the profit and loss and balance sheet information provided by the Centre for Monitoring Indian Economy (CMIE) in its Prowess database. For

Pakistan, Nepal, Sri Lanka and Bangladesh, data is collected from DataStream. Yearly data is used to compare and examine the credit market in Indian and other countries by using DID panel data regression techniques. After filtering data and removing missing values, there are 1,924 companies in total, with 1,736 firms from India, 51 from Pakistan, 95 from Sri Lanka, and 42 from Bangladesh. All continuous variables are winsorized at 5%. We consider contractual debt variables to investigate the impact of the IBC reform on credit behaviour and firm's debt financing. The contractual debt variables include the firm's total debt, long term debt, short term debt, trade credit, and cost of debt. The total debt is the sum of short and long-term debt, plus the debt held by suppliers (also known as trade credit) on a company's balance sheet. The cost of debt is calculated by dividing total annual interest expenses by total debt (except trade debt) over the same period for each firm.

To overcome the problem of omitted variables and endogeneity problems in cross-country studies, control variables are employed for controlling time-variant, non-observables and for standard shocks. Control variables include total assets, return on assets, price to book ratio and Earnings before Interest and Tax (EBIT), liquidity bankruptcy, tangibility and tax intensity following (Araujo et al., 2012) Furthermore, we included the following measures because the reform may affect firms' debt variables in a heterogeneous way, depending on some borrower characteristics. The first variable is risk of liquidity bankruptcy which is calculated as the ratio between EBIT and financial expenses (Asquith et al., 1994; Almeida et al., 2011).

As a result of increased liquidity issues, businesses are at a higher risk of bankruptcy. Lenders are forced to raise interest rates to break even, which causes companies them to default. With the new IBC reform, creditors should be able to recover their debts more quickly, making the reform more beneficial for firms facing greater liquidity challenges. ta Second variable is tangibility which is measured as plant, property, and equipment (PPE) divided by total assets. After the IBC reform intangible creditors should benefit as they can collect the assets placed as collateral in case of insolvency. Third variable is tax intensity which is captured as the ratio between (EBIT-Net Profit) and revenue. The bankruptcy reform should benefit firms that pay more taxes, as secured creditors are given more priority over tax claims.

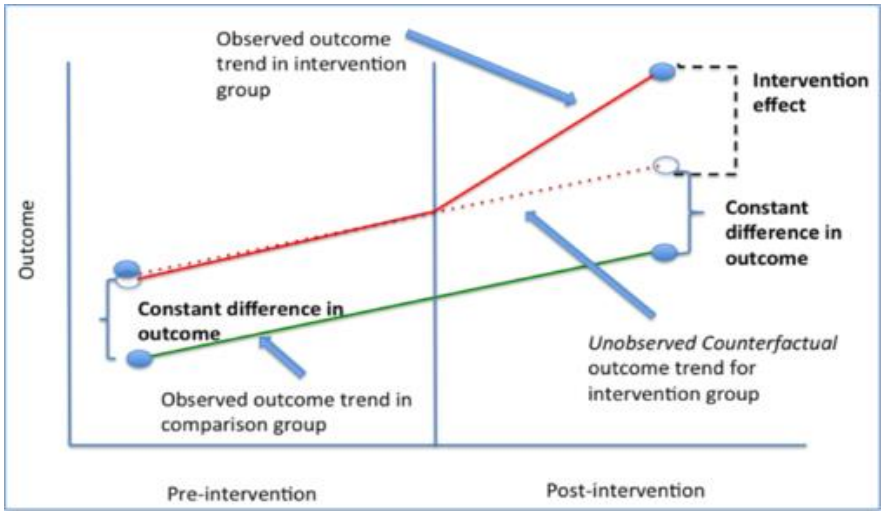
4.2. Model Specification

Following the methodology by (Araujo et al., 2012) the essay investigates the effect of the IBC reform on debt financing by Indian companies, using a fixed effects difference-in-difference model. Specifically, we test the effect of the reform before and after the reform for the treatment and control group. Indian companies are in the treatment group while companies from Pakistan, Sri Lanka and Bangladesh constitute the control group. By comparing India with different countries, with each country having a different reform to regulate bankruptcy procedures, but a similar economic environment, there is control on the omitted variables as the shocks in the credit market are expected in similar environments. The difference-in-differences (DID) is appropriate as both groups had similar credit variables and common trends before bankruptcy reform.

A DID method is widely used in program and policy evaluation and is typically used to estimate the impact of a specific intervention or treatment (such as the passage of a reform, the implementation of a new policy, or the rollout of a large-scale program) by comparing the changes in outcomes over time between a group enrolled in the program (the intervention group) and a control group (Wooldridge, 2007). An increasing number of academics employ this approach across various domains, including innovation (Aggarwal & Hsu, 2014; Flammer & Kacperczyk, 2016), board composition (Berger et al., 2012),regulatory compliance (Bruno et al., 2016), and environmental policy (He & Zhang, 2018). It is a quasi-experimental design that uses longitudinal data from treatment and control groups to estimate a causal effect using an appropriate counterfactual.

Figure 5

Difference-in-Difference estimation, graphical explanation



Source:https://www.publichealth.columbia.edu/research/population-health-methods/difference-difference-estimation

DID combines cross-sectional treatment-control comparisons with before-and-after studies for more robust identification and evaluates the outcomes in a treatment group to a control group after the implementation of a non-random policy ("treatment") after controlling for the factors that differ between the groups. Consider combining the after-before approach with a treatment-control group. After-before difference in the control group is subtracted from same difference in the treatment group. First, if other changes occur over time as well in the control group, then these factors are controlled for. Furthermore, this latter point also applies to time-invariant unobservable characteristics of treatment and control groups (because they are netted out). The DID study has data from two groups and two time periods with repeated cross-sections. There were two different groups of outcome variables: (i) a treatment group that was affected by the policy, and (ii) a control group that wasn't affected by the policy. Two periods refer to (i) before the policy and (ii) after the policy. The simple DID estimate of policy impact can be written as follows:

$$Y= \beta0 + \beta1*[Time] + \beta2*[Intervention] + \beta3*[Time*Intervention] + \beta4*[Covariates]+\varepsilon$$

Figure 6

Calculation of coefficients

Coefficient	Calculation	Interpretation
β_0	B	Baseline average
β_1	D-B	Time trend in control group
β_2	A-B	Difference between two groups pre-intervention
β_3	(C-A)-(D-B)	Difference in changes over time

Source:https://www.publichealth.columbia.edu/research/population-health-methods/difference-difference-estimation

DID estimates are usually obtained using a linear regression. However, Angrist and Pischke (2009, p.228) proposed the 2x2 DID as a fixed effects estimator and stated that it is "simple to add additional states or periods to the regression setup and to include additional covariates." Using a regression framework is also advantageous because it allows for more generalized DID settings. Based on the assumption that the conditional means of the outcomes will show additive linear structures and that group and period effects are present, the difference-in-difference model for the essay can be specified as the following firm fixed-effect linear regression model:

$$Y_{it} = \eta_i + \psi_t + \beta dBl_{it} + X_{it} + e_{it}$$

This equation includes the firm's fixed effects (ηi), to control for specific factors that are fixed over time; the time-dependant term ψ_t to control for common shocks that may differ over time. Further, X_{it} represents the vector of control variables; and the coefficient βdBl_{it}, is the estimate of the impact of India's bankruptcy reform on debt variables. Pre-reform years are taken from 2011 to 2015 and post-reform from 2016-2020.The dummy variable shows whether the new bankruptcy reform was in effect in year t and whether firm i is an Indian firm.

Following that, we will investigate the effect of the Insolvency and Bankruptcy Code (IBC) reform on companies providing non-financial services sector. Companies in the manufacturing products sector are assumed to have already benefited from credit because of the way they operate. Manufacturing companies usually have tangible assets like machinery, inventory, and real estate, which can be used as collateral. Historically, lending practices have favoured industries with tangible collateral, so manufacturing companies can get credit more easily.

Thus, manufacturing products companies may experience a less pronounced flow of credit after the IBC reform. Based on this assumption, the research's focus on the insolvency and bankruptcy code and non-financial services suggests a recognition of potential disparities in credit accessibility and insolvency dynamics. These businesses may be characterized by a higher proportion of intangible assets, such as intellectual property, brand value, or specialized knowledge, which are more challenging to collateralize. It is expected that the IBC reform, with its legislative framework is designed to deal with insolvency and bankruptcy issues, Consequently, the perceived risk associated with lending will decrease, resulting in creditors being more willing to extend credit to businesses in non-financial services sector.
The research is conducted by establishing two groups: a treatment group comprising of companies in the non-financial services sector and a control group of companies in the manufacturing sector. Since we will be using a dataset that includes non-publicly listed companies, PB ratio is not used as a control variable.

Next, we investigate the impact of the IBC reform on contractual debt variables conditional on different firm characteristics. We construct various sub-samples by determining median value for each year for each variable and divide the data based on size, leverage, market to book ratio and riskiness. Consequently, we re-examine the impact of bankruptcy reform in each subset for each variable by running the baseline equation separately.

Finally, to ensure, that the results are driven by the new reform and not by macro factors, we conduct a falsification test. As part of this test, we will replicate the empirical exercise as if the reform had been implemented in 2014 and 2015 instead of 2016. The results obtained from earlier implementation years can be compared with those obtained from the actual implementation year of 2016, which will enable us to determine whether the observed effects are attributed to the IBC reform or if other macroeconomic factors were also present at that time. If the results consistently indicate significant effects only in the year of implementation 2016 rather than earlier years, then it is more likely that the observed impacts are due to the new reform, rather than other external factors.

5. Results and Discussion

5.1. Univariate Analysis

Table 1

Summary statistics for countries in the treatment and control group

	Treatment				Control			
Variables	N	Mean	Std. dev.	Median	N	Mean	Std. dev.	Median
Total Debt	16,946	20.62	1.81	20.57	1,651	14.70	1.85	14.85
Long Term	16,946	18.68	2.62	18.80	1,651	13.33	2.34	13.61
Short Term	16,946	19.30	2.07	19.39	1,651	13.07	2.30	13.33
Trade Debt	16,946	19.20	2.04	19.22	1,651	13.37	1.99	13.40
Cost of debt	16,946	0.70	1.00	0.28	1,651	0.50	1.02	0.15
Taxes /total revenue	16,946	0.09	0.16	0.05	1,651	0.10	0.16	0.04
PP&E	16,946	0.28	0.18	0.26	1,651	0.64	0.54	0.52
Likelihood of liquidity	16,946	9.05	19.92	2.77	1,651	15.81	49.65	2.49
Total assets	16,946	24.77	0.84	24.96	1,651	15.96	1.59	15.89
EBIT	16,946	19.00	2.03	18.97	1,651	13.51	1.70	13.49
Return on Assets	16,946	3.83	4.47	2.97	1,651	6.61	6.79	5.75
PB ratio	16,946	1.40	1.64	0.77	1,651	1.81	2.06	1.10

This table reports summary of the main variables across the treatment and control firms. Summary statistics include mean, standard deviation, median values of all continuous variables.

Table 2

Summary Statistics of the whole sample

Variables	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**Median**
Total Debt	18,597	20.09	2.47	4.70	23.53	20.33
Long Term	18,597	18.20	3.00	3.04	22.99	18.49
Short Term	18,597	18.81	2.56	5.13	22.76	19.12
Trade Debt	18,597	18.61	2.78	3.97	22.45	18.96
Cost of debt	18,597	0.68	1.00	0	4.74	0.26
Taxes /total revenue	18,597	0.09	0.16	-0.15	1.1	0.04
PP&E	18,597	0.31	0.25	0.00	1.91	0.27
Likelihood of liquidity defaults	18,597	9.65	24.16	-6.63	313.37	2.75
Total assets	18,597	23.98	2.67	10.21	25.82	24.88
EBIT	18,597	18.51	2.54	6.05	22.29	18.69
Return on Assets	18,597	4.07	4.78	-17.99	25.20	3.14
PB ratio	18,597	1.43	1.68	-0.3	10.96	0.79

This table provides summary statistics of the main variables are shown in Table 3, which covers the full sample and includes both treatment and control firms. Summary statistics include mean, standard deviation, median, minimum, and maximum values of all continuous variable.

Tables 1 and 2 provides summary statistics of all continuous variables. Across the sample (Table 3), all variables show considerable variation around their respective mean values. There is a significant degree of dispersion in the distribution of total debt ranging from a minimum (Min) of 0 to a maximum (Max)of 23.5 and the average (median) of 18.2(18.79) with a standard deviation of 3.3. Similarly, the mean (median) values of long-term debt are 17.2(17.6) and short-term debt 17.6(17.7), respectively. We observe a considerable degree of dispersion in the distribution of trade credit, which varies from a minimum of 1.43 to a maximum of 22.4, with a mean (median) value of 17.1(17.7) and a standard deviation of 3.3. Distribution of short-term debt and trade credit of treatment and control firms and in the individual economies are almost the same as the distribution of long-term debt, indicating that from 2011 to 2020, there is not much difference in debt financing in terms of long run and short run. The average size of the firm for the treatment group is 24.5% and for control group 15.4%. Firms in the sample are profitable as determined by the mean and median value of EBIT. The treatment firms' EBIT mean, and the median value is 17.12 (19.59), and the control firms' is 13.1(13.2), which is positive in both cases. The average firm's assets are composed of 23% tangible assets relative to 35% for the control group, as seen from the mean value of PPE. It is estimated that 13% of companies in the total sample can default on their debt due to liquidity problems. Market to book for treatment and control firms are 1.3% and 1.6%, respectively, showing the market's valuation of a company relative to its current value of assets. The mean value indicates that firms in the sample economies are relatively stable.

5.2. Multivariate Analysis

Table 3

Panel A. Difference-in-difference regression with firm fixed effects

	Total debt	Long term	Short term	Trade debt	Cost of debt
Bankruptcy	**0.185*** **	**0.278*** **	**0.069**	**0.299*** **	**-0.167*** **
reform	**(0.000)**	**(0.003)**	**(0.313)**	**(0.000)**	**(0.002)**
Taxes/total	-0.165***	0.335***	-0.219***	-1.520***	-0.262***
revenue	(0.000)	(0.003)	(0.003)	(0.000)	(0.000)
PP&E	0.247***	2.236***	-0.277***	-0.007	-1.059***
	(0.000)	(0.000)	(0.000)	(0.900)	(0.000)
Likelihood of	-0.007***	-0.013***	-0.013***	-0.006***	0.001**
liquidity defaults	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)
Total Assets	-0.218***	-0.006	0.023	-0.417***	0.162***
	(0.000)	(0.759)	(0.113)	(0.000)	(0.000)
EBIT	0.729***	0.754***	0.682***	0.752***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Return on Assets	-0.100***	-0.107***	-0.108***	-0.094***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Price to Book	0.023***	0.023	0.040***	0.009	-0.003
Ratio	(0.000)	(0.144)	(0.000)	(0.365)	(0.721)
R-squared	0.596	0.254	0.333	0.440	0.036
Observations	18597	18597	18597	18597	18597

*The above table presents the results of the difference-in-differences panel regressions for five different outcome variables: total debt, short-term debt, trade credit, long-term debt, and cost of debt. The first four of them are in logarithms, and the last one is not. Each of the dependent variables is regressed against a dummy variable codified as 1 for post-2016 observations and 0 for observations between 2011 and 2015. The regression in the specification controls for firm fixed effects All variables (except for the dummy variable) are winsorized at 5%. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. p-values are reported in parentheses.*

Panel B. Difference-in-differences regression with firm and year fixed effects

VARIABLES	Total debt	Long term	Short term	Trade debt	Cost of debt
Bankruptcy	**0.185*** **	**0.274*** **	**0.072**	**0.303*** **	**-0.165*** **
reform	**(0.000)**	**(0.004)**	**(0.288)**	**(0.000)**	**(0.002)**
Taxes /total	-0.165***	0.339***	-0.223***	-1.523***	-0.265***
revenue	(0.000)	(0.002)	(0.005)	(0.005)	(0.000)
PP&E	0.247***	2.235***	-0.275***	-0.007	-1.059***
	(0.000)	(0.000)	(0.000)	(0.899)	(0.000)
Likelihood of	-0.007***	-0.013***	-0.013***	-0.006***	0.0011**
liquidity defaults	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)
Total Assets	-0.219***	-0.006	0.022	-0.418***	0.162***
	(0.000)	(0.773)	(0.122)	(0.000)	(0.000)
EBIT	-0.729***	-0.754***	-0.682***	-0.752***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Return on Assets	-0.100***	-0.101***	-0.108***	-0.094***	0.006***
	(0.001)	(0.000)	(0.002)	(0.000)	(0.002)
Price to Book	0.023***	0.023	0.041***	0.009	-0.003
Ratio	(0.000)	(0.156)	(0.000)	(0.365)	(0.758)
R-squared	0.596	0.255	0.333	0.44	0.036
Observations	18597	18597	18597	18597	18597

*This table presents the results of the difference-in-differences panel regressions for five different outcome variables: total debt, short-term debt, trade credit, long-term debt, and cost of debt. The first four of them are in logarithms, and the last one is not. The regression in the specification controls for firm and year fixed effects. Each of the dependent variables is regressed against a dummy variable codified as 1 for post-2016 observations and 0 for observations between 2011 and 2015. All variables (except for the dummy variable) are winsorized at 5%. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. p-values are reported in parentheses.*

Table 3 presents the baseline specifications in the difference-in-differences setting. The regression results indicate three main findings relating to credit supply, lending costs, and debt financing. First, the results indicate that after the introduction of the IBC reform there was an increase to total debt by 18.5 % and long-term debt by almost 27%. It suggests that the IBC reform positively impacts the supply of credit. Under a proper framework, creditors have a better chance of recovering their loans when firms become insolvent. Hence, they are willing to lend. There is considerable evidence that stronger creditors rights have positive effect on the supply of credit. The results are consistent with the theoretical literature on credit (Aghion and

Bolton, 1992; Hart and Moore, 1994, 1998; Scott, 1977; and Townsend, 1979). Hence, we accept hypothesis 1 which states that the total debt issuance of firm increases after the establishment of the IBC reform.

Secondly, the results indicate a reduction in the cost of debt. There is reduction in the cost of debt financing by approximately 16% post-IBC, which is comparable to the findings of Araujo et al. (2012) and Rodano et al. (2016) study which suggested that bankruptcy reforms promote credit markets by strengthening the rights of creditors, lowering the costs of debt, and improving the availability of credit and investment. Therefore, if creditors expect to receive their money in bankruptcy, it lowers the cost of debt. This is line with hypothesis H5 which states that there is a decrease in cost of debt after the establishment of the IBC reform. The lower cost of debt encourages firms to increase the level of debt for financing. The findings show that bankruptcy procedures improve lending (see Ponticelli and Alencar (2016) and Neira (2019) and suggests active participation by firms in lending mechanisms.

Finally, the empirical results indicate a positive impact of the IBC policy on both trade credit and long-term corporate borrowing. There is an increase in trade credit by almost 30%. However, short-term debt remains stable while long-term debt increases after the IBC reform. The results follow studies by Gopalan et al. (2016), Jose et al. (2020), and Vig (2013), who document that reducing creditors' enforcement costs leads to firms increasing long-term debt and decreasing their short-term debt proportions. Qian and Strahan (2007) and Bae and Goyal (2009) both report similar results. New bankruptcy reform encourages lenders to participate in the bankruptcy, eliminating the requirement to extend only short-term debt as a discipline mechanism, resulting in a debt with longer maturities (see Diamond, 2004). Our findings confirm hypotheses 2 and 4, indicating that long-term debt and trade credit have increased following the introduction of the IBC reform. Conversely, hypothesis 3, which proposes an increase in short-term debt post-IBC, is rejected. Overall, the findings demonstrate the positive effect of Indian bankruptcy and insolvency reform on credit markets (see La Porta et al.,1997,1998) and relevance of creditor protection on increase in credit supply to Indian firms (see Djankov et al., 2008).

*5.3.*Sub-sample analysis

Table 4

Tangible and Intangible

	Total debt	Long term	Short term	Trade debt	Cost of debt
Bankruptcy reform	0.120* (0.089)	0.196** (0.300)	-0.045 (0.463)	0.152* (0.063)	0.001 (0.435)
Taxes/total revenue	0.546*** (0.000)	3.605*** (0.000)	0.121 (0.407)	-5.096*** (0.000)	0.0238*** (0.000)
PP&E	0.019 0.438	2.581*** 0.000	-0.488*** 0.000	-0.616*** 0.000	-0.0112*** 0.000
Likelihood of liquidity defaults	0.000347*** (0.000)	0.000700*** (0.000)	0.00108*** (0.000)	0.000589*** (0.000)	-6.89e-05*** (0.000)
Total Assets	0.734*** (0.000)	0.604*** (0.000)	0.549*** (0.000)	0.731*** (0.000)	0.000485** (0.000)
EBIT	0.189*** (0.000)	0.236*** (0.000)	0.327*** (0.000)	0.259*** (0.000)	0.000722*** (0.000)
Return on Assets	-4.335*** (0.000)	-6.907*** (0.000)	-6.795*** (0.000)	-3.358*** (0.000)	0.0461*** (0.000)
Constant	1.093*** (0.000)	-1.360*** (0.000)	0.324*** (0.000)	-0.797*** (0.000)	0.00687*** (0.000)
R-squared	0.7903	0.45	0.54	0.59	0.23
Observations	50,500	57,588	59,317	71,907	50,500
Number of ids	13,000	13,538	13,616	14,147	13,000

*Table 5 reports regression estimates for subsample (tangible and intangible), where the dependent variables are: total debt, long term debt, short term, debt, trade credit and cost of debt. Median value is calculated for each variable for each year and samples are constructed based on size, leverage, market to book ratio and liquidity. We examine the impact of bankruptcy reform in each subset by running the baseline equation separately. All regressions include firm and year fixed effects. We use the same set of control variables as in baseline regression. All variables (except for the dummy variable) are winsorized at 5%. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. p-values are reported in parentheses.*

According to empirical findings, after the implementation of the IBC, debt utilization within non-financial services industries has increased substantially (Ponticelli and Alencar (2016) and Neira (2019). There has been an increase in the total debt to total Indian firms by 12%- by 19% and trade credit by 15%, pointing to a more favourable borrowing environment for firms after the implementation of the IBC reform (Rodano et al. ,2012). With greater access to credit, companies can support their operations and expand.

The rise in confidence among creditors towards non-financial services industries can be interpreted as a positive sign. This implies that creditors are becoming more confident about lending to non-financial services industries, despite their traditionally higher credit risk. There is a plausible explanation for this shift in creditor behaviour. The IBC reform guarantees that creditors can recover funds when a company goes bankrupt. With this assurance, creditors are protected and the perceived risk of lending to non-financial companies is mitigated. The findings are in line with previous research studies (La Porta et al.,1997,1998; Djankov et al., 2008; Neira ,2019; Ponticelli and Alencar ,2016).

These results support earlier research suggesting the IBC reform has played a crucial role in creating a trusting environment for businesses and creditors alike. Consequently, the findings reaffirm the IBC reform's effectiveness in fostering more robust and resilient financial ecosystems by facilitating credit lending.

5.4. Cross-sectional heterogeneity

Table 5

Cross-sectional heterogeneity on firm size, leverage, profitability and riskiness

Panel A. Firm Size

	Small					**Large**				
	Total debt	Long Term	Short Term	Trade credit	Cost of Debt	Total debt	Long Term	Short Term	Trade credit	Cost of Debt
Bankruptcy reform	0.099***	0.170**	0.103*	0.134***	-0.097**	0.002	-0.028	0.000	0.006	-0.051
	(0.002)	(0.024)	(0.062)	(0.002)	(0.021)	(0.932)	(0.698)	(0.998)	(0.89)	(0.253)
Additional controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	9,212	9,212	9,212	9,212	9,212	9,344	9,344	9,344	9,344	9,344
R-squared	0.461	0.186	0.282	0.308	0.018	0.721	0.30	0.368	0.508	0.06

Panel B. Leverage

	Low					High				
	Total debt	Long Term	Short Term	Trade credit	Cost of Debt	Total debt	Long Term	Short Term	Trade credit	Cost of Debt
Bankruptcy reform	0.068**	0.078	0.112**	0.083*	-0.102**	0.085***	0.136*	0.036	0.034	-0.071*
	(0.012)	(0.303)	(0.031)	(0.80)	(0.044)	(0.002)	(0.068)	(0.505)	(0.26)	(0.067)
Additional controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	8,787	8,787	8,787	8,748	8,748	8,872	8,872	8,872	8,872	8,872
R-squared	0.557	0.184	0.274	0.244	0.244	0.442	0.204	0.239	0.352	0.024

Panel C. Market to Book

	Low					High				
	Total debt	Long Term	Short Term	Trade credit	Cost of Debt	Total debt	Long Term	Short Term	Trade credit	Cost of Debt
Bankruptcy reform	0.069**	-0.138	0.060	0.071	0.081	0.039	0.223***	0.045	0.022	-0.150***
	(0.044)	(0.152)	(0.363)	(0.187)	(0.145)	(0.181)	(0.001)	(0.357)	(0.591)	(0.000)
Additional controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	9,310	9,310	9,310	9,310	9,310	9,329	9,329	9,329	9,324	9,329
R-squared	0.689	0.272	0.373	0.5	0.043	0.549	0.247	0.309	0.411	0.037

Panel D. Likelihood of default

	Low					High				
	Total debt	Long Term	Short Term	Trade credit	Cost of Debt	Total debt	Long Term	Short Term	Trade credit	Cost of Debt
Bankruptcy reform	0.007	0.058	0.006	-0.031	-0.139***	0.034	0.077	0.035	0.088**	-0.058
	(0.815)	(0.397)	(0.896)	(0.496)	(0.001)	(0.214)	(0.331)	(0.555)	(0.031)	(0.198)
Additional controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Firm fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	9,245	9,245	9,245	9,245	9,245	9,379	9,379	9,379	9,352	9,379
R-squared	0.55	0.239	0.322	0.373	0.039	0.657	0.225	0.29	0.465	0.031

Table 5 reports regression estimates for subsamples, where the dependent variables are: total debt, long term debt, short term, debt, trade credit and cost of debt. Median value is calculated for each variable for each year and samples are constructed based on size, leverage, market to book ratio and liquidity. We examine the impact of bankruptcy reform in each subset by running the baseline equation separately. All regressions include firm and year fixed effects. We use the same set of control variables as in baseline regression. All variables (except for the dummy variable) are winsorized at 5%. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. p-values are reported in parentheses.

Several interesting patterns emerge from the post-reform results reported in this article. In table 6, Panel A we differentiate between small and large firms to explore if there is any difference in their response to the IBC reform. We find the effect of the IBC reform is more pronounced in small-size firms. Our results indicate that after the IBC reform small firms experience an increase in total debt by 10%, long-term debt by 17%, short-term debt by 10%, and trade credit by 13.4%. There is a simultaneous decrease in the cost of debt by 9.7% This is consistent with the view that the IBC reform has expanded small firms' access to credit and there is an increase in corporate borrowings. The resources of small firms are typically limited compared to those of large firms. Creditors and investors may perceive small firms as riskier investments because they lack the financial cushion to withstand bankruptcy proceedings. Small businesses may be more prone to IBC procedures. The implementation of IBC may therefore have a more significant impact on these firms since it can improve their creditworthiness and access to capital. The findings indicate the active participation of creditors and firms in lending and bankruptcy mechanisms. However, we did not find any significant results in large firms following the IBC reform.

Next, we examine whether the changes in debt financing and credit supply are more pronounced among high or low leveraged firms. The evidence in panel B of table 6 reveals that firms with low leverage experience an increase in total debt by 7%, short-term debt by 11.2%, and trade credit by 8%, while firms with high leverage experience a corresponding increase in total debt by 9% and long-term debt by 14%. In addition, there is decrease in cost of debt for both high and low levered firms by 7% and 10% respectively. It may indicate that high-leverage firms are taking advantage of improved credit access to manage their existing debt burdens or fund expansion if the increase in debt supply is more pronounced among them. Alternatively,

if low-leverage companies show greater debt growth, they could be using it to capitalize on growth opportunities or benefit from favourable borrowing terms. The findings indicate that following the IBC reform there is an increase in the total supply of debt with simultaneous increase in the amount of long-term and short-term debt in the firms.

In table 6, panel C, we differentiate between firms based on the market to book ratio. We find that for firms with high market-to-book ratio there is a significant increase in long-term debt by 22% with a simultaneous decrease in the cost of debt 15% which is in line with our original empirical results. It seems that firms with high market-to-book ratios may use their perceived market value to access long-term financing by increasing their long-term debt. Long-term investments are likely to yield higher returns, therefore securing cheaper long-term debt could be beneficial. The total debt of firms with low market-book ratios increases significantly by 7%, which is consistent with the trade-off theory of capital structure that firms aim at achieving optimum capital structure (Rajan and Zingales, 1995). It is possible that these firms may be adjusting their capital structure for optimal debt levels, hoping to strike a balance between tax benefits and financial flexibility.

Next, we differentiate between high and low risk firms based on likelihood to default or riskiness to explore if there is any difference in their response to the IBC reform implementation. We find significant decrease in cost of debt in firms which have lower chances to default. Firms which have higher likelihood of default shows an increase in the trade credit by 14%. Suppliers and creditors can view this rise in trade credit as a strategic effort to mitigate the higher levels of risk associated with these companies. Creditors and suppliers are trying to keep business relationships with these higher-risk firms going by offering more trade credit. This difference in results between high-risk and low-risk firms shows that the impact of the IBC reform varies depending on the company's risk profile. While low-risk firms experience reduced borrowing costs, while high-risk firms increase trade credit as a risk management strategy.

Overall, evidence suggests positive impact of the IBC reform on creditors' protection and companies' access to credit. We can see active participation by firms and creditors in lending mechanisms. First, the IBC reform has strengthened creditors' protection, thus allowing creditors to safeguard their interests during disasters such as insolvency and bankruptcy. In

case of default, creditors have stronger recourse and a higher probability of recovering their investments because of this enhanced protection. Further, we find increase in both long term and short-term borrowings suggesting increase of corporate borrowing. Creditors and companies are taking advantage of better legal and insolvency resolution mechanisms provided by the reform, thereby positively impacting corporate borrowing. As a result of the availability of such mechanisms, lenders are more likely to provide financing to companies to meet their long-term investment and working capital needs.

5.5. Placebo Test

Table 6

Panel A. Falsification test for contractual debt variables when the reform is passed in 2015.

	Total Debt	Long Term	Short term	Trade Debt	Cost of Debt
1 if firm is Indian and the year is 2015	0.0769 (0.554)	0.155 (0.374)	0.0619 (0.641)	0.147 (0.397)	-0.113 (0.164)
Control Variables	yes	yes	yes	yes	yes
Firm fixed effects	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes

This table provides falsification test of the empirical results of this paper, reporting the robustness of the effects of the IBC reform on all contractual debt variables. It shows the results of the empirical exercise as if the reform was implemented not in 2016, but in 2015.The test is performed on all contractual debt variables. All variables except cost of debt are in logarithms and all continuous variables are winsorized at 5%. ***, **, and * represent 1%, 5%, and 10% significance levels, respectively. p-values are reported in parentheses.

Panel B. Falsification test for contractual debt variables when the reform is passed in 2014.

	Total Debt	Long Term	Short term	Trade Debt	Cost of Debt
1 if firm is Indian and the year is 2014	0.009 (0.796)	0.080 (0.368)	0.001 (0.979)	0.030 (0.569)	-0.08 (0.119)
Control Variables	yes	yes	yes	yes	yes
Firm fixed effects	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes

This table provides falsification test of the empirical results of this paper, reporting the robustness of the effects of the IBC reform on all contractual debt variables. It shows the results of the empirical exercise as if the reform was implemented not in 2016, but in 2014.The test is performed on all contractual debt variables. All variables except cost of debt are in logarithms and all continuous variables are winsorized at 5%. ***, **, and * represent 1%, 5%, and 10% significance levels, respectively. p-values are reported in parentheses.

In addition, we use Otaola (2010) to verify the robustness of the test results and to perform a falsification test on observed samples. Here, we replicate the empirical exercise as if the reform was implemented not in 2016, but in 2014 and 2015 instead. The dummy variables for the policy implementation years were introduced, representing the policy implementation years as 2014 and 2015, respectively. If the policy implementation year is 2014, the value of the dummy variable is taken as 1 for the years 2014 to 2020 and 0 for the years after 2014. Likewise, If the policy implementation year is 2015, the value dummy variable is taken as 1 for the years 2015 to 2020, and 0 for the years before 2015. If the results of coefficients are significant, then the diff-in-diff results previously obtained aren't linked to the new bankruptcy reform, but to some other macroeconomic factor. Table 7 and 8 reports the results of falsification tests, which shows no statistical significance for all debt variables. When the policy implementation year is 2014, the policy effect on the coefficients is insignificant. We find similar findings when 2015 is taken as the policy implementation year. The findings confirm that the results previously estimated are related to the new bankruptcy reform and not a general economic trend.

5.6. Does the composition of the debt structure affect the value of companies after the IBC reform?

So far, our empirical investigation has revealed a significant positive relationship between supply of debt in firms and the IBC reform. In this subsection, we investigate the implication of the IBC reform on the performance and the market value of firms. According (Safieddine & Titman, 1999) borrowing has a positive impact on a company's performance. (Myers, 1984 found that companies choose debt structure rather than equity to finance their businesses when they want to increase their performance. By increasing the debt structure, a company can increase its value (Sabin & Miras, 2015) and has a positive relationship with profitability (Nirajini & Priya, 2013).Yazdanfar & Öhman (2015) report that institutions have been able to meet their financial obligations, maintain a better return, avoid financial bankruptcy by borrowing, and financing part of their temporary assets. Hadlock & James (2002) demonstrate in Palestinian companies that long-term debt financing can help achieve higher performance rates. This is consistent with the findings of Abor (2007), Zeitun & Tian (2007) and Lara and Mesquita (2008).

Extant literature suggests that the right trade-off between debt and equity increases the value of firms. Previous researchers suggest that borrowing to a certain extent maximizes a company’s financial performance as the borrower has a higher return on investment than the

borrowing costs; thus, borrowing contributes to a firm's financial success, (Rahman et al., 2019).Moreover, borrowing, which is cheaper than equity, is a preferred source of financing (Purohit and Khanna, 2012). Flannery & Öztekin (2019) state that using debt increases the risk on the company's share value but provides a higher expected return increase because of financial leverage, which results in an increase in the share prices.

According to Olaniyi et al. (2015) the capital structure greatly impacts the performance of a company. It is important to realize that debt financing involves future cash outflows due to periodic interest payments as well as principal borrowed, and these obligations increase the probability of a firm going bankrupt and entering financial default. It should be noted that there have been several studies that suggest bankruptcy costs do exist, but they are small when compared with those of debt relief (Miller,1977;Warner, 1977)Therefore, companies that are more profitable are going to be able to shield more income from taxation, so they will borrow more so that they can take advantage of tax advantages and operate at a higher level of leverage. This would imply that the amount of debt held by a company is positively related to its performance (profitability). There have been several studies that have demonstrated that a positive relationship exists between firm performance and debt level (Taub, A., 1975; Roden & Lewellen, 1995; Ghosh et al., 2000; Hadlock & James, 2002; A. N. Berger & Bonaccorsi Di Patti, 2006).

In line with these studies, we conjecture that the IBC reform induced higher debt for firms, thereby increased market value and performance of firms. We establish that there is a significant positive effect of the IBC reform on firm value and performance of companies.

To investigate the value implication of the IBC reform, we applied DID regression with a one-year lead to capture time effects, since the effect of the IBC reform may take some time to be incorporated into a company's performance. To establish this link, we run the following baseline regression on our sample.

$$\text{Performance}_{it+1} = \eta_{i+} \psi_{t+} \beta dBl_{it} + \delta X_{it} + \epsilon_{it}$$

where the dependent variable $Performance_{it+1}$ proxied by market to book ratio and return on assets, of firm i in the lead year $t+1$. $Treated_i$ *and* $After_t$ variables as in the baseline regression. X_{it} is the vector of covariates as defined in section 4.1. The key coefficient of interest is from

the interaction DID term, Bankruptcy reform reform (Treated * After). We present the results in Table 7. The positive and significant DID coefficients for both performance and market value, indicate that the firms in the treatment group had higher performance and market value after the implementation of the IBC reform.

5.6. Value Implications

Table 7

VARIABLES	Market to Book (lead)	Return on assets (lead)
Bankruptcy reform	0.141***	0.489*
	(0.004)	(0.071)
Taxes /total revenue	0.097	0.281
	(0.152)	(0.455)
PP&E	0.031***	1.149***
	(0.552)	(0.000)
Likelihood of liquidity defaults	0.000	0.008***
	(0.970)	(0.000)
Total Assets	0.0259**	-0.101
	(0.021)	(0.103)
EBIT	-0.0261***	-0.042
	(0.000)	(0.243)
Return on Assets	0.004**	0.270***
	(0.036)	(0.000)
Price to Book Ratio	0.478***	0.118***
	(0.000)	(0.01)
R-squared	0.251	0.082
Observations	13,376	13,376

The above table presents the results of the difference-in-differences panel regressions for two outcome variables: market to book ratio and return on assets. Each of the dependent variables is regressed against a dummy variable codified as 1 for post-2016 observations and 0 for observations between 2011 and 2015. The regression in the specification controls for firm fixed effects All variables (except for the dummy variable) are winsorized at 5%. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. p-values are reported in parentheses.

6. Implications

The result of the study is aligned with two prominent theories in corporate finance and have significant implications for managers. First, our findings align with the trade-off theory which suggests that firms weigh the costs and benefits of different capital structures to determine the optimal mix of debt and equity and firm's value is maximized when its debt level is optimal. Creditors benefit from the IBC reform, as it enhances the legal framework, resulting in an efficient, transparent and effective debt resolution process. Thus, stronger creditor rights influence debt decisions by making debt more attractive to firms. As a result of the enhanced legal recourse for creditors, firms may be able to borrow more money with a lower risk associated with it, which lead to higher debt utilization and capital optimization.

Secondly, pecking order theory suggests that firms prefer internal financing (retained earnings) first, followed by debt, and then equity as a last resort (Myers and Majluf, 1984). After the IBC reform, firms are more likely to turn to debt financing before considering equity as the IBC reform makes it easier to access debt and provides an efficient resolution system. Firms can maximize their capital structure by balancing the tax benefits and costs of debt financing.

Thirdly, the IBC reform improves information environment and reduces information asymmetry. The most important thing for lending is information. It requires companies to provide key financial information, so creditors can assess the risk associated with lending to a particular company. With better access to financial information about borrowing firms, creditors are more willing to extend credit. Furthermore, the IBC reform enhances information environment by promoting accurate and timely disclosures. It introduces a time-bound process for resolving insolvency cases reduction in the information asymmetry between firms and creditors can positively influence debt decisions. Firms' debt decisions are positively influenced by the quicker resolution by minimizing uncertainty. Having confidence in the expeditious resolution of financial distress reduces the potential downside effects of prolonged insolvency for firms, making them more inclined to take on debt.

Creditors and borrowers both benefit from a more robust information environment. The IBC reform contributes to the development of a healthier credit market by fostering trust among investors and lenders. Our findings align with the information theories of credit were

pioneered by Jaffee and Russell (1976) and Stiglitz and Weiss (1981) stating that if lenders know borrowers, their credit history, or other lenders to the firm, and extend more credit.

Fourth, the IBC reform represents a significant step toward strengthening creditors' rights with its comprehensive legal framework. It provides creditors with a clear understanding of their rights and responsibilities during the insolvency resolution process through a well-defined structure. By introducing a time-bound resolution process, creditors can avoid prolonged delays associated with insolvency proceedings. Furthermore, it establishes a framework for the professionalization of insolvency professionals who play a critical role in the insolvency resolution process. As a result, creditors are assured that their claims will be handled by individuals with the required expertise. Additionally, in accordance with the IBC reform, a debtor must disclose relevant financial information. Thus, creditors can then make informed decisions and assess the debtor's financial health when lending money to companies. After the IBC reform, creditors rights have strengthened resulting in higher debt availability to firms and development of Indian financial markets. Our findings align with the power theories of credit have been formalized by Townsend (1979), Aghion & Bolton (1992), Hart & Moore (1994), and Hart & Moore (1998) which state that when lenders have easier access to collateral, repayment methods, and even control over a company, they can extend credit more easily.

7.Conclusion

This paper examines the impact of the IBC reform on the corporate borrowings and debt financing of Indian firms after the implementation of the IBC reform. The study is conducted using ,1924 companies in total, with 1,736 firms from India, 51 from Pakistan, 95 from Sri Lanka, and 42 from Bangladesh. To further identify the impact of the reform, the full sample is divided into two subsamples: treatment group and control group and two time periods- pre-IBC reform (2011–2015) and post-IBC reform (2016–2020).

Firstly, we contribute to the literature that examines the positive effect of bankruptcy reform on development of credit markets and credit financing in an economy. Our findings indicate that the IBC reform positively impacts the supply of credit to Indian firms. Essentially, the bankruptcy reform provides a framework for debt resolution that protects both creditors'

rights, enabling lenders to extend credit to businesses, supporting their financial stability and growth. The empirical findings are important for stakeholders and financial intermediaries to understand the changes in the debt levels of companies after the implementation of the IBC reform and identify changes in firms' financing behaviours. The creditor's rights are one of the fundamental components of bankruptcy reform. A strong legal framework encourages lenders to lend, resulting in greater access to credit for firms. Besides protecting creditors' interests, bankruptcy reform also encourages lending and stimulates the credit market.

The empirical results indicate a positive impact of the IBC policy on both trade credit and long-term corporate borrowing. Short-term borrowing is often used by firms in financial distress to meet their immediate liquidity requirements. Short-term credit is more likely to be extended to struggling businesses if bankruptcy reform exists, as lenders know that if they cannot repay the loan, a legal framework will protect their interests. As a result of increased access to short-term credit, firms can bridge funding gaps and continue operations.

Secondly, the analysis of heterogeneity found that bankruptcy reform provides credit to firms that previously had limited access to financing. Businesses that have previously been deemed too risky or burdened with excessive debt may now be able to secure credit under bankruptcy protection. Further, bankruptcy protection allows companies to negotiate more favourable repayment terms with creditors and extend repayment schedules to better manage long-term debt at lower cost. Creditors are more willing to lower interest rates in a default when they are confident that their debts will be recovered. The reduced cost of borrowing allows companies to invest, expand, and contribute to the growth of the economy.

Next, the results of our study have several important implications for policymakers and investors in businesses. By identifying the types of firms that obtain credit and the sources of financing that are available to various companies, policymakers can enhance the availability of credit for various companies including start-ups. We highlight the nuanced effectiveness of insolvency reforms across different sectors and institutional settings, offering valuable insights for policymakers and legislators worldwide. This could boost innovation, entrepreneurship, economic growth and creation of more jobs. Financial authorities may be able to ease the impact of a shortfall in debt during crises by taking precautionary measures by analysing the impact of the crisis on leverage. During and after crises, companies usually need to borrow

more, since their lower profitability prevents them from generating enough internal resources to sustain their long-term growth. An established legal framework like the IBC reform offers a comprehensive solution for debt resolution making borrowing more accessible and affordable.

Finally, in contrast to prior research, our study spotlights the unique dynamics of India's economic landscape in relation to bankruptcy laws. Examining insolvency in India presents a unique and insightful scenario that may be relevant to other developing economies facing similar challenges. Developing countries can benefit from understanding the ways in which India navigates insolvency issues to formulate and implement policies to foster economic stability and growth.

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Appendix 1: Description of variables for Essay 1

Variables	Description
Total debt	Log of sum of balance sheet short-term and long-term debt, plus suppliers' accounts (also called trade credit).
Long term debt	Log of long-term debt
Short term debt	Log of short-term debt
Trade Credit	Log of trade credit
Cost of debt	Total year's interest expenses, divided by its total debt
Tangibility	Ratio between PP& E (property, plant and equipment) and total assets.
Taxes/Total Revenue	Ratio between tax expenditures (EBIT minus Net Profit) and revenue.
Liquidity default likelihood	EBIT divided by interest expenses
Total assets	Log of total assets
EBIT	Log of Earnings before Interest and Tax
Return on assets	Ratio of firm's net income by the average of its total assets
Price-to-book ratio	Ratio of the market value of a company's shares (share price) over its book value of equity.

Data sources: Prowess for Indian companies and DataStream for companies from Pakistan, Sri Lanka and Bangladesh