

The Uses and Abuse of Corporate Social Responsibility – Three empirical studies

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By

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Abstract

This thesis explores the impact of CSR engagement on firm competitiveness from three different angles, viz., credit ratings, short-term stock returns and earnings management. In the first chapter, we examine the causal influence of CSR engagement on the credit ratings (CR) of firms and explore the moderating influence of business group affiliation on the CSR-CR relationship. We find strong evidence of a positive influence of CSR engagement on the credit ratings and business group affiliated firms achieve higher credit ratings compared to their standalone independent counterparts. We also find a reduction in the positive influence of CSR engagement on firm credit ratings during the era of mandatory CSR expenses. In the second chapter, we examine the influence of the exclusive CSR announcements on the short-term stock returns and attempt to explain the reasons behind such behaviour of the investors. We find evidence that investors react positively to the exclusive CSR announcements and the firms from the industries which are severely affected by the recent pandemic benefit more from such announcements. We also find that firms with high financial constraints risk and bankruptcy risk benefit more from CSR announcements compared to the firms which are more financially sound and were less affected by the pandemic. Finally in the third chapter, we study the impact of the mandatory CSR engagement on the earnings management (EM) practices by companies and find that companies increase their earnings management in the post-mandatory CSR period. We also find a larger increase in EM by the business group affiliated firms in comparison to the standalone independent firms after the implementation of the mandatory CSR engagement. We also find evidence that firms resort to CSR engagement as an instrument to practice EM and this is more prevalent for the business group affiliated firms. In order to study the causal effects of CSR on the three aspects of firm competitiveness, we primarily apply OLS and employ relevant robustness tests to verify our results. This thesis extends the stakeholder theory of the firm and establishes that CSR creates a complementary relationship with the risk management and resource-based theories with the former.

Chapter One

Introduction

1.1 Research background

Maintaining long-term competitiveness is one of the primary objectives of a firm, in addition to creating value for its shareholders and designing and implementing an efficient and effective risk management strategy are central to this idea (Weber, Scholz and Michalik, 2010). In recent years, CSR has emerged as one of the major techniques for firms from all over the world to manage their risks (Lahrech, 2011; Jo and Na, 2012; Shao, 2015; Kim, Lee and Kang, 2021; Lu, Liu and Falkenberg, 2022). Extant literature posits three foremost arguments that theoretically corroborate the negative association between CSR and financial risk, with two encompassing the stakeholder theory (SHT) and information asymmetry (IS) and the third involving the risk management theory (RMT) (Benlemlih and Girerd-Potin, 2017). Out of the three theoretical arguments, the stakeholder theory and information asymmetry are aligned with CSR reducing the firm's financial risk, whereas the third, which is based on the risk management theory, represents the social performance as a consequence of the risk reduction strategy of the firm (Benlemlih and Girerd-Potin, 2017). Firm social responsibility is closely related to the SHT, which states that a firm needs to pay attention to all the stakeholder groups who can impact or be impacted by it. The corporate managers need to strike a balance between the often-conflicting interests of its shareholders, employees, customers, suppliers, and the community in which it operates, to ensure the long-term sustainability and success of the firm (Freeman, 1984).

The reasons behind a firm's interest in enhancing its social performance and satisfying the stakeholders' expectations are easily understandable from the perspective of the resource-based theory (RBT) as well. The RBT of the firm suggests that a positive reputation indicates a psychological contract between itself and its stakeholders, creates an intangible asset which enhances firm performance (Barney, 1991). In addition to creating an intangible asset (Gardberg and Fombrun, 2006; Patrizia, 2012; Lin and Dong, 2018), a cordial relationship with the stakeholders also creates tangible benefits (Fombrun and Shanley, 1990; Fombrun, Gardberg and Barnett, 2000), both of which increase firm value (Gregory, Tharyan and Whittaker, 2014; El Ghoul, Guedhami and Kim, 2015; Manchiraju, 2015). This positive impact on firm performance may primarily arise from the insulation from negative financial performance that a commendable social performance provides (Luo and Bhattacharya, 2009). A firm that enhances its reputation by augmenting the social performance, is less likely to face large financial penalties caused by legal

actions (Boyer and Kordonsky, 2020; Chakraborty, Gao and Musa, 2022; Freund, Nguyen and Phan, 2022) and enjoys more liberal or flexible regulatory restrictions (Liston-Heyes and Ceton, 2014). In addition to the regulatory relaxations, a firm with a strong social performance also benefits from a higher degree of customer loyalty (Mandhachitara and Poolthong, 2011; Martínez and Rodríguez del Bosque, 2013; Yuen, Thai and Wong, 2016) and sound customer trust (Martínez and Rodríguez del Bosque, 2013; Iglesias *et al.*, 2020). The moral capital that CSR generates, creates relational wealth in different forms among all the stakeholders of the firm (Godfrey, 2005), like improved employee satisfaction (Mirvis, 2012; Lu, 2016) and high legitimacy and credibility in the local community (Stratling, 2007; Chaudhary, 2009; Santos, 2011; Frynas and Stephens, 2015). The CSR-induced moral capital acts as an insurance, which protects the relational wealth against any loss by improving stakeholders' positive assessments and reducing the severity of injunctions against the firm (Krishnamurti, Shams and Velayutham, 2018; Boyer and Kordonsky, 2020; Oware and David Kweku Botchway, 2022).

In addition, CSR engagement reduces information asymmetry, causing a decrease in firm financial risk and from the point of view of the quality of information, the uncertainty regarding profitability increases the volatility of the idiosyncratic returns (Pastor and Veronesi, 2003, 2009). By improving the quality of information regarding its profitability, a firm reduces the information asymmetry and lowers its idiosyncratic volatility as well (O'Hara, 2003). When a firm improves the quality of its information disclosures, it mitigates the information asymmetries regarding its financial performance and reduces the volatility in its stock returns (Rajgopal and Venkatachalam, 2011). Information asymmetry is likely to be more prevalent among firms with low CSR engagement and firms with high CSR engagement are less likely to manipulate their real operating activities or to practice earnings management (Hong and Andersen, 2011; Kim, Park and Wier, 2012; Gao and Zhang, 2015; Choi et al., 2021). Firms with high CSR engagement also adhere to high reporting standards and maintain more transparency in their financial statements, since they prefer to project and communicate a clean and positive image to all its stakeholders (Dhaliwal et al., 2011). This reduced information asymmetry further supports the negative influence that CSR has on the stock return volatility and firms that disclose additional CSR information, have lower idiosyncratic and total risks (Benlemlih et al., 2018).

The causal relationship between information asymmetry and financial risk is aligned with the signalling theory, which states that the quality of information content of the financial statements of a firm signals the investors and the financial markets regarding the social risk management capabilities of its managers (Diamond, 1985; Miller and Rock, 1985; Morris, 1987; Omran and Ramdhony, 2015). Introduced by the World Bank, social risk is a comprehensive approach which draws attention to the design and implementation of conventional public involvements like labour market, social insurance, and social support policies (Holzmann, Sherburne-Benz and Telsuic, 2003). In other words, social risk management is the integration of non-economic factors with the intention of managing the exposure to the firm from salient stakeholders (Taarup-Esbensen, 2014). As a risk management strategy, CSR proposes using the structured approaches and normative standards like the inclusion of the normative philanthropic initiatives to identify and manage social risk. At the same time, in comparison to the other traditional risk management systems, CSR depends to a large extent, on self-governance and self-reporting. This implies that the information disclosure, especially CSR disclosure, by a CSR-engaging firm ensures a high degree of transparency and validity and therefore endures scrutiny by outside stakeholders (Hung, Shi and Wng, 2013; Harjoto and Jo, 2015; Cui, Jo and Na, 2018).

From a risk management perspective, the main objectives of a risk management system are to reduce the uncertainty in the marketplace and implement the specific systems that minimise or eradicate disruptions caused by negative events to prevent financial loss for the business. Implementation of a proper risk management system results in selecting alternatives that turn out to be socially responsible (Kytle and Ruggie, 2005). For instance, in order to avoid the risk of incurring pollution-related penalties, when a firm acts in a way that protects the environment, it faces less stringent regulatory controls. This measure, in turn, results in the creation of a high level of trust among its customers and a better understanding of the challenges that it faces by the local community, especially during any financial crisis (Lahrech, 2011). Hence, by better managing its environmental risk, a firm reduces its environmental impact and the probability of a resultant litigation, which can affect its future cash flows. Hence, a firm's pollution-reducing measure leads to a decrease in its financial risk and may even improve its financial performance (Sharfman and Fernando, 2008). Chamberlain *et al.*, (2020) support this causal relationship and propose that with a reduction in the risk of potential litigation, the cash flows of a firm are more stable, and it can

then focus its strategic decisions and investments that contribute towards reduction of the perceived financial risk by the market.

The capability of a firm to manage and reconfigure its resources according to the environmental background is crucial for organizational development and long-term financial performance (Arafat et al., 2012; Black, 2014; Omran and Ramdhony, 2015; Flammer and Ioannou, 2018). Since a firm cannot control its environment, it needs to contend with the various risks that arise during the normal course of its operations. Therefore, the risk management practices are the strategic initiatives that a firm adopts in order to reduce the negative impact of the events that affects its operational and business capability and ultimately positively influences its financial performance (Ramachandran, 2011; Jo and Na, 2012; Black, 2014; Dunbar, Li and Shi, 2020; Kim, Lee and Kang, 2021). Extant literature establishes that CSR assists in maintaining stable and cordial relationships with governments and the members of the financial community, including the shareholders and also helps in gaining employee patronage during financial instability and decreasing information asymmetry among all the stakeholders (Friede, Busch and Bassen, 2015). This undeniably reduces a firm's risk of incurring financial penalties and litigations. In general, a firm with high CSR engagement is expected to have lower financial risk in comparison to its counterparts with low CSR engagement (Benlemlih and Girerd-Potin, 2017; Benlemlih et al., 2018).

This thesis predominantly explores the risk mitigating capabilities of CSR and draws heavily from the stakeholder theory, the risk management theory, and the signalling theory of the firm. In this dissertation, we aim to present a reasonably comprehensive examination of the association between CSR and financial risk, and we study the causal relationship from the perspectives of all its three theoretical foundations. In the first two empirical chapters, we analyse the influence of CSR engagement on the financial risk of a firm from the perspectives of the stakeholder theory (SHT) and the risk management theory (RMT) and in the third, we do the same from the standpoint of the signalling theory and information asymmetry. In addition, we build on the conclusions of several studies conducted in the domain of CSR, business groups, risk management and earnings management.

1.2 Motivation

This dissertation sheds light on the diverse manners in which corporations use corporate social responsibility (CSR) engagement. Exploring this context provides an interesting empirical and practical foundation for multiple reasons. First, in the context of any emerging market, almost no evidence exists regarding the motivations and impacts of the strategic CSR implemented by the business group affiliated firms. This void exists despite the fact that in emerging market economies (EMEs), business groups dominate the commercial space (Kali and Sarkar, 2005; Manos, Murinde and Green, 2007; Tewari and Bhattacharya, 2022) and rank amongst the highest contributors of CSR funds in the markets they operate in (Choi *et al.*, 2018; Naz, 2018).

Second, stocks generate positive abnormal returns when markets receive information on favourable corporate developments, such as announcements regarding earnings (Jones and Bacon, 2007), dividends (Grinblatt, Masulis and Titman, 1984; Clacher and Hagendorff, 2012), takeovers (Rani, Yadav and Jain, 2015; Katsikides, Markoulis and Papaminas, 2016), stock splits (Grinblatt, Masulis and Titman, 1984; Lamoureux and Poon, 1987), etc. However, no study examines the influence of exclusive CSR announcements on the short-term stock returns.

Third, the recent pandemic has diverse economic impacts on different industries and yet firms actively participate in the pandemic relief efforts through a plethora of channels. The findings of this study present details of the distinct manners in which CSR announcements by firms, facing unique levels of financial constraints and bankruptcy risk, influence their short-term stock returns.

Fourth, implementation of the mandatory CSR aims at increasing participation as well as the aggregate monetary contribution of companies towards the CSR agenda of the government. The findings of this dissertation have important connotations regarding the manner in which companies abuse CSR engagement and exploit the mandatory CSR legislation.

1.3 Research objectives and questions

The overall aims of this thesis are to examine the efficacy of CSR as a risk management strategy and as an earnings management instrument. We incorporate the effects of business group affiliation, capital structure, ownership structure, auditors, and growth prospects in our study as well. We present the sub-aims and corresponding objectives in table 1.2.

Table 1.2: Sub-aims and their corresponding objectives

	Sub-aims	Objectives
1	Examine the relative	A Identify the difference in the effect of CSR on the
	effectiveness of the three	business group affiliated firms in comparison to the
	avenues of CSR as risk	independent standalone firms
	management strategies and	B Examine the relative effectiveness of the different
	study the moderating effect	avenues of CSR in case of the manufacturing firms
	of business group affiliation	
2	Examine the effectiveness of	A Identify the difference in impact of the CSR
	CSR as a risk management	announcements on the short-term stock returns of the
	strategy during the pandemic	firms from industries which are highly impacted by the
		pandemic
		B Measure the influence of CSR for firms classified
		based on their financial constraints risk and bankruptcy
		risk
3	Explore the prevalence of	A Examine the difference in the extent earnings
	earnings management	management is practised by the business group
		affiliated firms compared to their independent
		standalone counterparts
		B Measure the applicability of CSR engagement as an
		instrument of earnings management

Table 1.2 presents the sub-aims and their corresponding objectives of this thesis

This thesis explores both benevolent and malevolent ways in which firms utilise CSR engagement to their advantage. In the first two chapters, we predominantly explore the manners in which firms use enhanced CSR engagement towards the benefit of their stakeholders, while in the third, we explore the sinister approach by which firms abuse CSR engagement. In the first chapter, we explore the impact of CSR engagement on the credit ratings (CR) of the firms, as well as the moderating effect of business group affiliation on the CSR-CR relationship. It is imperative, therefore, that we conduct this study in a market which is dominated by the presence of large, diversified business groups and India provides us with the perfect context. We provide further justification of adopting India as the context for this study later in the chapter.

In the second chapter, we further expand the use of CSR engagement by the firms, especially during the recent pandemic and conduct the study in the US market. This is because, a large number of US firms make exclusive CSR announcements and extend pandemic relief through multiple channels, which we cluster into four broad categories. Such a study cannot be conducted in an emerging market economy (EME) like India, where the companies predominantly make donations to the Prime Minister's Relief Fund and refrain from exploring other avenues of pandemic relief. Consequently, a comparison of the efficacy of the different channels of pandemic relief is imperative and hence, we select the US as the context of the second chapter.

Finally, in the third empirical chapter, we explore the impact of a natural experiment that is conducted in India, on the earnings management practices of firms. In this chapter, we explore the moderating effect of business group affiliation as well, since EM is more prevalent among them due to the presence of the internal capital markets (Sarkar, Sarkar and Sen, 2013; Beuselinck and Deloof, 2014; Das, 2021).

We conduct two of our studies in India, which is an EME and provides the context of the first and the third empirical chapters while the second chapter is based on firm-level data from the US market. Similar to other EMEs, the commercial space in India is dominated by the presence of business groups (Khanna and Rivkin, 2001; Chang and Hong, 2002; Khanna, Yafeh and Khanna, 2005) which are confederations of legally independent firms, sharing multiple economic, social, formal and informal bonds (Granovetter, 1994; Khanna and Palepu, 2000). The business group affiliated firms (bga-firms) typically operate in diverse industries but are generally vertically or

horizontally integrated within the same business group, providing the benefit of diversification to the controlling parent firm as well as to the other affiliates (Khanna, Yafeh and Khanna, 2005). The intimate and integrated functioning of the affiliate firms within the same business group creates an internal capital market (ICM), which eases transfer of scarce resources within the affiliates while avoiding the external capital markets (Stein, 1997; Lins and Servaes, 2001; Gopalan, Nanda and Seru, 2007). The EMEs are characterised by weak institutional frameworks and the ICMs of the business groups act as substitutes and shield the affiliate firms from the inefficiencies of the external capital, labour and product markets (Khanna and Palepu, 2000). Through the ICMs within the group, the affiliate firms of the same group benefit in terms of easier access to finance, source of raw materials and ready market for their finished products at nonmarket prices, cross guarantees for external loans when required, etc. (Dewenter, 2003; Sarkar, 2010; Bharati, 2017; Freeman et al., 2018). Thus, business group affiliation serves as an effective risk management strategy for the firms operating in an emerging market and CSR is also a risk management mechanism. Therefore, it is interesting to measure the effectiveness of the combination of the two risk management strategies and this forms the basis of our investigation in the first chapter.

We further explore the risk management capabilities of CSR engagement in the second chapter in the context of the recent pandemic, which causes major disruption to all commercial activity across the globe (Albulescu, 2020; Mishra and Mishra, 2020). The capital markets, which are considered to be the forebearers of economic conditions, rapidly lose value over the days following the announcement of the pandemic by the World Health Organization (WHO) (Albuquerque *et al.*, 2020; Baek, Mohanty and Glambosky, 2020; Liu *et al.*, 2020; Singh *et al.*, 2020). As mentioned earlier, we conduct this study in the US market, since those firms make exclusive CSR announcements focusing on pandemic relief and do not restrain themselves to making donations to the ruling political party. Despite the all-pervasive economic crisis, the majority of the US corporate houses announce their participation towards the pandemic relief efforts and make substantial monetary and non-monetary contributions (Zhang, 2021). These announcements only describe the company's benevolent activities during the pandemic and do not refer to the company's earnings, nor pay-outs nor restructuring. It is, therefore, interesting to examine the reactions of the investors to the exclusive CSR announcements and the motivations of a firm to

pursue CSR, braving the uncertainties resulting from the unprecedented phenomenon. The pandemic imposes strict restrictions on personal mobility and interaction with people in close proximity and hence, severely impacts the industries which are heavily dependent on them. On the other hand, the pandemic proves to be highly profitable for the firms which primarily offer their services remotely, especially over the internet. Therefore, while firms from the hospitality industry struggle for their survival, firms providing internet-based services benefit from increased customer base (Albuquerque *et al.*, 2020). However, corporate participation in the pandemic takes place irrespective of the nature of business and the severity of the impact of the pandemic, leading to diverse reactions from the investors. Therefore, it is interesting to assess the immediate capital market reactions to the exclusive CSR announcements and this is the primary point of investigation of the second empirical chapter.

Finally, in the third empirical chapter, we examine a sinister application of CSR by the corporate houses, especially by the business groups. The government of India introduces The Companies Act, 2013 whereby the firms are directed to spend at least 2% of the average of their past three years' profits towards CSR initiatives. Therefore, the CSR obligation is contingent on the profitability of the firm over the past three consecutive years. The primary motivation behind this legislation is to encourage more firms to actively pursue CSR initiatives (Ramesh, 2015; Gaba and Nagpal, 2019). However, the Act transforms a voluntary corporate activity into a mandatory expenditure, resulting in an additional expense for a firm from which it cannot reap any benefit (Rai and Bansal, 2014; Kapoor and Dhamija, 2017; Manchiraju and Rajgopal, 2017; Aswani, Chidambaran and Hasan, 2020). Hence, a CSR-avoiding firm may attempt to reduce or even evade the mandatory CSR expense in any which way possible. Earnings management is a practice of exercising discretionary powers and manipulating the accounting numbers to conceal the actual financial health of the firm and is done to obtain specific benefits from the government (Jones, 1991) or to reduce the tax incidence (Beuselinck and Deloof, 2014). Since a business group is a substantially large commercial entity, its mandatory CSR liability is likely to be higher than the independent standalone firms and it can manage its CSR obligations to its desired level by transferring funds among its affiliates through the internal capital markets (Gonenc, 2009; Almeida, Kim and Kim, 2015; Naz, 2018). Therefore, the business group affiliated firms have a distinct advantage over the independent standalone firms in managing their earnings. It is interesting to

examine whether the introduction of the Companies Act has influenced the earnings management practices of the firms, especially the business group affiliated ones and this is the principal point of investigation of the third empirical chapter.

Based on the determined aims, objectives, and research problems mentioned above, in this dissertation we investigate the following three main research questions:

Research question 1: Does business group affiliation moderate the relationship between CSR engagement and the credit ratings?

Research question 2: Do the exclusive CSR announcements influence the short-term stock returns?

Research question 3: Does mandatory CSR engagement influence the practice of earnings management?

1.4 Research methods

We primarily depend on the multiple regression technique in all the chapters to explain the impacts of CSR engagement on various aspects of firm competitiveness. In the first chapter, we segregate the entire time period into pre- and post-legislation and conduct the study. Thereafter, we introduce a binary variable to denote business group affiliation and explore the moderating impact of business group affiliation on the CSR-CR relationship. In the second chapter, we start our investigation with the event study methodology, considering the individual announcement dates of the CSR initiatives of the firms and estimate the abnormal returns over short time windows. We then proceed to conduct the regression analysis and explain the abnormal returns due to the CSR announcements. Moreover, we introduce a binary variable to distinguish the firms from industries which are heavily affected by the pandemic to identify the differences in influence from their less affected counterparts. Finally, in the third chapter as well, we conduct the multiple regression analysis incorporating a binary variable to denote pre- and post-legislation time periods to compare the earnings management practices of firms. In addition, we also employ another binary variable to denote business group affiliation and compare the earnings management practices of the standalone equivalents.

1.5 Summary of findings

We examine the efficiency of CSR engagement as a risk management strategy and as an earnings management instrument in this dissertation. Our results evince that first, CSR engagement positively influences the credit ratings. We adopt the credit ratings (CR) of the firms as the measure of the effectiveness of risk management strategies and find that CSR engagement positively influences credit ratings, irrespective of the affiliation of the firms. In other words, both the independent standalone firms and business group affiliated firms benefit from higher credit ratings resulting from higher CSR engagement. Moreover, all the three channels of CSR engagement in India, viz., donations, social and community development expenses, and pollution and environment related expenses, individually have positive impacts on the credit ratings of the firms. We also study the case of the effect of CSR engagement by the manufacturing firms and find significant positive impact of CSR engagement as well and they benefit the most by investing in pollution and environmental expenses. We also find that the debt instruments issued by the business group affiliated firms attract higher credit ratings compared to those of the independent standalone firms since the bga-firms benefit from cross guarantees that are provided by the other affiliates or sometimes even by the parent firm. Finally, we examine the moderating influence of business group affiliation on the CSR-CR relationship and find that it positively moderates the causal relationship, suggesting that the business group affiliated firms benefit more in terms of higher credit ratings from identical levels of CSR engagement as the independent standalone firms. This is because the business groups have superior access to political information, and they formulate their CSR engagement strategies in perfect alignment with the national development agenda. Consequently, their political risk gets substantially mitigated, lending them higher legitimacy with the regulators, which in turn reduces the probability of facing litigation from the latter and provides more stability to their expected future cash flows, resulting in reduced credit risk and higher credit ratings.

Second, we find evidence that the investors react positively to the exclusive CSR announcements and the stocks of the companies making such declarations, generate higher cumulative abnormal returns in the short-term in the post-announcement period. We segregate the CSR-announcing firms into the ones belonging to the industries which are highly affected by the pandemic, and the ones which are less affected. Moreover, we identify the four channels through which the companies provide pandemic support (medical, R&D, local community, and employee support) and find that each of them individually positively affects the short-term returns of the CSR-announcing firms. We also evince that the firms belonging to the industries which are more affected by the pandemic, gain significantly more than their less affected counterparts. We also find that the highly affected firms generate higher stock returns through each of the four individual channels of CSR engagement compared to the less affected ones. The highly affected firms witness their cash flows decline abruptly due to the pandemic and the investors appreciate their participation towards the relief efforts of the pandemic due to the fact that it provides strong validation of their commitment towards the societal benefit. Due to severe cash shortage, all the firms' financial constraints risk (FCR) increases, and we classify the firms into having high and low FCR. We report that the firms which are highly affected by the pandemic and also have high FCR, generate more cumulative gains than their counterparts which are less affected and have low FCR. This may be explained by the fact that the former class of firms increase their CSR engagement during periods of crises in order to strengthen the safety net that CSR creates and reduces the market perception of their future risk. We also find consistent results when we analyse the short-term returns from the perspective of the bankruptcy risk and find that the highly affected and closer to bankruptcy firms, generate higher returns compared to the ones which are less affected and financially stronger.

Third, we find that there has been an increase in the earnings management (EM) practices of the firms after the introduction of The Companies Act, 2013, which implements mandatory CSR expenditure on all the qualifying firms. We also find that business group affiliation positively influences EM, suggesting that the business groups practise more EM compared to the independent standalone firms and this trend is prevalent even after the introduction of The Act. This is due to the fact that the business groups exploit their internal capital markets and through related party transactions, manage their earnings so that their CSR obligations are maintained at the levels that they prefer rather than what the legislation requires them to disburse. In addition, the corporate managers involved with EM have adequate incentives to manage the earnings of the affiliates as well as those of the controlling parent firm. We also find that CSR engagement reduces the tendencies of EM, both before and after the legislative change is brought about, however, the negative influence reduces in the post-Act period. This is because once CSR engagement becomes a compliance requirement, the auditors include that as an evaluation criterion and ensure that the

firms comply with the regulatory requirements before certifying the financial statements to be true and accurate. At the same time, our results also suggest that the business groups perform high levels of EM through increased CSR engagement, which indicates that the business groups increase their CSR engagement in order to divert the stakeholders' attention from their EM management practices. Finally, we find that the business group affiliated firms increase their EM through CSR engagement in the post-Act period. The business group affiliated firms do this by allocating large amounts of money towards CSR engagement to portray a responsible image for the markets, and at the same time, allocate much lower monetary amounts for CSR that what the regulation stipulates.

In summary, this thesis presents a fairly comprehensive analysis of the causal relationship between CSR engagement and financial risk by analysing it from the perspectives of all its three fundamental theories, viz., the stakeholder theory, the risk management theory and information asymmetry. We study the impact of CSR engagement on the financial risk of the firm from the perspectives of the stakeholder theory (SHT) and the risk management theory (RMT) in the first and second empirical chapters. Finally, in the third chapter, we study the relationship from the context of information asymmetry.

1.6 Contributions

This thesis highlights the fact that CSR engagement can be used as an effective and efficient risk management strategy and at the same time, can also be exploited as an instrument for earnings management. Our findings make significant contributions to the literature and the knowledge of CSR engagement, business groups, risk management, earnings management, and emerging markets.

First, this thesis broadens the extant literature of CSR and business groups that primarily focuses on the financial performance of firms as a result of business group affiliation (Khanna and Rivkin, 2001; Chacar and Vissa, 2005; Bhaumik, Estrin and Mickiewicz, 2017) by concentrating on the influence of business group affiliation as a risk management strategy.

Second, it contributes to the broader literature regarding market efficiency and investors' reactions to the corporate announcements, that hitherto deals with declarations of income (Thompson, 1985;

Sorokina and Thornton, 2012; Neuhierl, Scherbina and Schlusche, 2013), dividends (Grinblatt, Masulis and Titman, 1984; Miller and Rock, 1985; Teplova, 2008) or firm restructuring (Deng, Kang and Low, 2013; Rani, Yadav and Jain, 2015; Adnan and Hossain, 2016) by analysing the influence of the exclusive corporate announcements describing its benevolent activities.

Third, this thesis further augments the understanding of capital market reactions to the CSR initiatives of the firms, which predominantly is concerned with inclusion or exclusion from the different sustainability indices (Reddy and Gordon, 2010; Kong Cheung, 2011; Oberndorfer *et al.*, 2011; Cordeiro and Tewari, 2015), by investigating from the perspectives of financial constraints risk and proximity to bankruptcy.

Finally, it extends the literature on the imposition of the mandatory CSR, which is mainly involved with exploring its impact on the profitability of the firms (Manchiraju, 2015; Bird, Duppati and Mukherjee, 2016; Manchiraju and Rajgopal, 2017; Mukherjee, Bird and Duppati, 2018; Sharma and Aggarwal, 2022) by contemplating the same from the standpoint of curbing or incentivising earnings management.

In a nutshell, this dissertation extends the CSR literature and establishes a strong interdependent relationship between the various theories of the firm, viz., the stakeholder theory, the risk management theory, the market efficiency theory, the signalling theory, the information asymmetry and finally, the transparency theory. In other words, the primary contribution of this dissertation is that is establishes that CSR is the shared philosophy which binds the various theories into a unified concept of the firm. In addition, we contribute to the extant literature by way of expanding the practical implementation aspects of CSR engagement from the aspects of business group affiliation, stock returns, and accounting transparency.

1.7 Thesis organisation

This thesis is prepared in a format consisting of three empirical chapters (Chapters 2, 3 and 4), which are studies that are partly prepared for separate and independent publications. These papers are arranged to fit the overall structure of the thesis to maintain continuity.

Taken as a whole, this thesis consists of five (5) chapters including this introduction chapter, followed by the three empirical chapters in chapters two (2), three (3) and four (4). The final chapter, chapter five (5), presents the general conclusions, the policy implications and summarises the thesis.

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Chapter Two

CSR Engagement and Business Group Affiliation as Risk Management Strategies

2.1 Introduction

This chapter aims to explore the influence of the engagement of companies in corporate social responsibility (CSR) initiatives on their credit ratings (CR) and the moderating effect of business group affiliation on the CSR-CR relationship. We employ ordinary least squares (OLS) regression methodology and analyse financial data spanning over two decades and provide evidence of a positive relationship between CSR expenses and credit ratings. Our results suggest that as a firm increases its CSR engagement by utilising more financial resources, it (i.e., the firm) increases the likelihood of being awarded a higher credit rating by the independent credit rating agencies. In addition, we also demonstrate that the business group affiliated firms are more likely to be benefitted with higher credit ratings, even if they have identical levels of CSR engagement as the independent standalone firms. Finally, we examine the CSR-CR relationship for the manufacturing firms and obtain consistent outcomes and furnish theoretical and empirical evidence to corroborate our conclusions. Our results are upheld even when we subject them to tests for selection bias and reverse causality and ascertain the robustness of our results. Considering all the results of this study, we find ample evidence in support of our hypothesis that CSR expenses positively influence credit ratings, and this positive effect is more pronounced in case of the business group affiliated firms.

2.1.1 Motivation

Examination of the CSR-CR relationship has been done earlier and despite several attempts to establish a causal relationship between the two [see for example, (Attig *et al.*, 2013; Cooper and Uzun, 2015; Ge and Liu, 2015; Aktas and Karampatsas, 2016; Bae, Chang and Yi, 2017, 2018)], an unambiguous and unanimous opinion is yet to be achieved. The equivocality of the results of the erstwhile studies arises from estimations of several key parameters used in the models and the applicability and reliability of the result of the CSR-CR relationship rests on the accuracy in estimation of the primary variables like the proxy for CSR engagement by the firms and the resulting credit ratings. One of the main weaknesses of the existing studies lies in the estimation of CSR engagement by the firms. As the proxy for firm CSR engagement, the majority of the studies use the MSCI ESG ratings (erstwhile KLD scores), which are awarded on the basis of CSR strengths, weaknesses, and concerns of a firm. Despite their popularity, the MSCI scores do not

provide any guidance nor knowledge for the companies, the regulators, or the investors, regarding the manner in which firms can conceive and implement their CSR initiatives to enhance their CSR scores. This study highlights the benefits of an improved CSR engagement in the form of credit ratings and also suggests the precise methods in which companies can enhance their CSR engagement.

We conduct this study in the context of an emerging market, since there is a severe dearth of studies linking CSR and firm performance in the emerging markets. This is despite the fact that the awareness regarding the socially responsible aspect of companies is gaining in popularity among both the corporate managers and the academia. Moreover, the absence of the MSCI scores in most of the emerging markets, has further contributed to the scarcity. The emerging markets are typically characterized by weak institutional frameworks and immature financial markets, which lack the width and depth of those of the mature developed nations. Therefore, in the absence of the MSCI ESG ratings, finding an appropriate proxy for firm CSR engagement remains a challenge for research on CSR in emerging markets. We address this issue by considering the monetary contribution that a firm makes towards its CSR initiatives as the indicator of its engagement with CSR. In addition to the measurement issues, our CSR statistic has many advantages over using the MSCI index. The large established firms are likely to be awarded higher credit ratings on their debt instruments in comparison to the smaller ones due to multiple reasons like larger asset base, higher amount of monetary profits, etc. In addition, the large firms also have better financial and non-financial resources to spend towards their CSR activities. Hence, better CSR performance and higher credit ratings are associated closely with each other, and it remains a challenge to prove beyond reasonable levels of doubt, that the improved CSR performance results in an enhancement of corporate performance and not the other way round.

The erstwhile studies address this issue by econometrically accounting for reverse causality, and despite the wide applicability of such tests, there is always a probability, however small, of reverse causality swaying the results. The indicator of CSR engagement that we use in this study, is not affected by the relative sizes of the firms and is hence a more reliable measure. In other words, our estimation of the expenses of a firm towards the CSR activities, addresses the issue of reverse causality, which is often witnessed in case of large firms having large amounts of CSR investments being awarded higher MSCI scores and better credit ratings. In addition, the existing studies do

not account for a time lag between the CSR engagement and corporate performance and assume that the increased CSR engagement results in better financial performance in the same year. We argue that this is an impractical assumption since the improvement in financial performance due increased CSR engagement cannot take place at the same time. Therefore, we incorporate a oneyear lag in all our analytical models and also conduct the conventional tests for sample selection bias and reverse causality in order to provide further evidence of the robustness of our results.

The other challenge lies in the credit ratings of the instruments that are considered. The erstwhile studies consider the credit ratings of the long-term debt instruments only, ignoring the fixed deposits made by the public with the listed companies. Fixed deposits (FD) are long-term financial instruments, with guaranteed fixed annual returns and are rated for safety by the credit ratings agencies in every year of their operating life. The FD schemes are analogous to corporate bonds in every way and play a crucial role in long-term financial planning for the vast populace of the emerging markets. Hitherto studies, examining the CSR-CR relationship in the context of emerging markets, do not consider the FD for reasons known only to the researchers and hence, the findings of similar studies are even less relevant for those emerging markets. We argue that since the fixed deposits share all their characteristics with the long-term corporate bonds, it is important to consider their credit ratings as well. This study takes a comprehensive stand towards financial instruments and considers the credit ratings of both the long-term corporate bonds and those of the fixed deposits, making the findings applicable for both the developed and the emerging markets.

Business groups dominate the commercial scenario of emerging markets and India is no different (Khanna and Rivkin, 2001; Chang and Hong, 2002; Freeman *et al.*, 2018; Poczter, 2018; Sur and Chauhan, 2021; Tewari and Bhattacharya, 2022). Business groups are typically described as confederations of legally independent firms, which share manifold economic, social, formal, and informal bonds (Granovetter, 1994; Khanna and Rivkin, 2001) and take coordinated action (Khanna and Rivkin, 2001). Even though business group affiliated firms are legally independent, they are generally horizontally and vertically integrated within the same group (Yiu *et al.*, 2007; Samphantharak, 2011). Such close operational integration between multiple businesses within the same group gives rise to the internal capital markets (Stein, 1997; Lins and Servaes, 2001; Gopalan, Nanda and Seru, 2007; Samphantharak, 2011), which facilitates relocation of scarce

resources among them, circumventing the external capital markets (Khanna and Palepu, 2000). Business groups manage their risks differently compared to the independent standalone firms, through providing related guarantees to the affiliated firms and related party transactions (Jian and Wong, 2010; Yeh, Shu and Su, 2012; Jia, Shi and Wang, 2013; Kim and Lee, 2021; Ryu and Chae, 2022), thereby reducing their business risk and credit risk in particular (Yang, Li and Zongfang, 2013; Li and He, 2019). In other words, the credit risk management strategy of a firm depends on its affiliation and in this study, we examine the moderating influence of business group affiliation on the CSR-CR relationship.

2.1.2 Contribution

This study contributes to finance literature in more ways than one and addresses several gaps in the understanding of the CSR-CR relationship. First, we significantly expand the risk management theory and the stakeholder theory of the firm and establish a complementary relationship between them from the standpoint of CSR engagement. Second, our approach towards estimation of the CSR engagement provides the academia with an objective measure of CSR involvement of the firms, thereby facilitating research on CSR especially in the context of the emerging economies. From a practitioner perspective, the corporate managers of the companies can refer to our findings to develop their CSR strategies with a clear expectation of the influence of the same on the credit ratings of the long-term debt instruments. In other words, due to the advantages of the measure of CSR performance that we use in this study, the corporate managers of all companies, irrespective of their revenues, sectors, and affiliation, can strategically formulate both their CSR and long-term borrowing strategies, since we offer an unambiguous causal relationship between the two. This study also compares the different avenues of CSR and identifies the most advantageous ones and therefore, this would further benefit the firm managers while formulating their CSR strategy particularly in the current regime of mandatory spending on CSR initiatives. The comparison between the different CSR avenues can also benefit the regulators who can take preventive steps to thwart the companies from misusing CSR to accomplish ulterior motives than benefitting the society at large.

This study is also relevant for the credit rating agencies, especially while rating the firms, which are established before 2014, but consider CSR as a compliance requirement and not as a strategic

investment. Those firms start their CSR engagement only after 2014 and such a step suggests a serious lack of proactiveness and long-term vision of the top management of those companies who are entrusted with running the business. The reactive attitude of the top management is likely to spill over to the other operations, resulting in a decline in the risk profile of the firm. This is because, the credit ratings convey a plethora of crucial information and form an important component of financial and investment decisions that firms make as a part of their operations. Company executives create and appraise corporate policies bearing in mind the magnitude of the impact on the credit rating of their companies. A clear portrayal of the influence of the CSR activities on the credit ratings is certain to benefit the independent credit rating agencies while evaluating the risk profile of the firms.

The rest of the chapter is organized as follows. We deliberate on the relevant literature in section 2 and describe the data and research methodology in section 3. We follow it up with the detailed discussion of our results in section 4 and finally, section 5 concludes along with suggestions for future research.

2.2 Literature review

2.2.1 Background

The primary objective of this study is to explore the effectiveness of CSR engagement as a risk management strategy. We investigate how a firm can improve its credit ratings (CR) as a result of increased CSR engagement. In addition, we also examine the moderating effect of business group affiliation on the CSR-CR relationship. We provide evidence that firms with increased CSR engagement are awarded higher credit ratings than the ones which have low involvement with CSR. We conduct our investigation considering firm-level data spanning a time period of more than two decades and also examine the impact of the Companies Act, 2013 on the CSR-CR relationship. Moreover, since the manufacturing firms have more environmental impact (Arafat et al., 2012; Shanmugam, 2013; Ng et al., 2022) as well as have substantially higher CSR commitment than the non-manufacturing firms, we examine the influence of CSR and its different components on their credit ratings. Finally, we argue and evince that the business group affiliated firms manage their credit risk more effectively than the independent standalone firms and therefore, are awarded higher credit ratings despite having identical levels of CSR engagement as the latter. Before we conduct our analyses, we seek the roots of the CSR-CR relationship in the theories of finance and also provide empirical evidence of the same. This helps us in identifying the gap in the literature that we aim to fulfil by this study.

2.2.2 Theoretical foundations of CSR as a risk management strategy

We base our conviction about the relationship between CSR and credit ratings on several theories of the firm, such the stakeholder theory, the risk management theory, the resource-based theory, and the good management hypothesis. The stakeholder theory of the firm states that the quintessence of a business predominantly lies in forging relationships with all its stakeholders and generating value for all of them (Garriga and Melé, 2004). Despite that the composition of the stakeholders may vary depending on the company's industry and its business model, the main stakeholders typically consist of employees, customers, communities, suppliers, and financiers (owners, investors). Since all the stakeholders are equally important for the firm, it should avoid any trade-off among the stakeholders and its managers need to formulate strategies to align the

interests of all the stakeholders (Freeman, 2016). CSR is an overarching concept for the activities of a firm that are directed towards the society at large and includes donating to charity, offering to volunteer, adopting steps to improve the environment, and implementing ethical labour practices. Not attempting to understand the objectives of a company or its total span of responsibilities, CSR focuses on one course of the responsibilities of a business, which is towards the local communities and the society at large and also attempts to ensure that the firm fulfils them (Carroll, 1979, 2009, 2016).

While both the stakeholder theory and CSR highlight the importance of the responsibility of a company towards its local communities and society, there is a subtle difference between the two, which lies in their expanse. The stakeholder theory leans towards concentrating a firm's attention to the local communities where it operates and the surrounding society (Munilla and Miles, 2005), whereas CSR is more inclined towards extending the social orientation of the company way beyond. For example, there are multiple instances where a company champions the cause of CSR, provides assistance in fighting diseases and alleviating poverty in the far-flung corners of the globe, even if it does not operate there. CSR primarily concentrates on implementing ethical labour practices and pursuing environment improving endeavours in relation to a company's responsibilities towards the employees and customers and does not accentuate any stakeholder groups like the financiers and suppliers. Therefore, CSR considers responsibility as unidirectional that flows only from the company to the stakeholders. On the other hand, the stakeholder theory attempts to encompass the company's responsibilities towards the stakeholders in its entirety as well as the stakeholders' responsibilities towards the company and the other stakeholders and advocates the multi-directional nature of responsibilities (Freeman and Dmytriyev, 2017).

While there are subtle differences between the stakeholder theory and CSR, they can be aligned to work in conjunction for the betterment for the society and the company, since the stakeholders are a critical contributing factor for the success of the CSR initiatives. Freeman and Dmytriyev (2017) propose that there is an interrelationship between the stakeholder theory and CSR and offers the following diagram, figure 2.1.

[Insert figure 2.1 here]

CSR and corporate responsibilities are deeply intertwined and share three common elements that unify them, viz., purpose, value creation and stakeholder interdependence. Purpose defines the direction towards which a company heads and also specifies the corporate responsibilities along the way, since it is crucial to embed purpose in the ethical domain. A morally driven purpose immunises a company from the escalation of fictitious dichotomies such as economic vs social, business vs ethics, or stakeholders' vs societal interests. This attribute prevents a company from using CSR as an instrument to disguise any wrongdoing and integrates the economic decisions with the social, environmental, and ethical criteria. The stakeholder theory promotes the notion that the stakeholders are interdependent and creating value for one group of stakeholders also contributes towards creating value for the others. Ameliorating the local communities benefits the shareholders in multiple ways in the form of more motivated, loyal, and productive employees (Galbreath, 2010; Vitaliano, 2010; Lu, 2016), better company reputation (Costa and Menichini, 2013), better access to the capital markets (Cheng, Ioannou and Serafeim, 2013), higher sales (Sprinkle and Maines, 2010; Martincík and Polívka, 2012; Fatemi, Fooladi and Tehranian, 2015) and higher credit ratings (Attig *et al.*, 2013; Jiraporn *et al.*, 2014).

The stakeholder theory also states that the responsible treatment of the concerned parties results in reduced negative outcomes such as lawsuits, adverse regulation, consumer boycotts, employee strikes and negative publicity (Shane and Spicer, 1983; Werther and Chandler, 2005; Vitaliano, 2010; Eisingerich *et al.*, 2011). By avoiding negative consequences, a company lowers its expenses and the financial risk concomitant with the uncertainty of the returns (Freeman and McVea, 2005) and confirms maintenance of long-term financial performance (Dandaro and Lima, 2022). In the context of maximising returns in the long-term, optimisation of processes, reduction of costs and improving the institutional image are crucial components of the argument in support of adoption of CSR practices by firms (Klassen and McLaughlin, 1996).

The risk management theory (RMT) states that firms need to adopt to identify, assess and manage risk and by identifying potential risks, firms can develop comprehensive plans to minimise or, at best, avoid them. RMT maintains that companies face four types of risk, viz., financial, physical, reputational, and legal, and studies in CSR establish its beneficial influence on all the four types. By increasing its CSR engagement, a firm can reduce the uncertainties in its cash flows (Cordeiro and Tewari, 2015), thereby reducing the volatility in its earnings (Hsu, Chen and Chen, 2015).

CSR can further reinforce this by enhancing customer loyalty (Werther and Chandler, 2005; Martínez and Rodríguez del Bosque, 2013; Goel and R, 2015), reducing cost of debt (Cooper and Uzun, 2015; Ge and Liu, 2015; Huang, Hu and Zhu, 2018), reducing cost of equity (Breuer, Rosenbach and Salzmann, no date; Metz, 2012; Dahiya and Singh, 2021) and reducing cost of capital (El Ghoul *et al.*, 2011; Cajias, Fuerst and Bienert, 2014; Wu, Lin and Wu, 2014), and increasing firm value (Gregory, Tharyan and Whittaker, 2014; El Ghoul, Guedhami and Kim, 2015, 2017; Li, Li and Minor, 2016; Fatemi, Glaum and Kaiser, 2018; Harjoto and Laksmana, 2018; Wirawan *et al.*, 2020).

Physical risks refer to the likelihood of damage to property or people and a high CSR engagement reduces this risk as well. This is because during times of unrest in the country, a firm with high legitimacy with the local community has a substantially lower probability of incurring any damage to its facilities and this legitimacy is increased through intensified CSR, which is especially focused towards benefiting the local community (Shiu and Yang, 2017; Singh and Hong, 2023). This particularly holds true for the emerging markets where the political risk is higher than the developed markets (Singh and Jung, 1995; Krifa-Schneider and Matei, 2010). Political risk is a major concern for companies, especially those who operate globally, and includes managing public opinion of corporations internationally, regulatory liaisons, defining the general legal environment, government associations and geo-politics (Kytle and Ruggie, 2005). A company reduces its vulnerability and threat of any type of risk by improving its internal and external sensing, reporting, and monitoring. Hence, a firm needs to gain knowledge regarding the social expectations through better communication with the different groups of stakeholders, deeper understanding of the international standards to which the company needs to conform, and efficient allocation of scarce resources. All these objectives are achieved through formulating a strategic CSR program and embedded it within the risk management program of the firm and once this is accomplished, it is in a better position to manage its political and social risks (Kytle and Ruggie, 2005).

From an organizational standpoint, corporate reputation embodies the stakeholders' overall appraisal of a company (Kim et al. 2019), and predominantly establishes the degree to which the stakeholders classify the company as being good or bad. While assigning a positive or negative reputation to a company, stakeholders look at various facets such as the firm's past commercial

activities and create their assumption of the company's future behaviour (Lin-Hi and Blumberg, 2018). Reputational risk arises from the case of negative publicity and investment in CSR enhances a firm's social reputation and portrays it as a more honest, dependable, and ethical. The contract theory considers a firm as a nexus of explicit and implicit contracts between its shareholders and stakeholders and firms which engage with CSR voluntarily commit themselves to the implicit contracts with the stakeholders. This voluntary commitment to the implicit contracts with the stakeholders sends a strong indication of trustworthiness, since the costs associated with failing to honour an implicit contract tends to be substantially higher than the rewards. CSR engagement serves as a signal of a code of ethics that firms send in a scheme of recurrent interactions and therefore, firms that voluntarily choose to commit to such implicit contracts tend to be perceived as more trustworthy and less likely to commit fraud (Harjoto and Jo, 2011; Su et al., 2016; Zerbini, 2017). Due to the increased levels of trust that firms with high CSR engagement create amongst the investors, the latter consider the information that such firms disclose, as more dependable and more authentic in comparison to the ones with low CSR engagement (Jung et al., 2017). A firm sends a positive signal of transparency and trust with a high CSR engagement and this results in a reduction of firm-level capital constraints (Cheng, Ioannou and Serafeim, 2013) and firms with high CSR reputation can reduce their cost of equity due to perceived lower risk (El Ghoul et al., 2011; Dhaliwal et al., 2014). In addition, firms with high CSR engagement signal a restraint on its involvement in unethical activities (Hoi, Wu and Zhang, 2013). Finally, firms that participate in altruistic activities, like encouraging diversity, investing in the local community and protection and conservation of the environment, indicate that the management of the firm is not only interested in pursuing self-interest, but is also compassionate towards the society at large (Godfrey, Merrill and Hansen, 2009).

The possibility of a company facing legal risk arises from being sued due to any corporate malpractice and a firm with high CSR engagement has a substantially lower probability of being facing class action lawsuits. First of all, firms with high CSR engagement are less likely to engage in financial misconduct and the investors are less likely to reprimand them for such incidences (Chakraborty, Gao and Musa, 2022). This is because, the investors assign any punishment on the basis of the perceived state of mind and the intentions of the delinquent and firms with positive CSR impression, are more likely to encounter either mild or even no sanctions. The securities

lawsuits state that the firms intentionally deceived its investors by practising fraudulent actions. However, the positive CSR reputation of a firm may persuade its stakeholders to consider the events indicative of a fraud as a one-time error instead of viewing it as an intentional act to deceive, and whenever there is a lack of intent, the motivation to file a lawsuit tends to be lower (Boyer and Kordonsky, 2020). In addition, establishing that a firm intentionally mislead its investors proves to be more challenging for firms with commendable CSR reputation, since the strong CSR reputation is indicative of an honest and transparent relationship with the stakeholders. Under such circumstances, the plaintiffs may abandon the idea of filing lawsuits against such firms, since proving the intent of the firm requires daunting amounts of time, money and energy (Baker and Griffith, 2009). Koh, Cuili and Wang (Koh *et al.*, 2014) suggest that investing in CSR is a worthwhile strategy for the firms with high litigation risk, since CSR has a positive impact on firm value because of its ex-ante insurance against the risk of securities lawsuits. Hence, firms with high CSR engagement do that partly to decrease shareholder litigation risk ex-ante and minimise its consequences ex-post (Freund, Nguyen and Phan, 2022).

[Insert figure 2.2 here]

Figure 2.2 shows the interrelationship between risk management theory and CSR. To pursue longterm sustainability, growth and financial performance, it is extremely important for a firm to manage its resources and reconfigure them according to the environment in which it operates (Sirmon, Hitt and Ireland, 2007). Since the firm cannot exert control over the external environment, it needs to contend with the various risks, which arises in the course of its normal business. Hence, risk management strategies are considered to be strategic initiatives that a firm formulates and adopts to reduce the negative impact of broad, rare and adverse events that may affect its operational and business capabilities (Singh and Hong, 2023). In other words, risk management procedures are strategic schemes that a firm implements to decrease the negative influence of environmental uncertainties on firm performance. By doing so, a firm reduces expensive faults and prevents damaging organizational resources, and eventually creates a positive impact on organizational financial outcomes (Zhao *et al.*, 2019; Singh and Hong, 2023).

The risk management theory and the risk mitigation view jointly argue that CSR initiatives generate a form of goodwill or moral capital that is extremely valuable for the firm. The CSR

programmes spawn an "insurance-like" protection for the firm and the latter can capitalise on this protection in case of occurrence of negative events (Godfrey, 2005). In a similar vein, the moral capital results in a more propitious risk profile arising from a more stable financial performance since firms with high moral capital are less susceptible in the occurrence of negative events. In addition, consistent with the stakeholder theory, the risk management theory suggests that firms with high CSR commitments are associated with lower financial risk since they have lower probabilities of facing legal prosecutions and penalties that negatively impact their financial risk and profitability (McGuire, Sundgren and Schneeweis, 1988). The risk management theory, therefore, proposes a positive relationship between CSR and the credit ratings of the firm. Extant studies explore this aspect and provide ample support to this argument. For example, El Ghoul et al. (2011) provide empirical evidence that a higher CSR engagement by a firm reduces its idiosyncratic risk, while Attig et al. (2013) and Jiraporn et al. (2014) posit that firms with high CSR commitment are assigned higher credit ratings. It is evident that the arguments of the risk management theory are consistent with those of the stakeholder theory and from the point of view of CSR engagement, the theories can be considered as complementary to each other. In other words, the risk management theory and the stakeholder theory fill the gaps of each other as far as CSR is concerned. The implications of the stakeholder and risk management theories, are however, contradictory to the agency theory.

The resource-based theory (RBT) of the firm posits that the performance of a firm is dependent on a large collection of unique and heterogeneous firm-specific resources, which may be both tangible and intangible. These resources need to be integrated and employed most effectively to the best of the capabilities of the firm and this efficient deployment of the scarce resources determine the financial performance of a firm as well as its long-term sustainability and sustained competitiveness (Wernerfelt, 1984; Amit and Wernerfelt, 1990; Barney, 1991). Fombrun and Shanley (1990) attempt to link the stakeholder theory and the resource-based theory and propose that a good CSR reputation improves a firm's relationship with its stakeholders and the enhanced relationships are likely to result in generation of precious intangible assets for a firm (Jenkins, 2006), like enhanced customer loyalty and the capability to attract and retain high-quality employees (Bhattacharya, Sen and Korschun, 2007; Vitaliano, 2010; Lee, Park and Lee, 2013), which are vital for a firm's long-term sustainability. Similarly, CSR activities may develop

capabilities, which may prove to be advantageous for the firm. such capabilities include a shared corporate vision, heightened employee involvement, etc. (Hart, 1995). McWilliams and Siegel (2001) base their model of "profit-maximising" CSR and demonstrate that the corporate managers can achieve the optimal level of CSR by conducting cost-benefit analysis. The evaluation of the input and output of the valuable resources related to the CSR initiatives need to be made according to the organizational capabilities of the firm (McWilliams and Siegel, 2001).

[Insert figure 2.3 here]

Figure 2.3 represents the resource-based theory (RBT), which suggests that apart from the internal resources which are heterogeneous and immobile, a firm also needs certain elements with four qualities, viz., value, rare, imitability and organization. The CSR strategies of a firm contributes to all the four qualities that RBT states. CSR is found to create value for the firm by improving financial performance (Crisóstomo, De Souza Freire and De Vasconcellos, 2011; Jo and Harjoto, 2011; Cho, Chung and Young, 2019) and is an efficient way of utilising the scarce resources of a firm (Branco and Rodrigues, 2006). It is extremely difficult for any firm to imitate the value-enhancing CSR strategies of another (Blomgren, 2011; Ng *et al.*, 2022) and finally, CSR is an excellent parameter of the way a firm manages its workforce (Bhattacharya, Sen and Korschun, 2007; Dhanesh, 2014).

Waddock and Graves (1997) provide support to this idea and suggest the good management hypothesis, which upholds that CSR activities result in an improvement of a firm's relationships with its key stakeholders, including consumers, employees, suppliers, and regulators. With such cordial relationships with its stakeholders, a firm stands to improve its competitiveness, which results in better financial performance and firms need to meet the stakeholders' expectations and enhance its competitiveness and respectability. The firms must endeavour to achieve this objective by strategically investing its internal financial resources through CSR (Waddock and Graves, 1997). This view is congruent with both the stakeholder theory and Barney's (1991) resource-based view regarding the efficient use of precious internal resources to fund CSR investments such as product innovation, employee relations, etc. (McWilliams and Siegel, 2001; Stratling, 2007; Chang and Shen, 2014; Linnea and Bråtenius, 2015). These socially responsible activities are improbable to be financed by external funds (Surroca, Tribó and Waddock, 2010). In order to

actively pursue its CSR objectives, a firm dedicates a proportion of its earnings towards the betterment of the society. As part of its CSR engagement, a firm typically chooses to champion the national development aims pursued by the central government through direct donations, funds local community development and invests in environment improvement (like pollution control) measures (Japhet, Tawiah and Benjamin, 2015). Such benevolent activities of the firms support the idea of CSR representing the "moral capital" of businesses (Godfrey, 2005). Consequently, such a firm is rewarded with support from its wider community, especially during times of an economic downturn. This promise of support acts as a safety net or insurance for the firms and reduces the probabilities of their default and hence, should benefit their shareholders (Kim, Lee and Kang, 2021).

Despite the increasing acceptance of the role that CSR plays to reduce the cost of capital [see for example, Metz (Metz, 2012), El Ghoul *et al.* (2018)], there is a dearth of studies exploring the impact of the CSR expenses on the credit ratings of a firm. Drawing from the extant theories of the firm and CSR, we forecast that with improved relationships with the stakeholders, a firm can allocate and utilise its scarce resources more efficiently, which reduces the uncertainty in its cash flows. Hence, we propose that the independent credit rating agencies (CRAs) have an optimistic view regarding the CSR engagement of the firms since CSR reduces the probability of default for the firms and enhances its long-term sustainability as well. Therefore, we hypothesize that the CSR engagement of a firm, expressed by its CSR expenses, has a positive influence on its credit ratings.

2.2.3 Empirical evidence of CSR as a risk management strategy

We now turn to the empirical evidence on the use of CSR as a risk management strategy and provide a brief summary of the relevant studies. In case a firm has a poor CSR record, disclosure of its socially oriented information has a negative impact on the public perception regarding its (i.e., the firm's) compliance track record and on the probability distribution of its future cash flows (Shane and Spicer, 1983). Consequently, its (i.e., the firm's) idiosyncratic risk increases, which results in a low credit rating (El Ghoul *et al.*, 2011). Firms with low CSR engagement have significantly higher idiosyncratic risk compared to the firms, which have higher CSR engagement (Boutin-Dufresne and Savaria, 2004; Lee and Faff, 2009) and investors regard the former class of firms as having higher levels of risk than the latter (Frederick, 1998; Attig *et al.*, 2013; El Ghoul

et al., 2018). In particular, firms which perform poorly on the social performance scale, are associated with significantly higher number of regulatory and compliance violations compared to their counterparts with high social awareness (Chatterji, Levine and Toffel, 2009). Therefore, firms that adopt an environmentally proactive approach, are able to considerably reduce their perceived risk (Feldman, Soyka and Ameer, 1997) and firms from the "sin" industries (i.e., firms involved in manufacturing and selling of tobacco and alcohol products or involved in gambling) confront higher litigation risk than others (Hong and Kacperczyk, 2009) and the litigation costs resulting from a socially irresponsible behaviour can be intimidating (Herremans, Akathaporn and McInnes, 1993). On the basis of the evidence provided by the extant literature, we propose that the CRAs consider CSR investment as insurance against the dauntingly high litigation costs that can arise from the socially imprudent behaviour of the firm.

There are other rationales to consider that CSR, through its impact on the credit risk, influences the credit ratings. First, the credit rating is primarily motivated by the credit risk of a firm and incorporates extreme-risk attributes since it refers to a situation where a firm faces insolvency, i.e., it is unable to repay its debts, which is a rarity (Shao, 2015; Suhail Rizwan, Obaid and Ashraf, 2017; Bannier, Bofinger and Rock, 2022). Moreover, in line with the arguments for equity risk, credit risk and therefore, the credit rating, does get influenced by the fact that high CSR involvement by a firm helps it (i.e., the firm) protect its earnings against extreme shifts in consumer preferences or regulatory interventions prompted by societal or environmental emergencies (Albuquerque, Koskinen and Zhang, 2019). On the other hand, the resultant CSR fame (Soppe et al., 2011) also provides incentives for implementing CSR to conceal misbehaviour by corporations (Diemont, Moore and Soppe, 2016), which may even lead to agency conflicts (for example, either under- or overinvestment) and can possibly lead to insolvency (Bannier, Bofinger and Rock, 2022). Consequently, the credit risk may increase and lead to a lower credit rating in spite of the firm engaging strongly with CSR. So, comprehensive disclosures of the CSR activities undertaken by the firms may prompt both the equity and debt investors to respond positively if their expectations are met or exceeded with consistent outcomes on market-based measures of risk, like the credit ratings (Benlemlih and Girerd-Potin, 2017; Bae, Chang and Yi, 2018; Benlemlih et al., 2018). We hypothesize, therefore, that there is a definite impact of a firm's CSR activities on its credit ratings.

We argue that firms can diminish their anticipated levels of financial distress by signalling the accessibility and proficient apportionment of internal resources through their CSR programmes. We extend the findings of the existing studies and hypothesize that the CRAs have a positive outlook regarding the CSR expenses of the firms and regard the CSR expenses as indicators of efficient allocation and application of the internal resources by the firms. All points considered, we hypothesize that the CSR engagement of a firm, represented by the monetary expenditure that it incurs to fund its CSR initiatives, reduces the realized risk of its financial distress and hence, has a positive influence on its credit ratings. We propose that CSR expenses positively influence the credit ratings of a firm and formally state our null and alternate hypotheses as under:

H₀: CSR expenses do not have any influence on the credit ratings of a firm

H₁: CSR expenses influence the credit ratings of a firm

2.2.4 Business group affiliation – a risk management strategy

Business executives from all over the world unequivocally express the advantages of the stability originating from affiliation to a diversified organization. There are three primary reasons to consider that group affiliation is beneficial. Firstly, firms affiliated with business groups may have better access to foreign capital and technical know-how. Secondly, increased inside ownership positively affects the performance of the group affiliate firms and finally, the group affiliate firms may have access to the internal capital markets, which are easier to access for funds (Khanna and Palepu, 2000).

There exists a wide gamut of descriptive studies on the dominance of business groups in the emerging markets and consequently, there are various explanations of this phenomenon. Business groups in emerging markets are typically not legal structures and encompass both formal and informal relations amongst the member firms. Empirical studies in the context of emerging markets suggest that group membership may result in superior financial performance, albeit for unclear reasons (Khanna, 2000). This superior performance may be explained by the fact that business groups often more than adequately compensate for the missing capital markets and other financial institutions (Khanna and Palepu, 2000). Yafeh and Khanna (Khanna, Yafeh and Khanna, 2005) document that risk-sharing is an important function of the business groups and business

group affiliation is negatively correlated with the volatility of the profitability of the firms. However, the impact of the risk-sharing within the affiliates within the same business group, particularly in the emerging markets, has unjustifiably and inexplicably garnered little attention from the academia. In other words, there is a scarcity of empirical studies exploring the effects of business group affiliation and the resultant risk-sharing amongst them. This study further aims to fill this gap in literature and explores the effects of business group affiliation and the resultant risk profile of the constituent firms.

Economic theory asserts that under specific circumstances, mutual insurance or risk-sharing mechanisms amongst firms may be mutually beneficial, since adverse outcomes may prove to be very expensive for a standalone firm. For instance, a firm with weak financial performance may encounter bankruptcy costs, squander investment opportunities due to resource constraints and lose assets. In less extreme circumstances, such firms may face considerable difficulty in raising external capital or in obtaining loans. This may result in failure to execute their investment strategies and meet mandatory financial obligations. In economies where capital markets are highly developed, such firms may still find some degree of reprieve. However, emerging economies are often characterized by capital markets, which lack both breadth and depth and firms with weak financial performance operating there, confront insurmountable challenges to overcome adverse business situations. Hence, it may be best for them to affiliate themselves with a large and diversified business group and thereby share the financial or business risk by having mutual insurance arrangements. Affiliation to a business group may be considered as a substitute for capital markets if they efficiently share risks and absorb some shocks to profitability. Thus, the "insured" affiliate members, may be empowered to execute projects, which otherwise they would have eschewed and contribute to economic growth of the entire group. Companies within diversified business groups are mostly better equipped manage sudden sectoral changes, especially in the current period of ever increasing globalization and high volatility (Khanna, Yafeh and Khanna, 2005).

There are two fundamental reasons behind the group-affiliated firms sharing their business risks amongst themselves. Firstly, firms aim to maximize the joint utility of their stakeholders, some of whom are unable to diversify their human capital. Such firms are naturally risk-averse and smoothing of negative outcomes may enhance their utility (Aoki, 1990). If risk-sharing succeeds in reducing the required compensation for the appointed managers, it may be beneficial for the stakeholders as well (Hermalin & Katz, 2000). Moreover, the risk-sharing traits witnessed in interventions during financial distress may be economically efficient if it is able to retain the human capital, which would otherwise be squandered. Furthermore, due to the existence of inefficiencies in the external capital markets, it becomes vital for a company to have access to internal funds. One of the most popular ways to achieve this objective is by having a mutual insurance understanding amongst the group affiliated firms via an "internal capital market" (Khanna, Yafeh and Khanna, 2005).

Diversified business groups dominate the commercial space in emerging markets like Brazil, Chile, China, India, Indonesia, South Korea, Mexico, Pakistan, Thailand, South Africa, among others and even in some developed countries like Italy, Sweden, etc. (Khanna and Yafeh, 2007). Affiliation to any business group offers a plethora of advantages, one of which is effective risk management, which is a result of the presence of the internal capital market within the group (Kim and Lee, 2021). The internal capital market enables the affiliated firms to circumvent the external markets and their inefficiencies like higher costs and longer response times. In times of crises, the business group can quickly transfer funds to a distressed affiliate through the internal capital market (Gonenc, 2009). Moreover, a business group typically consists of member firms which operate in multiple industries and therefore, have contrasting levels of cash flow volatility and as a result, the overall risk of the group is not dependent on the success of a single sector (Sekhar and Lukose, 2022). This is in stark contrast to the standalone independent firms, who may have to fall back on reducing their investments in order to decrease their exposure to cash flow volatility (Kim and Lee, 2021). Considering the evidence provided by the extant literature on business groups, we propose that business group affiliated firms manage their risk, especially credit risk, more efficiently compared to the standalone independent firms and therefore, are more likely to be awarded higher credit ratings.

Due to the existence of such characteristics of the business groups, the impact of business risk for the group-affiliated firms is expected to differ from that of the standalone firms. The standalone firms, being smaller in size, are subjected to higher bankruptcy costs, which are the losses that it may face when it fails to pay its creditors. On the other hand, the business group affiliated firms, generally consisting of large firms, may have lower bankruptcy costs, since marginal bankruptcy costs increase at a slower pace for them (Chakraborty, 2015). This is because managerial discretionary powers and growth opportunities are less in such firms (Myers, 1977). Moreover, since the business group affiliated firms operate in diversified businesses, such firms can eliminate the risks related to operating in a single line of business and hence reduce the probability of bankruptcy. Therefore, the "coinsurance effect" helps the group-affiliated firms increase their debt capacities (Lewellen, 1971). In case a group affiliated firm experiences high uncertainty in its earnings, the potential costs of financial distress are lower for such firms, compared to a standalone firm. This is because, the business groups generally cross-subsidize other members and cover debt obligations in case of a default to protect the group's reputation (Chakraborty, 2015).

We propose that business group affiliation moderates the influence of CSR expenses on the credit ratings and the null and alternate hypotheses are as under:

H₀: Business group affiliation does not moderate the influence of CSR expenses on the credit ratings of a firm

H₁: Business group affiliation moderates the influence of CSR expenses on the credit ratings of a firm

2.2.5 ESG, CSR & the credit rating methodology

Credit ratings convey a plethora of information and form an important component of financial and investment decisions that firms make as a part of their operations and play important roles both from the points of view of the companies and their investors (Ederington, Yawitz and Roberts, 1987). From the company's standpoint, the corporate executives create and appraise corporate policies bearing in mind the magnitude of the impact on the credit rating of their companies (Hilscher and Wilson, 2009). In contrast, the institutional investors, for example, pension funds, banks, and insurance firms, rely on the credit ratings to determine the constituents of their portfolios and also to assign compliance funds. At the same time, regulators frequently utilize the credit ratings to evaluate the quality of indemnity that they stipulate and accept. In recent times, corporate social responsibility (CSR) and its influence on various aspects of corporate performance, is a fiercely debated topic amongst the academia and industry professionals alike. More and more companies are disclosing their corporate responsibility than ever before and are

making CSR an integral part of their brand identity (Cha, Yi and Bagozzi, 2016). Through creation and implementation of extensive CSR strategies, companies resort to enhance their corporate image (Werther and Chandler, 2005) and also to foster the idea that their objective is not only to maximise shareholders' wealth, but also to propagate the agenda of upliftment of the society (Singh, 2010; Ghosh, 2015; Fontana, 2017). All over the world, it is now being increasingly believed that firms need to increase their gamut of beneficiaries beyond its shareholders to include the broader stakeholders (Bird *et al.*, 2007; Bara, 2010; Brown and Forster, 2013).

While CSR and environmental, social, and governance (ESG) are both affected by a company's impact on society and the environment, they are not the same concept. CSR is an expression that is used by all sectors and industries whether an organisation will be investing/investable or not. The expression ESG is specifically employed by the finance and investment professionals who apply the stipulated set of criteria as a measurement, performance, and comparison instrument. ESG scoring or reporting incorporates specific areas such as water usage, health & safety, and tax transparency. Figure 2.4 below demonstrates the full list of ESG categories and how ESG corresponds with the Four Pillars of CSR.

[Insert figure 2.4 here]

The guidebook on the corporate ratings methodology reveals that while assigning the credit ratings, the CRAs consider two broad categories of risk, viz., business risk and financial risk. There are several criteria, which refer to the various ESG-related initiatives that affect both the business and financial risks. For example, how a firm treats its employees and its unions in the face of a strike, which can severely impede the operation and relationships with the regulators or the government officials, etc. play important roles in determining a firm's credit rating. The guidebook also places high importance on the manner in which a company is managed, i.e., its relationships with the stakeholders, like the shareholders, creditors, etc. and also on the internal procedures, policies and practices that can potentially either instigate or mitigate risk (Standard & Poor's, 2019). In addition, the CRAs also consider the extent to which a firm maintains reliable disclosures on important areas of employee, community and environmental activities that address apprehensions of non-financial stakeholders and implements a functional policy of engagement with diverse investor and stakeholder interests while evaluating the firm's relationships with key

external stakeholders (Dallas, 1988; Bradley *et al.*, 2008). While it is evident that the ratings methodology of the CRAs includes a wide range of ESG activities, the actual credit ratings may not be significantly associated with the CSR expenses if the other conventional important ratings criteria, like profitability and existing debt level, etc. dictate the credit rating decisions.

2.2.5.1 Emphasis on ESG by specific CRAs

In this sub-section, we provide a brief discussion regarding the manner in which the different large credit rating agencies incorporate ESG on their credit ratings. The credit ratings are a reflection of the financial and non-financial performance of a firm and ESG plays a crucial role in determining the credit ratings (Barth, Hübel and Scholz, 2022). This is because the independent credit rating agencies place substantial amounts of emphasis on the responsible actions of a firm while rating a firm's long-term debt instruments for credit worthiness. The influence of ESG on the credit ratings depends, to a large extent, on the industry the firm operates in and downgrades solely on the basis of performance on the social front, is not uncommon¹. For example, on 12th October 2015, the credit rating of Volkswagen AG was downgraded from A to A- due to substantial shortcomings in management, governance, and risk management².

Standard & Poor's (S&P) examines the credit effect of environmental, social and governance (ESG) factors as the rated firms retort to such risks and opportunities. This is because the ESG risks and opportunities can influence the capacity and inclination of a firm to meet its financial obligations in more ways than one. S&P combines these considerations into its ratings method and analytics, which enables the analysts to classify them into short-, medium- and long-term impacts and finally, assimilate them in multiple steps in their credit assessment. The influence of the ESG factors is reflected through a variation in the size and comparative stability of a firm's current or forecasted revenue base, its operating necessities, its profitability or earnings, its cash flows or liquidity, or the volume and maturity of its financial liabilities. The ratings awarded by S&P are forward-looking and integrate S&P's financial forecasts. These financial forecasts indicate the period over which S&P considers that it (i.e., S&P) has an uncluttered and definite view of a

¹ See for example, "The Role of ESG Credit Factors in Our Ratings Analysis, published by S&P-Global, available from https://www.spglobal.com/ratings/en/research/articles/190912-the-role-of-environmental-social-and-governance-credit-factors-in-our-ratings-analysis-11135920

² Source: https://www.wsj.com/articles/s-p-downgrades-volkswagens-credit-rating-1444662846

company's potential financial performance, considering its asset class, capital structure, and the conceivable impact of the relevant credit factors, including the ESG credit factors. S&P includes the impact of ESG factors such as greenhouse emission costs, other pollution costs, or health and safety costs in their financial forecasts, if they consider them to be relevant to the analysis of creditworthiness. The credit ratings awarded by S&P changes over time, since an obligor's exposure to credit factors, including the ESG credit factors, may evolve over time. Certain factors may become more prominent, or its impact may be more pronounced, while the obligor may act to mitigate or eliminate its (i.e., the obligor) exposure to certain other factors. S&P monitors the impact of all the credit factors, including the ESG factors, and the credit ratings may change as either more information becomes available or the fundamentals of the obligor change, due to changes in, for example, in public policy that may affect the economics of the business and its solvency (Standard & Poors, 2019).

In their analysis, Moody's identifies and assesses credit implications resulting from all quantifiable ESG considerations that can be detected, whether they would have a current or a future implication. Moody's also evaluates any mitigating or adaptive behaviour that issuers may undertake. In some cases, the ESG trends that are positive for an obligor's credit profile are also considered. Moody's approach towards the ESG factors is congruent with its attitude regarding the other material credit factors. Therefore, the credit ratings include an assessment of the impact on the obligor's cash flows and the value of its (i.e., the obligor's) assets over time, the adequacy and stability of the cash flows and assets in relation to its (i.e., the obligor's) debt burden and other financial obligations, liquidity, and the capacity to access capital and finally, the outlook into the future cash flows. The ESG factors are incorporated into the credit ratings wherever they are applicable and meaningful and is done in a variety of ways in applying their sector-specific methodologies. As a part of their overall credit analysis, Moody's considers the impact of the ESG risks that can affect the qualitative and quantitative factors in the relevant scorecard or model. The ESG factors are integrated, for instance, in the qualitative assessment of the scorecard factors, such as business profile, the institutional strength and the regulatory environment. For firms, for which Moody's has sufficient clarity, the ESG considerations may be integrated into their (i.e., Moody's) forecasts, or the scorecard-indicated results based on a plethora of scenarios may be considered. In cases where the ESG factors do not influence the measures in a sector-specific scorecard or model, or

where they cannot be measured, Moody's incorporates them into the overall analysis of the credit drivers, which are consequential to the rating. In some instances, the predicted impact of the ESG risks may stretch beyond the period that can be meaningfully projected for an obligor's scorecard metrics. At the same time, for some firms, the ESG risks may substantially increase the uncertainty of the future results and the CRA like Moody's, may not have sufficient information to predict the impact with satisfactory levels of precision. In such cases, Moody's may incorporate the ESG risks qualitatively beyond the scorecard. For example, it is not feasible to accurately forecast the financial impact of the long-term weakening of the thermal coal industry over many decades due to implementation of more stringent environmental conventions and product replacement and hence, cannot be completely reflected in a scorecard. Therefore, the ratings of the thermal coal mining companies qualitatively incorporate the long-term negative forecasts for this industry in addition to the short-term projections (Moody's Corporation, 2021).

Fitch is the first credit rating agency to implement a systematic approach in issuing the manner in which the ESG issues are pertinent and substantial to an individual entity, deals or program credit ratings. Fitch's credit research reports unambiguously incorporate the scoring system to demonstrate how the ESG factors influence the individual credit rating decisions. In 2019, Fitch launched the ESG Relevance Scores, which are their research product targeted towards augmenting market transparency and also to satisfy investors' demand for a rigorous and robust reporting on how ESG factors impact credit risk. Before formulating their relevance scores, this CRA invested months to gather the views and thoughts of a wide range of market stakeholders on what information the latter wanted the CRAs to provide. The CRA initiative by the investor-based United Nations-supported Principles for Responsible Investment (UN-PRI) is also influential in determining what the investors want from the CRAs, which are public release of ESG credit issues at both industry and sector levels, transparent explanations of how ESG issues influence individual credit ratings and finally, recognition of systemic ESG risks. While managing portfolios in a more sustainable method, investors can resort to many and diverse data sources, no other prior source could specifically highlight the entity and sector levels of ESG elements for fundamental credit risk. Fitch solely focus on fundamental credit analysis and hence, their ESG Relevance Scores aim exclusively to address ESG in their context. This approach symbolises an important step forward regarding offering transparency in the treatment of ESG factors from a credit risk outlook while

arriving at rating decisions. Such an approach gives the investors an opportunity to scrutinise, deliberate and contest the judgements on how ESG factors influence individual rating outcomes. In addition, investors also gain from Fitch's long history of analysing debt issuers and more than 80% of the global fixed income indices bear a rating from Fitch. The same analysts working on the credit rating of a firm or instrument, assign the ESG Relevance Scores as the final rating and transparently and regularly demonstrate both the applicability and materiality of the individually identified ESG risk factors to the rating verdict. Alongside Fitch's dedicated Sustainable Finance Group, every ratings team within Fitch, worked globally to catalogue and arrange the ESG credit risks at the sectoral level and scored them for individual firms within that sector (Fitch Ratings, 2021).

To summarize the approach of the CRAs towards the influence of ESG on the credit ratings, we conclude that the ESG factors are considered to be important in the credit analysis and the creditworthiness assessment of the borrowers because they affect the latter's cash flows and the probability of default on their debt obligations. It is evident that there exists a causal relationship between the ESG score and the credit rating of a firm. The ESG evaluation is a score the firm does not decide for itself but is awarded to it based on its performance on the set of predetermined ESG criteria. Hence, a firm can only decide its strategic CSR and determine the best possible modus operandi of the implementation with the hope of earning a favourable ESG score. However, till date, it is not known whether the CSR engagement by a firm can influence its credit ratings since the CSR-CR relationship is yet to be explored. In other words, the influence of CSR engagement of a firm on its credit ratings is yet to be examined and this study aims to fulfil that gap in literature.

In this study, the main dependent variable(s) are the credit ratings awarded by the credit rating agencies (CRAs) and the strongest endorsement of our claim that CSR engagement influences the credit ratings, is lent by the credit ratings methodologies practised by the CRAs. The CRAs like Standard & Poor's (S&P), Moody's and Fitch, unequivocally declare that the credit rating of a company is influenced by its ESG performance (Standard & Poors, 2019; Fitch Ratings, 2021; Moody's Corporation, 2021). Due to the fact that ESG and CSR are strongly interdependent, when a firm increases its CSR engagement, it is more likely to be awarded a higher ESG score (Cini and Ricci, 2018; Baraibar-Diez and Odriozola, 2019; Bhaskaran, 2022; Huang *et al.*, 2023; Park *et al.*,

2023). Hence, we hypothesize the CSR engagement of a firm positively influences its credit ratings.

In the following sections, we present the data for our study, the research design and methodology of our empirical study into the CSR expenses and its impact on the credit ratings of a firm. We attempt to analyse these propositions and also endeavour to recognize the vital enabling and disabling aspects of such an approach. We further expand our proposition to explore the possibility of a dissimilar impact for the business group affiliated firms, compared to their standalone counterparts.
2.3 Data and research methodology

2.3.1 Aims

There are two primary aims of this study. The first objective is to study the impact of CSR expenses on credit ratings (CR) of long-term debt securities. Secondly and more importantly, we explore the moderating effect of business group affiliation on the influence of CSR expenses on credit ratings.

In addition to the primary aims, this study has two ancillary aims as well. We explore additional dimensions of the CSR-CR relationship and in particular, we study the special case of the manufacturing firms. Furthermore, we explore the influence of the three components of CSR, viz., donations, local community development expenditures and environmental and pollution related expenses, on the credit ratings.

2.3.2 Data

In this study, in order to examine the impact of CSR expenses on credit ratings, we collect data from various sources and analyse them. We collect the credit rating and the financial accounting data of the listed Indian companies from the Prowessdx database³. We calculate the values of the majority of the variables and consider some of the variables as reported in the Prowessdx. For example, we follow Attig *et al.* (2013) to calculate the capital intensity of a firm and obtain it by dividing the total intangible assets by total assets. We provide the explanation and relevance of the regression variables later in the section and for the detailed discussion on the variables, the calculations, and sources, please refer to appendix 2.2.

We collect debt market data spanning two decades, from 2000 till 2020, and report that our sample consists of 7,603 firm-year observations with 1,450 unique firms. This implies that over the two decades under consideration, 1,450 firms have either issued long-term debt instruments or have accepted long-term fixed deposits from the public. Since unlike the short-term debt instruments,

³ It is the foremost database on Indian companies and is created and managed by the Centre for Monitoring Indian Economy (CMIE) Pvt. Ltd.

the credit ratings of the long-term debt instruments can vary with changes in the financial conditions of a firm, we consider only the long-term debt instruments, which are rated for their safety by independent credit rating agencies, like CARE, CRISIL, ICRA, etc.⁴. A rudimentary study of the data reveals that the debt instruments are issued by firms from 149 diverse industries, and this enables us to incorporate the industry effects in our model as well. In summary, the dataset is an unbalanced panel data consisting of 7,603 firm-year observations, representing 1,450 unique firms from 149 industries.

India is an emerging economy characterized by the presence of a large number of business groups (Sarkar, 2010). An investigation of the data regarding the business group reveals that there are 386 business groups that have borrowed from the public by issuing long-term debt instruments during the period under consideration. Out of the 1,450 firms, 697 are affiliated to business groups and represent 4,182 firm-year observations, while 753 firms are not affiliated to any business group and account for 3,421 firm-year observations. The firms, which are not affiliated to any business group, can be further classified into seven (7) types of ownership. 290 firms are owned by private individuals, while 188 firms have foreign ownership. There are 241 firms, which are Central Government Commercial Enterprises, while the State Governments own 21 firms and 1 firm is jointly owned by the State Govt. and the private sector. Finally, the non-resident Indians (NRI) own 12 firms. It does not come as a surprise that the majority of the observations (55%) are attributed to business groups and the standalone firm data accounts for 45%. The primary reason of the dominance of the business groups is that India is an emerging economy, which is characterized by weak institutional frameworks and immature capital markets (Khanna and Palepu, 2004; Khanna, Yafeh and Khanna, 2005) and firms seek business group affiliation as a risk management strategy (Khanna and Palepu, 2000).

⁴ Prowessdx reports credit ratings information obtained from seven different rating agencies in India. These are CRISIL (which is a S & P group company and was formerly known as Credit Rating Information Services of India Limited), ICRA (which is a Moody's group company and originally named Investment Information and Credit Rating Agency of India Limited), India Ratings and Research Pvt. Ltd. (formerly known as Fitch Ratings India Pvt. Ltd.), Credit Analysis and Research (CARE) Limited, Brickwork Ratings India Private Limited (a Canara Bank promoted company), ACUITE Ratings & Research (formerly known as Small Medium Enterprises Rating Agency Of India Limited) & Infomerics valuation and rating.

The data divulges a number of interesting practices prevalent in Indian business. One of the first aspects that we notice is that numerous firms issue multiple debt instruments within one financial year and this trend is repeated over multiple years by many firms. This phenomenon is not unusual for firms, especially for those operating in emerging markets, where firms primarily borrow to maintain an optimal level of debt to maximise the benefits of borrowing and minimise the associated costs at the same time (Furqan, 2018). This practice of borrowing multiple times in the same financial year leads to the possibility of different credit ratings being awarded to the long-term debt instruments of the same company within the same year. In order to capture the intra-year fluctuations in the credit ratings, we calculate the annual means of the credit ratings of the firms and consider it as the dependent variable in our study.

The baseline model in our study is as under:

$$y_i^* = \beta_0 + \beta_1 csr_p at + \beta_2 bga + \beta_3 lnsales + \beta_4 ROA + \beta_5 lnassets + \beta_6 cap_int + \beta_7 lev + \beta_8 int \ cov + \beta_9 margin + \beta_{10} PSII + \beta_{11} aud_d + \varepsilon_i \dots \dots \dots \dots (1)$$

where, y_i^* is the credit rating awarded by the CRAs (*mean_rating*) to the *i*th firm, while *csr_pat* is the proportion of the net profits which is spent towards the CSR activities of a firm. The rest of the variables are used as controls and is consistent with extant studies in the area [see for example, Holmstrom (2006), Luo and Bhattacharya (2006), Attig *et al.* (Attig *et al.*, 2013), Hsu and Chen (Hsu, Chen and Chen, 2015), Amiraslani *et al.* (2017b)].

The credit rating agencies (CRAs) employ a wide range of variables to determine the credit rating of a firm and the vast majority of those factors originate from the financial performance of companies which are reported annually. We argue that it is not reasonable to assume that the CRAs can instantaneously assimilate the latest financial performance in the credit rating. In other words, we posit that the credit ratings awarded to a firm, for example in 2009, are influenced by its financial performance in 2008. Therefore, it is crucial to incorporate a one-year lag in our model and is congruent with the rating procedures practiced by the largest credit rating agencies like Standard & Poor's, Moody's and Fitch (Standard & Poors, 2019; Moody's Corporation, 2021; Fitch Ratings, 2021).

We incorporate the one-year lag and reformate our baseline model as below:

$$y_{i,t}^{*} = \beta_{0} + \beta_{1}csr_pat_{t-1} + \beta_{2}bga_{t-1} + \beta_{3}lnsales_{t-1} + \beta_{4}ROA_{t-1} + \beta_{5}lnassets_{t-1} + \beta_{6}cap_int_{t-1} + \beta_{7}lev_{t-1} + \beta_{8}int_cov_{t-1} + \beta_{9}margin_{t-1} + \beta_{10}PSII_{t-1} + \beta_{11}aud_d_{t-1} + \varepsilon_{i} \dots \dots \dots (2)$$

where, $y_{i,t}^*$ is the credit rating awarded by the CRAs (*mean_rating*) to the *i*th firm in year *t*, while csr_pat_{t-1} is the proportion of the net profits which is spent towards the CSR activities of a firm in year (t - 1). The use of the rest of the variables as controls is congruent with prior studies in the domain [see for example, Holmstrom (2006), Luo and Bhattacharya (2006), Attig *et al.* (Attig *et al.*, 2013), Hsu and Chen (Hsu, Chen and Chen, 2015), Amiraslani *et al.* (2017b)].

2.3.2.1 The Companies Act, 2013

In 2013, the Government of India (GoI), introduces the Companies Act, 2013 (The Act hereafter) and its Section 135 stipulates that all the companies incorporated in the country and meet certain qualifying criteria, must spend at least two percent (2%) of the average of the previous three years' profits, towards CSR activities. This mandate is applicable for all the companies which meet at least one of the qualifying criteria, mentioned below:

- a. Net worth of INR 500 crores (\$ 61 billion⁵, approx.) or more
- b. Annual turnover of INR 1,000 crores (\$ 122 billion, approx.) or more
- c. Net profit of INR 5 crores (\$ 610,000, approx.) or more

This measure means that from the following year, i.e., 2014, all the qualifying companies need to comply (or explain) with the recently implemented regulation. The Schedule VII of the Act outlines the priority areas for CSR resource distribution. In addition, the Act also highlights the activities are included in or excluded from the domain of corporate CSR. To ensure that firms maintain integrity and transparency at all steps of implementing CSR, the Act also recommends formation of a CSR committee within each firm, consisting of three or more directors, with at least one independent director, to propel the CSR strategies of the firm and to supervise the associated expenses (MCA, 2013).

⁵ As of 26 October 2022, quote obtained from <u>www.xe.com</u> for all the three INR amounts

The introduction of a law causes a structural break in the panel data and consequently, it is advisable to drop the observations pertaining to the year (Brooks, 2008; Wooldridge, 2010; Antoch *et al.*, 2019). Inclusion of the data in which the structural break occurs in the panel data analysis is riddled with numerous problems including drawing inaccurate model specifications and erroneous conclusions (Greene, 2000; Antoch *et al.*, 2019). Consequently, we do not consider the credit ratings of the long-term bonds issued in 2014 and hence, our panel data is divided into two time periods, i.e., from 2000 to 2013 and from 2015 till 2020. Based on equation (2), we start our panel regression analysis considering the entire time period, i.e., from 2000 till 2020. We then segregate the time period into before and after legislation and proceed to conduct the panel regression analysis for the period 2000 to 2013 and then repeat it for the period 2015 till 2020.

Splitting the data into before and after implementation of the legislation, therefore, presents us several advantages. First and foremost, the results from our analyses are unambiguous and robust and have wide applicability. Secondly, given the fact that the data in our study is spread over two decades, which is a substantial period of time to arrive at stable results with wide applicability (Gujarati, 2004; Gujarati and Porter, 2010), the segregation of the time period into before and after legislation, enables us to comment on the change in the impact, if any, of the legislation on the CSR-CR relationship. In particular, this study focusses on the moderating impact of business group affiliation on the CSR-CR association. Therefore, the separation of the time period along these lines also concedes us the opportunity, albeit superficially, to examine the variation in the CSR-CR relationship for the business group affiliated firms.

We hypothesize that the CSR expenses positively influence credit ratings and since business group affiliation is a risk management measure adopted by firms especially in the emerging markets, the business group affiliated firms benefit more from CSR expenses in comparison to the standalone firms. However, it is interesting to see the extent of the change in this influence post legislation, since it is expected that the majority of the listed companies, if not all, engage in CSR once the Act is put into effect. In the following sub-sections, we proceed to the empirical models and the research methodology that we employ in this study.

2.3.3 Empirical Models

In this study, we examine the manner in which the CSR expenses of a firm influences its risk profile and we represent the risk profile of a firm by its credit ratings, which are awarded by the credit rating agencies, since the credit rating awarded to a firm serves as an unbiased estimator of its risk profile (Ederington, Yawitz and Roberts, 1987; Kliger and Sarig, 2000; Duff and Einig, 2009). In other words, we investigate the influence of CSR expenses on the credit ratings of long-term debt instruments or bonds. Therefore, the dependent variable is the credit ratings, to which we assign numerical values with a definite natural ordering and therefore, transform them (i.e., the credit ratings) into ordinal variables. The credit ratings and the respective assigned scores are provided in appendix 2.1.

The ordinal variables differ from cardinal numbers since in the latter, it is possible to extract additional information from their actual values relative to one another. Hence, it is safe to assume that a bond with a rating of AAA+ (which has a numerical score of 23) represents a safer investment proposition than one with a rating of BBB– (which has a numerical score of 12). However, it would be erroneous to believe that the former bond (with AAA+ rating) is 'almost twice as good' in comparison to the latter (with BBB– rating). Moreover, the difference between a score of 22 and 23 (representing credit ratings of AAA and AAA+, respectively) cannot be considered to be the same as the difference between scores of 14 and 15 (representing credit ratings of BBB+ and A–, respectively). All we can conclude from the credit rating scores is that as the score increases, there is a monotonic increase in the credit quality. In other words, a bond with a higher credit rating score is safer than one with a lower score.

Consequently, taking into account the aims of this study, arguably it is useful to study and interpret only the ordering and not the exact assigned numerical values of the debt instruments. Hence, ordinary least squares (OLS) regression model may not be applied and a technique based on mostlikelihood (ML) is more pertinent (Oikonomou, Brooks and Pavelin, 2011). Moreover, the logistic

⁶ A list of the credit rating agencies in the world can be obtained from the links:

^{1. &}lt;u>http://www.defaultrisk.com/rating_agencies.htm</u>

^{2.} https://www.financewalk.com/credit-rating-agencies/

regression methodology is preferred over the probit model, since the former does not require the evaluation of an integral (Stock and Watson, 2007). However, it has also been counter argued that in cases where the number of categories in the dependent variable exceeds 5 and the distribution looks quasi-normal, the OLS results closely match those of the ordered models, with identical significance levels and predicted outcomes. Moreover, the simplicity of interpreting the OLS results far outweigh the technical accuracy of any ordered model like ordered logit or ordered probit (Angrist and Pischke, 2009). Since this is a subject of great debate amongst the applied econometricians, academicians routinely perform both (i.e., OLS and any ordered model) to check for consistency (Winship and Mare, 1984). We adopt an identical strategy and formulate our analyses by applying OLS and eventually use the ordered logistical regression model to ensure consistency in our results.

The dependent variable in this study are the credit ratings, which are monotonically numbered from 1 to 23, representing 23 categories. A company can raise debts multiple times within a financial year and the bonds can have different credit ratings. This is because, even though the financials of the issuing firm remain the same, a multitude of firm-specific and macroeconomic factors determine the credit ratings of a firm. Some of the most important firm-level factors are the corpus of the present debt issue, the ratio of the present debt issue to the already existing levels of debt, the maturity of the bond, etc. (Ederington, Yawitz and Roberts, 1987). Hence, we calculate the annual means of all the credit ratings of the firms (*mean_rating*) and consider it as the dependent variable. Our approach to the credit ratings, transform them into a continuous variable and provides more econometric logic to adopt the OLS regression model in our study. We, therefore, adopt the OLS regression model and perform additional robustness checks to provide evidence of consistency and applicability of the outcomes. A detailed evaluation of the relevant research methodologies is provided later in the section. We set up our model accordingly and apply the OLS regression model to study the effect of CSR expenses on the credit ratings.

The primary objective of this study is to explore whether business group affiliation has any moderating impact on the CSR-CR relationship. In other words, whether the CSR strategies practiced by the business group affiliated firms have a different (or better) impact on the credit ratings compared to the standalone independent firms. In order to test our hypothesis, we interact the CSR expenses as a proportion to the net profits (*csr_pat*) with the business group affiliation

dummy (*bga*). We hypothesize that business group affiliation does moderate the influence of CSR on credit ratings. To seek empirical evidence to our proposition, we apply the OLS regression model with a one-year lag, and we do the same while using the ordered logistic regression models as well. We incorporate the one-year in our models for several reasons. The long-term bonds, i.e., bonds with maturities of over one financial year, are reviewed annually for safety and therefore, a rating is valid for a year⁷. Hence, the credit rating agencies take minimum of one years' time to award a different credit rating to a firm. Needless to say, depending on the latest financial conditions of the firm/industry/economy, the CRAs can downgrade or upgrade a bond and consequently can award a higher or a lower credit rating respectively (Ederington, Yawitz and Roberts, 1987). In addition, the one-year lag in our regression models also allows the CRAs to assimilate the most recent firm-specific and macroeconomic financial and non-financial information and integrate them in the credit ratings.

2.3.4 Research Methodology

In our study, we measure the influence of the CSR expenses on the risk profile of the firm and therefore, the credit rating awarded by the independent CRAs to the long-term debt instruments is the dependent variable, while the CSR expenses as a proportion of the net profits, is the primary explanatory variable. However, large firms with high profits understandably have more financial resources to fund their CSR activities and also have a propensity of attracting higher credit ratings for their debt instruments compared to their smaller counterparts. Since both these phenomena occur simultaneously, considering the monetary quantity of CSR spending can lead to erroneous results. Hence, we consider the annual CSR expenditure as a proportion of the net profits as the main explanatory variable.

The most stylised method to measure the influence of one or more independent variable on the dependent variable is to apply regression. We follow suit and seek refuge in regression and evaluate the suitability and applicability of some of the most popular regression models to our

⁷ For more information on the credit ratings and the methodology, see for example: S&P's "The credit rating guide", S&P's "Understanding credit rating methodology", etc.

data. The credit ratings follow a definite progressive order depending on and indicating the repayment abilities of the issuing company and the ensuing debt instrument. In other words, a debt instrument which has a rating of A is definitely safer than one with a rating of B and as mentioned before, there are 23 credit ratings or categories. By calculating the annual mean scores of all the credit ratings of firms, we transform the credit ratings into a continuous variable and evaluate the methodologies according to their applicability and relevance to our study.

In conditions where the dependent variable is measured on an ordinal scale, Menard (2002) suggests the following options.

- Ordinary Least Squares (OLS) regression: This is perhaps the most popular method
 predominantly because of its simplicity and wide applicability. Moreover, OLS assumes
 that the dependent variable is continuous and hence, applying this method is advantageous
 in our model, since the dependent variable is continuous in nature.
- Multinomial logistic regression: This method shares some similarities with ordinal logistic regression. However, this model does not assume a definite sequential order in the outcome variable, i.e., the categories are nominal. Therefore, all the information contained in the ordering is lost. Since the credit ratings have a definite sequential order, application of the multinomial logistic regression model would result in failure to measure the likelihood of obtaining a higher credit rating due to increased involvement in CSR.
- Analysis of Variance (ANOVA): This method is relevant in case the model has only one continuous predictor. In such cases, the model can be flipped around, and a one-way ANOVA can be executed. However, our model has more than one predictor variable and despite the fact that it (i.e., the explanatory variable) is continuous, it is unviable to flip the model around and apply this method.
- Ordered probit or logistic regression: The ordered probit and ordered logistic regression models are similar to each other and the main difference lies in the interpretation of the coefficients. In addition, applying probit models requires evaluation of an integral, which is not required in logistic regression, making ordinal logistic regression models more applicable (Williams, 2016).

The Gauss-Markov theorem states that the estimates from the OLS are superior to those from all other linear model estimation methods when the assumptions of OLS hold true (Hansen, 2022). Hence, we adopt the OLS regression for our study and construct the baseline model as mentioned in equation (2).

2.3.5 Description of Variables

The variables in this study are divided into three categories, viz., dependent, independent and control variables. The credit ratings awarded to the long-term debt instruments, is the dependent variable, while the CSR expenses as a proportion of the net income of the firm, is the primary independent variable. In addition, we incorporate a number of control variables to study the effect of CSR on credit ratings in isolation.

2.3.5.1 Dependent variable

The dependent variable for this study is the credit ratings obtained by the long-term debt instruments issued in India by the listed companies. Congruent with similar studies in the area [see for example, Blume, Lim and Mackinlay (1998), Sengupta and Bhojraj (2003), Mansi, Maxwell and Miller (2004), Chang and Shen (2014), Amiraslani *et al.* (2017b)], we consider the credit ratings of only the long-term debt instruments, and do not consider the short-term borrowings. This is because, the short-term debt instruments have less than one year till maturity and are rated for their safety only once, which is done at the time of issue. Consequently, such instruments do not offer any scope to study changes in credit ratings. The long-term debt instruments, on the other hand, have more than one year till maturity and consist of the long-term loans from financial institutions and the long-term fixed deposits accepted by the companies from the general public. Consistent with global best practices in credit rating and investor protection, both these types of instruments are rated for their safety every year till maturity. Thus, these types of debt instruments give us the opportunity to investigate the fluctuations in their credit ratings over a period of time.

The credit ratings are awarded by the credit ratings agencies (CRA) operating in India and we apply them in our model as recorded in the Prowessdx database. The ratings range from AAA+ representing "highest safety" to NM, denoting "not meaningful". We convert the ratings to an ordinal scale and assign a value of 23 in case a debt instrument is awarded a rating of AAA+, 22

if AAA and so on. The investment grade instruments are rated B– and above, while the instruments with ratings of C+ and below represent debt instruments with immense risk and uncertain repayment capabilities of the firms issuing them (Brealey *et al.*, 2018). The credit ratings and their respective scores are reported in appendix 2.1. We denote the credit ratings of the long-term debt instruments by the variable *mean_rating* in our ordinary least squares regression model.

2.3.5.2 Explanatory variable

In this study, we explore the impact of the expenses of a firm towards its corporate social responsibility activities on the credit ratings of its long-term debt instruments. Hence, the primary explanatory variable is the expenses towards the corporate social responsibilities (CSR) of a firm. In India, the CSR expenses are done through three channels, viz., donations, social and community expenses and environment and pollution control expenses (Chauhan and Amit, 2014). The total of these expenses represent the total CSR expenses of a firm and we follow prior studies on CSR expenses (for example, Verma, 2011; Chauhan and Amit, 2014; Bird, Duppati and Mukherjee, 2016; Mitra, Mukherjee and Gaur, 2018; Mukherjee, Bird and Duppati, 2018; Malik, Al Mamun and Amin, 2019) consider the proportion of net profits, which is spent towards CSR activities, as the primary explanatory variable and represent by the variable *csr_pat* in our model.

In order to further explore the effects of CSR expenses on credit ratings, we study the influence of each individual constituent of CSR on the credit ratings of the firms. We maintain consistency and introduce them as proportions the net profits and represent them as under in our study. The models under study, therefore, are

$$y_{i,t}^{*} = \beta_{0} + \beta_{1}don_pat_{t-1} + \beta_{2}bga_{t-1} + \beta_{3}lnsales_{t-1} + \beta_{4}ROA_{t-1} + \beta_{5}lnassets_{t-1} + \beta_{6}cap_int_{t-1} + \beta_{7}lev_{t-1} + \beta_{8}int_cov_{t-1} + \beta_{9}margin_{t-1} + \beta_{10}PSII_{t-1} + \beta_{11}aud_d_{t-1} + \varepsilon_{i} \dots \dots \dots (3)$$

$$y_{i,t}^{*} = \beta_{0} + \beta_{1}soccom_pat_{t-1} + \beta_{2}bga_{t-1} + \beta_{3}lnsales_{t-1} + \beta_{4}ROA_{t-1} + \beta_{5}lnassets_{t-1} + \beta_{6}cap_int_{t-1} + \beta_{7}lev_{t-1} + \beta_{8}int_cov_{t-1} + \beta_{9}margin_{t-1} + \beta_{10}PSII_{t-1} + \beta_{11}aud_d_{t-1} + \varepsilon_{i} \dots \dots (4)$$

$$y_{i,t}^{*} = \beta_{0} + \beta_{1}env_pat_{t-1} + \beta_{2}bga_{t-1} + \beta_{3}lnsales_{t-1} + \beta_{4}ROA_{t-1} + \beta_{5}lnassets_{t-1} + \beta_{6}cap_int_{t-1} + \beta_{7}lev_{t-1} + \beta_{8}int_cov_{t-1} + \beta_{9}margin_{t-1} + \beta_{10}PSII_{t-1} + \beta_{11}aud_d_{t-1} + \varepsilon_{i} \dots \dots \dots \dots \dots (5)$$

where, $y_{i,t}^*$ is the credit rating awarded by the CRAs (*mean_rating*) to the *i*th firm in year *t*, don_pat_{t-1} is the proportion of donations to the net profits in year (*t* – 1), soccom_pat_{t-1} is the proportion of social and community expenses to the net profits in year (*t* – 1) and env_pat_{t-1} is the proportion of environment and pollution control expenses to the net profits in year (*t* – 1). As in equations (1) and (2), the rest of the variables act as controls and are coherent with comparable studies in the field [see for example, Holmstrom (2006), Luo and Bhattacharya (2006), Attig *et al.* (Attig *et al.*, 2013), Hsu and Chen (Hsu, Chen and Chen, 2015), Amiraslani *et al.* (2017b)] and comprehensively define them in the following sub-section.

2.3.5.2.1 Business group affiliation

India is an emerging economy, which is characterized by weak institutional frameworks and unstable socio-political and business environment (Khanna and Palepu, 2000; Kali and Sarkar, 2011; Mukherjee, 2012; Freeman *et al.*, 2018). It becomes imperative for the firms, therefore, to adopt both active and passive risk management strategies to impart stability to their earnings in such volatile situations (Power, 2004; Jain, Yadav and Rastogi, 2009; Jones, 2017). Affiliation to a business group acts as a risk management strategy since the affiliated firms can benefit from numerous advantages like the presence of an internal capital market (Gopalan, Nanda and Seru, 2007), easy access to cheaper raw materials (Holmstrom *et al.*, 2006) and finance (Manos, Murinde and Green, 2007), etc. In addition, the business group affiliated (BGA) firms encounter reduced levels of risk since they are able to circumvent most of the uncertainties of the inefficient market mechanism (Khanna and Palepu, 2000; Khanna, Yafeh and Khanna, 2005) and the majority of the business risk is shared by the affiliated firms within the same business group (Poczter, 2018; Li and He, 2019).

In recent times, CSR has emerged as one of the dominant risk management strategies (Reverte, 2012; Attig *et al.*, 2013; Richter and Dow, 2017; Shiu and Yang, 2017; Suhail Rizwan, Obaid and Ashraf, 2017; Drago, Carnevale and Gallo, 2019) and we argue that CSR positively and significantly influences the credit ratings. Therefore, firms which are affiliated to business groups and actively pursue CSR objectives, manage their business risks with a two-pronged strategy and it is interesting to study the extent of these benefits over the standalone firms or over those firms, which are not involved with CSR. In this study, we combine the two risk management strategies,

i.e., business group affiliation and CSR engagement, and examine their combined influence on the credit ratings. We propose that the CSR-CR relationship differs between the BGA and non-BGA firms. We hypothesize that the CSR expenses positively influence the credit ratings and since business group affiliation is a risk management measure adopted by firms especially in the emerging markets, the business group affiliated firms derive more benefit from the CSR expenses by way of attracting higher credit ratings in comparison to the standalone firms.

In order to answer the question whether business group affiliation has any influence on the CSR-CR relationship, we introduce a binary variable (bga), which takes the value one (1) if the firm is affiliated to any business group and zero (0) otherwise, i.e., an independent standalone firm. We interact it with the primary explanatory variable(s) and examine the moderating impact of business group affiliation. The result of our analysis will reveal whether business group affiliated firms gain more by doing CSR than the standalone firms. In other words, we investigate whether the long-term debt instruments issued by the business group affiliated firms are awarded a higher credit rating if they practice identical levels of CSR engagement compared to their standalone counterparts.

2.3.5.2.2 Manufacturing firms

In addition to business group affiliation, we study the manufacturing firms as a special case in relation to the influence of CSR expenses to the credit ratings. The social behaviour of the manufacturing firms is driven by the market-based decision-making frameworks that filter through and dominate the manufacturing sector (Williamson, Lynch-Wood and Ramsay, 2006). The manufacturing firms endeavour to improve their business performance due to the pressures that they encounter from market-dominated decision-making frameworks. The physical presence of the manufacturing firms is more prominent compared to the non-manufacturing ones, and hence, it is more crucial for them (i.e., the manufacturing firms) to practice CSR activities (Shabbir and Wisdom, 2020). Moreover, since the environmental concern is one of the pillars of CSR for the manufacturing firms, our findings have significant implications for CSR strategies for such firms. Extant literature suggests that there exists a positive influence of the CSR practices by the manufacturing firms on their social value, reputation, profitability and financial performance, especially in an emerging market (Cherian *et al.*, 2019; Shabbir and Wisdom, 2020).

In this study, we incorporate a binary variable (*mfr*), which takes the value one (1) if the firm is involved with manufacturing or production and zero (0) otherwise. We segregate the firms into manufacturing and non-manufacturing and conduct the regression analyses separately and compare the results. Consistent with our earlier approach, we initially run the regression models for the entire time period, i.e., from 2000 till 2020 and then proceed to divide the time period into before and after legislation (i.e., 2000 to 2013 and 2015 to 2020), so that we can compare the change in the influence of CSR on CR for both types of firms. As mentioned earlier, CSR in India is done through three channels, viz. donations, social & community development, and environment & pollution related expenses. We also compare the difference in influences of all the three components of CSR for the manufacturing and non-manufacturing firms, both before and after the implementation of the Act.

2.3.5.3 Control variables

To study the effects of CSR on the credit ratings in isolation, we introduce a wide range of control variables. For selecting the control variables, we refer to studies on firm credit ratings [see for example, Weber (Weber, 2006), Blume, Lim and Mackinlay (1998), Sengupta and Bhojraj (2003), Mansi, Maxwell and Miller (2004), Attig (Attig *et al.*, 2013), Chang and Shen (2014), Amiraslani *et al.* (2017b)], and consider the following variables as controls in our study. The detailed discussion on the source and derivation of the variables is provided in appendix 2.2.

Insales: The natural logarithm of the annual sales

ROA: The return on assets ratio

Inassets: The natural logarithm of the total assets

cap_int: The capital intensity ratio, expressed as the ratio of the tangible assets to the total assets

lev: The debt-equity ratio

int_cov: The interest coverage ratio

margin: The ratio of operating profit to sales

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PSII: The proportion of equity shares owned by institutional investors

aud_d: A binary variable, which assumes the value 1 if it is audited by one of the Big4 auditing firms or their associates, 0 otherwise

bga: A binary variable, which assumes the value 1 if the firm is affiliated to any business group, 0 otherwise

2.4 Discussion of results

We commence our analysis with summarising the descriptive statistics of the key regression variables followed by assessing their pairwise correlations. We then proceed to conduct the regression analyses and present a discussion of the results.

2.4.1 Descriptive Statistics

[Insert table 2.1 here]

We present the descriptive statistics of the key regression variables in table 2.1 and report that there are 7,603 firm-year observations in our dataset. As stated earlier, the ratings are converted to a continuous variable and range from 1 to 23, denoting ratings of "Not Meaningful" and "Highest Safety" respectively⁸. All the explanatory variables are continuous as well except for the ones representing business group affiliation (*bga*), auditors (*aud_d*) manufacturing (*mfr*), which are binary variables and assume values of either one (1) or zero (0). The minimum value of the primary explanatory variable, i.e., the proportion of net profits spent towards CSR (*csr_pat*) is -15, which is entirely composed of donations (*don_pat*). This is witnessed commonly in emerging markets like India, where even loss-making companies need to make donations in order to reduce their political risk (Lu, 2016; Liang and Renneboog, 2017; Freeman *et al.*, 2018). The maximum proportion of net profits spent on CSR is 62, which entirely consists of social and community related expenses. This phenomenon is frequently observed in case of large business groups, where they invest heavily towards developing the livelihoods of the members of the local community by investing in providing safe drinking water, primary education and hygienic sanitation (Mitra, 2011; Verma, 2011; Lakra and Kumar, 2016; Sarda, 2016).

⁸ The credit ratings and their respective scores are presented in appendix 2.1.

[Insert table 2.2 here]

In table 2.2, we report the pairwise correlations between the regression variables of our OLS model along and stars indicate the conventional levels of significance. From the pairwise correlation table, it can be seen that even though there are some correlations between the regression variables, they (i.e., the correlations) are not statistically significant to influence our results. For example, we find that leverage (*lev*), which is one of our control variables, is significantly and negatively correlated with a number of variables like credit ratings (*mean_rating*), sales (*lnsales*), return on assets (ROA), firm size (lnassets), proportion of shares held by institutional investors (PSII) and auditors (aud_d). This phenomenon is entirely expected since higher levels of debt implies that the firm would attract lower credit ratings and that its sales are dwindling. However, the dependent variable of our study, the credit ratings of the firms (mean_rating), is not significantly correlated with the primary explanatory variable, viz. the proportion of net profits allocated towards the CSR activities of the firms (csr_pat). We also observe that the variables, which we use in our subsequent models as explanatory variables, i.e., the proportion of net profits disbursed towards donations (don_pat), social & community development (soccom_pat) and towards environmental protection (env_pat), are not significantly correlated with the credit ratings. At the same time, all the three constituents of CSR (i.e., donations, social & community development and environment and pollution related expenses) are positively and statistically significantly correlated with the total CSR expenses of the firms. However, since we use them in separate models to assess their individual influences on the credit ratings, the positive and significant correlations between them do not impact our results.

It is also worthwhile to mention that the proportion of net profits allocated towards CSR (*csr_pat*) is correlated with the proportion of net assets spent on CSR (*csr_assets*) and this correlation is positive and statistically significant. Hence, it does not come as a surprise that the three constituents of CSR are also positively and statistically significantly correlated with the proportion of assets spent on CSR (*csr_assets*).

In summary, we state that the correlations between the dependent and the explanatory variables are not strong enough to weaken our models and violate the results. While some of the explanatory and control variables are expectedly positively or negatively correlated, the small and insignificant correlations amongst the regression variables mitigate concerns regarding multicollinearity affecting the results of our OLS regression models.

2.4.3 Baseline Regression Model

[Insert table 2.3 here]

We present the results of our baseline regression model in table 2.3, where we measure the influence of the CSR expenses on the credit ratings. We start with the random effects model and then proceed to conduct the tests using the fixed effects model as well to provide additional robustness checks to our results. In our model, the business group and the auditor dummies are time invariant variables and therefore, adoption of the fixed effects model right at the outset would result in their elimination from the results. Therefore, it is imperative that we adopt the random effects model over the fixed effects model (Bell, Fairbrother and Jones, 2019). We start our analyses by measuring the impact of the CSR expenses for all firms over the entire time period and report the results in column (1). This is our baseline model, wherein we consider all firms irrespective of their affiliation, i.e., we consider both business group affiliated and standalone firms at this stage and the entire time period is from 2000 till 2020.

The regression coefficients of our primary explanatory variables, viz. the proportion of CSR expenses to the net profits and the business group affiliation, are intriguing to say the very least. The results suggest that the influence of CSR expenses on the credit rating is positive and is statistically significant at 1% level. From the regression coefficient, we infer that if a firm increases the allocation towards CSR activities out of its net profit, with each additional percentage increase, its mean annual credit rating increases by 0.371 points, assuming the other variables remain unchanged. Our finding is congruent with earlier studies done in the area, albeit most of them use the MSCI (erstwhile KLD score) scores as indicators of CSR involvements by firms. Nevertheless, prior studies establish that the more a firm is actively involved with CSR, the higher are its credit ratings [see for example, Attig *et al.* (Attig *et al.*, 2013), Amiraslani *et al.* (Amiraslani *et al.*,

2017a), Bae, Chang and Yi (Bae, Chang and Yi, 2018)]. This is explained by the fact that a firm which participates more towards socially responsible activities, concentrates not only on itself and its shareholders, but also on its stakeholders and the community on the whole. This benevolent approach positively impacts the operating cash flows of the firm and increases the stability of the cash flows as well. In other words, the higher a company's CSR involvement, the higher are its stable cash flows. In addition, higher CSR engagement also effectively reduces corporate expenses, for example the cost of operations and the cost of goods sold (Purnamasari, Hastuti and Chrismastuti, 2015). A higher CSR involvement by firms also results in increased customer loyalty, which results in repeated and increased purchases by customers (Mandhachitara and Poolthong, 2011; Martínez and Rodríguez del Bosque, 2013; Goel and R, 2015; Yusof *et al.*, 2015). This enhanced customer loyalty results in high stability of the future expected cash flows for the firm, which in turn, decreases the credit risk and hence, results in higher credit ratings for the firm. So, firms need to consider CSR expenses not as an encumbrance but as a valuable long-term investment.

Similarly, compared to a standalone firm, a business group affiliated firm is likely to be awarded a credit score, which is higher by 0.753 points. This is because, business group affiliation acts as a safety net for the firms, especially in an emerging economy, which is characterized by weak institutional frameworks. A business group affiliated firm has access to the internal capital market which acts as a source of inexpensive funds and the other affiliate firms in the same group provides raw materials at lower prices and in some cases, a ready market for the finished products as well. Therefore, the bga-firms have comparatively lower risk levels than the standalone firms and attract higher credit ratings at identical levels of CSR engagement. Our finding on the moderating influence of business group affiliation on the credit rating is consistent with extant business group literature which focuses on the advantages of business group affiliation [see for example, (Khanna and Yafeh (Khanna, Yafeh and Khanna, 2005), Freeman *et al.* (2018), Li and He (Li and He, 2019)].

The influences of the other variables, which we use as controls in our models, are congruent with the extant corporate finance literature. For example, higher net sales and higher total assets are associated with a better credit rating. Since it is expected that as a firm increases its net sales, its credit rating should improve due to the fact that a higher level of sales results in an increase in the

cash inflow for a firm, which in turn improves its debt repaying abilities. Similarly, a firm with large amount of total assets is awarded a high credit rating since the firm is in a good financial position to cover its debt obligations and is able to liquidate its assets towards the same cause, if the need ever arises. Firms with high profitability attract higher credit ratings, since they create larger amounts of financial resources for the firms and therefore, are more sustainable. In a similar vein, firms with higher capital intensity are more likely to be awarded higher credit ratings since such companies have more tangible assets in comparison to the total assets. The interest coverage ratio indicates how many times over a firm can meet its debt obligations and needless to say, a higher ratio is preferred by the CRAs since it indicates that the firm is financially sound. In the same way, a high profit margin is indicative of a reliable financial condition of a firm and a firm with a high margin gets a high credit rating.

The institutional investors are large shareholders and often have cross-border holdings. Since they are subjected to heavy regulations, they in turn prefer that the firms, which are in their portfolio, conform to all regulations, meet the industry standards, and implement the best practices in every aspect of its operations. Such firms are likely to have high credit ratings and lower bond yields and since the institutional shareholders prefer to invest in such firms, their influence on the credit ratings is expected to be positive. A firm that is audited by one of the Big4 auditing firms or their associates, also attract higher credit rating, since they (the Big4 auditing firms and their associates) are independent agencies who adhere to rigorous auditing practices and perform high quality audit. By doing so, they decrease creditors' doubts regarding the quality of the financial statements and result in reducing the default risk and improving the credit ratings. In India, law requires the auditor must be changed at least once every five years and a firm, which has been audited by one of the Big4 does not switch to any non-Big4 auditing firm due to the value that the Big4 firms add to the businesses (Sarre, Doig and Fiedler, 2001; Che, Hope and Langli, 2020). On the other hand, leverage is characterized by a negative impact on the credit ratings. This is imperative, since additional borrowing increases default risk and therefore, results in lower credit ratings.

The regression coefficients of the control variables of our study conform to corporate finance theories and earlier studies done in the area. The regression coefficient of the sales of the firm *(lnsales)* is positive and is significant at 1% level and indicates that increase in sales results in a higher credit rating. Similarly, profitability *(ROA)* also positively and significantly influences

credit ratings. A similar positive and significant effect on the credit ratings is witnessed in case of the size of the firm (*lnassets*), interest coverage (*int_cov*) and operating profit margin (*margin*). An increase in the firm's borrowings negatively influences the credit ratings and our results confirm the same. The regression coefficient of leverage (*lev*) is significant at 1% level and is negative, which indicates that additional borrowing results in a decrease in the credit ratings. The impact of all the variables is consistent with established corporate finance literature [see for example, Brealey, Myers and Marcus (2014), Brealey et al. (2018)].

Our results indicate that the proportion of institutional shareholding (*PSII*) of firms positively influences the credit ratings, which is consistent with results of earlier studies done in the area. The large institutional investors are either prone to invest in firms with high bond ratings and lower yields or generate the higher bond ratings (Sengupta and Bhojraj, 2003). This phenomenon can be explained by the agency theory and legitimacy theory of the firm. The agency theory of the firm proposes that there may arise a conflict between the owners and managers, while the agents play a monitoring role and try to ensure that the managers do not exploit the firm's resources and foster their own interests rather than those of the shareholders (Eisenhardt, 1989; Wright and Ferris, 1997; Shapiro, 2005; Beaudoin and Agoglia, 2008). The institutional shareholders keep an eye on the activities of the managers of the firm and hence, contribute towards the monitoring of the management. This is appreciated by the credit rating agencies and has a positive effect on the credit ratings (Sengupta and Bhojraj, 2003; AlHares and Ntim, 2017). In addition to the agency theory, the legitimacy theory also explains the positive impact of the institutional shareholding on the credit ratings. Institutional investors tend to invest in companies with low bond yields (Elbannan, 2009) and therefore, they not only influence but are also influenced by bond ratings and yields. Our findings are consistent with former studies, and we infer that the institutional shareholders positively influence the credit ratings of firms.

We include capital intensity (*cap_int*) to control for differences in the structures in companies' assets. Firms with greater capital intensity offer lower risk to the lenders and hence, are expected to obtain higher credit ratings (Fabozzi, Ng and Tunaru, 2021). The regression coefficient for the capital intensity ratio is positive and is significant at 1% level, implying that capital intensity positively influences the credit ratings of firms and our results are consistent with preceding studies in the domain [see for example, Grunert, Norden and Weber (2005), Utama, Utama and Amin

(2016), Rafay *et al.*, (2018), Fabozzi, Ng and Tunaru (2021)]. We find a similar positive influence of the auditors on the credit ratings of the firms. In other words, firms audited by the one of the Big4 auditing firms or their associates, have higher credit ratings than the non-Big4 audited firms. This positive effect is expected since the Big4 auditing firms act as independent agencies and perform the auditing assignment better than the others. Consequently, they (the Big4 auditors) reduce the creditors' qualms regarding the quality of the financial statements and the financial health of the company, and thus lower the default risk, and thereby improve the credit ratings (Setyaningrum, 2014).

We now proceed to analyse the impact of CSR expenses on the credit ratings before and after the implementation of the Act in 2014. As mentioned earlier, we do not consider the data for the year 2014 and therefore, the time periods that we consider are from 2000 till 2013 and then from 2015 till 2020 and we report the results in columns (2) and (3) respectively of table 2.3. Before the Act was implemented, the effect of CSR expenses is positive and is significant at 1% level. The regression coefficient reveals that for every one percent increase in the CSR expenses as a proportion of the net profits (csr_pat) result in an improvement of 0.379 points in the credit ratings of firms. Compared to the regression coefficient in our baseline model, we report that the impact is higher before the CSR is made mandatory. This increased influence is expected since prior to 2014, firms that incurred CSR expenses, practised voluntary CSR, which has a pronounced impact on the credit ratings (Holmstrom et al., 2006; Attig et al., 2013; Stellner, Klein and Zwergel, 2015). The influence of the business group affiliation (bga) is also positive and statistically significant, implying that the business group affiliated firms attract higher credit ratings compared to their standalone counterparts and bears testimony to the fact that affiliation to a business group serves as a risk management technique, especially in an emerging economy like India (Jain, Yadav and Rastogi, 2009; Li and He, 2019; Kim and Lee, 2021).

The control variables, as in our baseline model, retain their symbols albeit at varying levels of statistical significance. For example, leverage (*lev*) has a negative impact on the credit ratings, while size of the firm (*lnassets*) impacts positively. More capital-intensive firms (*cap_int*) and firms with high interest coverage ratios (*int_cov*) and operating margins (*margin*) attract better credit ratings. Similarly, profitability (*ROA*), institutional ownership (*PSII*) and being audited by one of the Big4 or their associates (*aud_d*) all positively influence the credit ratings. Our findings

for the period before the implementation of the Act is consistent with previous studies done in the domain and involve the same variables that we use as controls [see for example, citations].

The column (3) of table 2.3 reports the regression results in the post 2014 era. The results indicate that the CSR expenses still influence the credit ratings positively and at 1% level of significance. The regression coefficient suggests that with a one percent increase in the CSR expenses as a proportion to the net profits, the credit rating improves by 0.361 points. Hence, we can infer that ever since the CSR expenses are made mandatory in 2013, the credit rating agencies place significant amount of importance while awarding the credit ratings to companies. However, the impact, though remains significant, reduces by a small margin in the post-2014 period. This is predictable because once all firms mandatorily incur CSR expenses out of their net incomes, the individual influence of CSR on the credit rating is bound to decrease. Hence post-2014, the CSR expenses have become more of a compliance requirement than a cluster of coherent benevolent actions, which the companies undertake voluntarily towards the improvement of the society.

We now explore the influence of CSR expenses incurred by the business group affiliated firms on their credit ratings. As mentioned before, we posit that both business group affiliation and CSR act as risk management mechanisms, especially in emerging markets. Therefore, when a long-term debt instrument is issued by a firm with both characteristics, we expect that the credit rating will be higher. In other words, we propose that a firm, which is affiliated to a business group and is actively involved with CSR, is awarded a higher credit rating compared to a standalone firm doing the same level of CSR. In order to investigate this proposition, we interact the business group dummy with the CSR expenses and repeat the regression analyses. As before, we consider the entire time period (i.e., 2000 till 2020) at the first instance and subsequently proceed to segregate the time period into pre- and post-2013 segments and report the results in columns (4), (5) and (6) respectively in table 2.3.

From the results, we observe that the influence of CSR and business group affiliation individually are positive. In addition, the control variables retain their signs, which are identical to those in our baseline model and indicate that their influences remain unchanged. Needless to say, the regression coefficients vary from the baseline model suggesting that even though their influences differ, they (i.e., their influences on the credit ratings) are significant at varying levels of significance.

Variables like the return on assets, net sales, total assets, capital intensity, interest coverage, operating profit margin, institutional shareholding and auditors positively influence the credit ratings, while leverage has the opposite effect. This signifies that the explanatory variables influence the credit ratings in a way that is identical to our prior models. In other words, the influences of the explanatory variables on the credit ratings are same in the interaction model.

We now focus on the influence of the interaction variable and provide a detailed discussion and endeavour to explain its impact. As explained before, the interaction term defines the impact of the CSR done by the business group affiliated firms (or bga-firms) and we propose that the business group affiliated firms benefit more from identical levels of CSR compared to their standalone counterparts. In other words, we examine the moderating influence of the business group affiliation on the CSR-CR relationship. We observe that the coefficient of the interaction variable is positive and significant at 1% level. This provides support to our argument and implies that the business group affiliated firms indeed benefit more from CSR in terms of being awarded higher credit ratings compared to the standalone firms who implement identical levels of CSR. In order to explain this moderating influence of business group affiliation on the CSR-CR relationship (i.e., CSR by bga-firms), we turn to extant literature in the area of CSR, credit ratings, business group affiliation and the like.

In recent years, academicians are increasingly paying attention to the credit risk of the business groups and their subsidiaries. Unfortunately, there has been a serious lack of consensus amongst the researchers regarding the effect of group affiliation on the credit risk of the bga-firms. Siegel and Choudhury (2012) suggest that business groups have a lower credit risk compared to the independent standalone firms and the business group affiliated firms with limited financial resources can benefit from the support from the other affiliate firms in the group. This support is provided through the internal capital markets and results in decreasing the credit risk of the subsidiaries (Khanna, Yafeh and Khanna, 2005; Gopalan, Nanda and Seru, 2007). This is because the financial advantages of the business group is characterised by having access to more resources and unrelated diversification and the debt instruments issued by an affiliate firm have longer maturities and lower costs compared to the ones issued by similar independent standalone firms (Sur and Chauhan, 2021). In contrast, the presence of tunnelling of resources between the

subsidiaries of a business group results in an increase of the credit risk of business groups and may even be higher than that of individual companies (Bertrand, Mehta and Mullainathan, 2002; Jiang, Lee and Yue, 2010; Wei, Chen and Wirth, 2022). Therefore, there is inconsistency in the conclusions in extant literature regarding the moderating impact of business group affiliation on the credit risk of a firm.

In our study, we find evidence that the business group affiliated firms derive more benefit from identical CSR activities in comparison to the independent standalone firms by way of obtaining higher credit ratings. This implies that business group affiliation has a positive moderating impact on the CSR-CR relationship. In other words, the bga-firms are awarded higher credit ratings than the standalone firms owing to CSR activities. This indicates that the bga-firms are better able to manage their credit risk through CSR compared to the standalone firms. This is due to the fact that the business groups are typically characterised by the existence of internal capital markets, which enables the group to quickly shift capital and other scarce resources like managerial skills, technical know-how, etc. through their associate firms, especially during times of financial distress. In addition, the internal capital markets enables the affiliate firms to function better, for example, by avoiding credit market conflicts (Khanna and Palepu, 2000). Business group affiliation also empowers the affiliate firms to take on more risk compared the independent ones and this risk-taking attitude has a positive influence on the profitability for the bga-firms and has a negative impact on the non-affiliated firms (Bhaumik, Estrin and Mickiewicz, 2017). Consequently, the BGA firms are able to be more proactive (Bhaumik, Estrin and Mickiewicz, 2017) and innovative (Freeman et al., 2018) and have lower bankruptcy risk due to the risk-sharing practices amongst all the affiliate firms (Khanna, Yafeh and Khanna, 2005; Buchuk et al., 2014; Buchuk, 2019).

The presence or dominance of the internal capital markets for the bga-firms is one of the biggest contributing factors for their success. The managers of the internal capital markets have access to more accurate information than the financial markets regarding the available projects and only fund the ones with the best prospects for profitability. This attitude of winner-picking gives a competitive advantage to the bga-firms compared to the standalone firms. In addition, since the business groups operate in multiple industries, the internal capital markets provide the scope to transfer from divisions with surplus funds to the ones with insufficient funds but have profitable

projects. This free flow of funds reduces the risk of the affiliate firms, increases theirs as well as the overall value of the business group (Stein, 1997; Tewari and Bhattacharya, 2022). Consequently, firms affiliated to business groups have more probability of overcoming the stress of any financial crises than the unaffiliated independent standalone firms (Santioni, Schiantarelli and Strahan, 2020).

Our results are consistent with several theories of business groups and the first theory that lends support is the coinsurance theory. The coinsurance theory states that in a business group structure, the parent firm and its affiliate mutually insure each other. In particular, the parent firm receives financial support from the affiliate if the former faces challenges in its business operations. Simultaneously, the affiliate is also assured of support from the parent firm in case the former faces any financial distress. This mutual support is channelized through the internal capital markets, which is a phenomenon that exists exclusively in a business group structure. The bga-firms are extended support by way of internal transactions of products and services at favourable prices and/or reduced transaction costs. Other benefits like access to cheaper capital (Gopalan, Nanda and Seru, 2007; Byun et al., 2013), supplier and buyer networks (Mahmood, Zhu and Zajac, 2011), reputation and political connections (Freeman et al., 2018), managerial talent (Oh, Park and Kim, 2022), technical know-how and information (Tewari and Bhattacharya, 2022) are more readily available to the bga-firms in comparison to their standalone counterparts.

In case of business groups, CSR engagement takes place at both affiliate and group levels and the resulting benefits are shared equally by all the constituent firms which form the group (Ray and Ray Chaudhuri, 2018). As an extension, in a business group, irrespective of their levels of CSR engagement, all the constituent firms and the parent firm, reap the same benefits resulting from CSR (Indriani, 2018). In addition, a number of business groups also make significant investments in CSR through independent trusts and foundations in order to augment the overall group reputation (Fombrun and Shanley, 1990; Du, Bhattacharya and Sen, 2010; Choi *et al.*, 2018; Cuervo-Cazurra, 2018), which is arguably a valuable resource, especially in the context of an emerging economy (Amaladoss and Manohar, 2013; Vlastelica et al., 2018). The business groups in the emerging economies participate in the national development agenda by pursuing CSR and this participation provides it with strong political legitimacy (Cuervo-Cazurra, 2018). Therefore,

the bga-firms are less likely to face regulatory or political risk than the standalone firms and herein lies the main difference between the way CSR is done by the standalone firms and the bga-firms.

Due to a plethora of reasons, including scarcity of both financial and non-financial resources, the unaffiliated individual firms conduct CSR differently in comparison to the bga-firms. The bga-firms conduct CSR more methodically and there is a strategic vision, which governs establishing the overarching CSR goals and objectives. The results provide evidence to our suggestion that business group affiliated firms benefit more from the same levels of CSR in comparison to their standalone counterparts. Hence, we conclude that business group affiliation has a positive moderating influence on the credit ratings of the CSR practising firms.

We observe a similar influence of CSR on the credit ratings of the bga-firms even when we consider the period before the implementation of the mandatory CSR. Column (5) reports the results of the time period when the Indian firms voluntarily practise CSR. The results indicate that during this time period, CSR positively influences the credit ratings. At the same time, business group affiliation (bga), net sales (lnsales), the return on assets (ROA), the size of the firm (lnassets), capital intensity (cap_int), interest coverage ratio (int_cov), operating profit margin (margin), institutional shareholding (PSII) and audited by Big4 (aud_d) all have positive influences on the credit ratings, while as before, leverage (*lev*) negatively influences the same. The interaction term between business group affiliation and CSR, as before, indicates the CSR done by the business group affiliated firms and its coefficient is positive and significant at 1% level. This implies that the business group affiliated firms attract higher credit ratings compared to the standalone firms with the equivalent degree of CSR involvement before CSR was made mandatory. This is attributed to the fact that prior to the enactment of the Act in 2014, CSR was primarily practised by firms affiliated to large business groups, who align their CSR strategies with the national development plan announced by the central government (Arora and Puranik, 2004; Raman, 2006; Agarwal, 2008; Galliara, 2010; Verma, 2011; Tyagi, Sharma and Agrawal, 2013). This results in reduction of political and reputation risks of the firms (Sun and Cui, 2014) and therefore, CSR acts as an effective risk management technique (Jo and Na, 2012; Story and Price, 2014; Shiu and Yang, 2017; Albuquerque, Koskinen and Zhang, 2019) and an increase in CSR engagement results in a higher credit rating (Holmstrom et al., 2006; Attig et al., 2013).

With the implementation of the new Companies Act in 2013, CSR spending becomes mandatory in India and almost all listed firms compulsorily undertake CSR activities and column (6) reports the influence of the variables on the credit ratings during this era. The results suggest that the variables are steadfast in their influences on the credit ratings as outlined in the baseline model, albeit the coefficients differ along with the levels of significance. However, their influences remain the same as before. That is to say, variables like business group affiliation (bga), net sales (*lnsales*), the return on assets (ROA), the size of the firm (lnassets), capital intensity (cap_int), interest coverage ratio (*int_cov*), operating profit margin (*margin*), institutional shareholding (*PSII*) and audited by Big4 (*aud_d*) all positively influence the credit ratings, while as before, leverage (*lev*) has a negative influence on the credit ratings. CSR done by the business group affiliated firms, represented by the interaction term between business group affiliation and CSR, is positive and significant at 1% level. This entails that the business group affiliated firms are awarded with higher credit ratings compared to the standalone firms with the comparable scale of CSR participation even after CSR spending is made mandatory. Interestingly, the coefficient of the interaction term in the post-mandatory era (column 6) is little lower compared to the one in pre-2014 era (column 5), i.e., 0.382 compared to 0.411. This is explained by the fact that once all firms undertake CSR expenditures, the marginal effectiveness of CSR as a risk management technique is diminished. However, the influence still remains positive and significant.

So far, we analyse the influence of CSR and business group affiliation, along with the control variables, on the credit ratings using the random effects model. Now we provide robustness to our results and conduct the regression analysis using the fixed effects model and report the results in columns (7), (8) and (9) of table 3. Consistent with our previous approach, we start by considering the entire time period, i.e., from 2000 till 2020 and report the results in column (7). We then proceed to segregate the time period into pre- and post-2014 to conduct the regression analysis and report the results in columns (8) and (9). The results from the regression analysis using the fixed effects model support the inferences from the random effects models, which we used earlier. There is no significant change in the effects of the variables on the credit ratings of the firms and as earlier, business group affiliation (*bga*), net sales (*lnsales*), the return on assets (*ROA*), the size of the firm (*lnassets*), capital intensity (*cap_int*), interest coverage ratio (*int_cov*), operating profit margin (*margin*), institutional shareholding (*PSII*) and auditing done by Big4 (*aud_d*) yield

positive influences on the credit ratings, whereas leverage (*lev*) has a negative influence on the same. Once again, the results suggest that CSR done by the business group affiliated firms, represented by the interaction variable between business group affiliation (*bga*) and CSR (*csr_pat*), is positive and significant at 1% level. Therefore, it is safe to conclude that the business group affiliation has a positive moderating impact on the CSR-CR relationship. Our results indicate that the bga-firms attract higher credit ratings compared to the standalone firms, even if they (i.e., the bga-firms) practice identical levels of CSR.

As in the case of the fixed effects model, the time-invariant variables get eliminated from the results and we find that the business group affiliation (*bga*) and auditing by the Big4 (*aud_d*) are excluded from the results. This indicates that firms do not abandon their affiliation to any business group and also do not change their auditors from a Big4 to a non-Big4 firm and vice versa. However, a firm may get the auditing done by any other firm within the Big4. In other words, once a firm gets its auditing done by one of the Big4 auditing firms, our results indicate that even when it (i.e., the firm) switches to any other auditing firm, it chooses another one (i.e., the auditing firm) from the Big4 auditing firms. This is an interesting finding and is consistent with extant studies done in the domain of auditing by the Big4 firms. This is attributed to the Big4 effect, which originates from three sources. At the first instance, the Big4 auditing firms are able to employ personnel from non-Big4 firms who produce higher quality audit than others. Secondly, when a firm switches to one of the Big4 auditing firms, it undergoes enhanced learning and finally, the Big4 firms provide better audit quality (Eshleman and Guo, 2014), which can also be a result of stronger incentives or monitoring (Che, Hope and Langli, 2020).

The results of the fixed effects models over the entire time period suggest that our original postulation is true. That is to say, business group affiliation has positive moderating influence on the CSR-CR relationship. This suggests that the bga-firms are awarded higher credit ratings in comparison to the independent standalone ones even when both firms conduct equivalent levels of CSR. In other words, business group affiliation assists firms to decrease their credit risk and when such firms engage in CSR, they obtain higher credit ratings compared to the standalone firms. We witness this phenomenon over the two decades (column 7) that we consider in this study. Towards the end of this time period, in 2014 CSR is made mandatory and as a result, the majority of the firms are now obligated to undertake CSR activities. During the voluntary CSR regime, i.e., prior

to 2014, CSR expenses, business group affiliation and CSR done by the bga-firms positively influenced the credit ratings (column 8) and post-2014, there is no change in the overall impact (column 9). However, the degrees of influence of the factors differ between before and after the enactment of the Act, which is captured by the difference in magnitude of the regression coefficients.

The applicability of OLS over the ordered models like the ordered probit or ordered logistic regression, is severely contested amongst the academicians, and applied econometricians. It does not come as a surprise that researchers frequently perform the analyses using both the models to check for consistency (Winship and Mare, 1984). We embrace an identical approach and use the ordered logistic regression (OLR) model to ensure consistency in the results from the OLS model. Table 2.4 reports the results of the ordered logistic regression (OLR) models. Consistent with the OLS model, we begin the OLR analysis considering the entire time period, i.e., from 2000 till 2020 and conduct the analyses for all firms, irrespective of their affiliation and report the results in columns (2) and (3) respectively. In the final steps, we interact the business group affiliation dummy (*bga*) with the CSR expenses (*csr_pat*) and perform the OLR, considering the entire time periods and report the results in columns (4), (5) and (6) respectively.

2.4.4 The Ordered Logistic Regression Model

[Insert table 2.4 here]

The results in table 2.4 suggest that over the last two decades, a firm with greater CSR engagement is more likely to be awarded a higher credit rating and the same holds true for the business group affiliation. When we split the time period into pre- and post-mandate and study the impacts of the explanatory variables, we find that both CSR expenses and business group affiliation variables still have the same positive impact on the credit ratings. Therefore, we confidently state that CSR expenses and business group affiliation improve the credit ratings of the firms. We also convey that the control variables preserve their original symbols as estimated in the OLS models, which signifies that net sales (*lnsales*), the return on assets (*ROA*), the size of the firm (*lnassets*), capital

intensity (*cap_int*), interest coverage ratio (*int_cov*), operating profit margin (*margin*), institutional shareholding (*PSII*) and auditing done by Big4 (*aud_d*) positively affect the credit ratings, whereas leverage (*lev*) has a negative effect on the same. We proceed to interact the business group affiliation dummy (*bga*) with the CSR expenses variable (*csr_pat*) to explore the difference in impacts of identical levels of CSR done by bga- and non-bga-firms. The regression coefficient of the interaction variable is positive and significant at 1% level, which is consistent with the results from the OLS models. The results from the OLR are consistent with those from the OLS models and consequently, our proposition is proven to be valid. We infer that business group affiliation has a positive moderating influence on the CSR-CR relationship and that the bga-firms are more likely to be awarded a higher credit rating compared to the standalone firms, even if both of them have the same level of CSR engagement.

2.4.5 The Components of CSR

[Insert table 2.5 here]

In India, a firm incurs CSR expenses through three avenues, viz., donations, social and community expenses and environment and pollution control expenses (Chauhan and Amit, 2014). It is imperative, therefore, to explore the influences of these individual components on credit ratings of firms and also perform a comparative analysis of them as measures of credit risk mitigation. As outlined in equations (3), (4) and (5), we consider all the three CSR channels as proportions to the net profits and represent the proportion of donations by the variable don_pat while, soccom_pat represents the proportion of social and community expenses and env_pat does the same for the proportion of environment and pollution control expenses. For all the three conduits of CSR, we begin by considering the entire time period from 2000 till 2020 and then proceed to segregate it between pre- and post-2014. We also explore the combined effect of CSR and assess their individual impacts on the credit ratings of firms. As before, we incorporate a one-year lag between the dependent and explanatory variables to ensure consistency amongst our models and also to reconcile the fact that the credit rating agencies require some time to incorporate the latest financial data into the credit ratings. In addition, we perform the regression analyses using both the random

and fixed effects models. We analyse their impacts on the credit ratings of the firms and report the results in table 2.5.

The results of the analyses are consistent with our earlier outcomes, and we report that both CSR expenses (*csr_pat*) and business group affiliation (*bga*) have positive influences on the credit ratings and the effect of their interaction variable is also positive and significant at 1% level. Once again, consistent with our earlier results, these findings suggest that CSR done by bga-firms is more effective in reducing credit risk compared to the standalone firms. This enhanced positive effect stems from the business groups' participation or donation towards the developmental projects that are supported by the local and central governments (Ararat, Colpan and Matten, 2018; Freeman *et al.*, 2018). We now study the individual components of CSR expenses and report that donations as a proportion of net profits (*don_pat*) positively influences the credit ratings (columns 1, 2 and 3) and we witness the same phenomenon for the interaction variable with business group affiliation as well. We observe a similar trend both in pre- and post-2014 and the regression coefficient of the interaction variable is significantly larger than the individual variables, which is attributed to the fact that the large business groups make donations to both the local and central governments to mitigate their political risks (Manos, Murinde and Green, 2007; Carney, 2008), which directly results in higher credit ratings (Erb, Harvey and Viskanta, 1996).

The social and community development efforts (*soccom_pat*) also help in reducing credit risk, which is evident from the positive and significant regression coefficients (columns 4, 5 and 6). In addition, the interaction variable is also positive and significant, implying that the bga-firms benefit more by doing social and community development expenses compared to the standalone firms. This is because the large business groups invest heavily towards developing the local community that they operate in and often even act as substitutes to the public good. In other words, as part of their CSR strategy, business groups provide public goods like clean drinking water, free primary education, free healthcare, improved infrastructure in the areas they operate (Khanna, 2000; Fisman and Khanna, 2004; Ghosh and Chakraborti, 2010; Guha, 2011; Mitra, 2011; Pikka, Iskanius and Page, 2011; Becker-Ritterspach and Bruche, 2012; Srivastava, 2012; Narwal and Singh, 2013; Sarda, 2016; Ray and Ray Chaudhuri, 2018). In emerging markets, risks arising from various factors like political, credit, business, financial, etc. are intertwined (Qazi and Simsekler, 2022) and as a result, reduction in risk in one area translates into a reduction in risk in other areas

(Erb, Harvey and Viskanta, 1996). Hence, CSR engagement directed towards local area development results in reduction of political risk and enhances the reputation of the firm and financial performance and reduces firm risk (Anginer *et al.*, 2011; Rehman, Khan and Rahman, 2020), which in turn improves the credit ratings.

The environmental and pollution related expenses (env_pat) also positively impact the credit ratings, as shown in the results reported in columns (7), (8) and (9). Consistent with the effect of the other components of CSR on the credit ratings, we observe that the environmental and pollution related expenses also positively impact the credit ratings. Furthermore, the interaction term between this expense and the business group affiliation is also positive and significant at 1% level. This signifies that not only a firm can improve its credit ratings by investing in curbing its environmental impact, but also the bga-firms benefit more from this expense compared to the standalone firms through attracting higher credit ratings. Our findings are consistent with the existing studies done in the area of environmental concerns, CSR and credit risk management. The firms affiliated with large business groups typically channelize resources towards improving the environment around their production facilities and invest substantially towards controlling the pollution caused by the effluents from those facilities (Khanna, 2000; Khojastehpour and Johns, 2014). This results in enhancing their reputation not only within the local community but also in the larger society (Lakra and Kumar, 2016) and provides a higher degree of legitimacy to those firms (Stratling, 2007). The enhanced corporate reputation regarding the company taking positive steps towards the protection of the environment results in the customers willingness to pay higher prices for their products (McWilliams and Siegel, 2001; Yuen, Thai and Wong, 2016) and also helps in increasing customer loyalty (Yusof et al., 2015; Yuen, Thai and Wong, 2016; Iglesias et al., 2020; Sarkar, Chatterjee and Bhattacharjee, 2021). Both of these factors lead to increased cash flows (Reichheld, Markey Jr. and Hopton, 2000), a reduction in the default risk and higher credit ratings (Holmstrom et al., 2006). Compared to the standalone firms, bga-firms conduct CSR as a part of their long-term commitment towards sustainability (Ararat, Colpan and Matten, 2018; Choi et al., 2018) and hence, benefit more from their CSR practices than their standalone counterparts.

In the lower section of table 2.3, we provide the results using the fixed effects models and report that the results are consistent with the random effects models. In addition, we also confirm that the control variables retain their symbols from the baseline models and are therefore, not reported

here. The results indicate that the bga-firms indeed derive more benefit through higher credit ratings compared to their standalone counterparts even if both engage with CSR at comparable levels. In general, we conclude that CSR engagement helps in managing more than one risk that a firm confronts. This is because, through various channels of CSR, a practising firm enjoys strong legitimacy amongst the local community as well as its customers and this acceptability in turn, results in reduced political or regulatory risk and higher customer loyalty. Both these factors contribute towards lowering the business risk and enhancing and stabilising the cash flows of a firm, which eventually leads to higher credit ratings. The bga-firms are further strengthened by the power of the patent company as well as the support of the other affiliate firms (i.e., firms which are affiliated with the same business group). Consistent with the coinsurance theory, the bga-firms are less likely to face financial distress and therefore, are considered safer than the standalone firms. In addition, the business groups predominantly formulate their CSR strategies in alignment with the national development programme, which further contributes to lowering their risks and increasing reputation and acceptability. Hence, the bga-firms attract higher credit ratings than the standalone firms with comparable levels of CSR engagement.

2.4.6 The Case of Manufacturing Firms

[Insert table 2.6 here]

The manufacturing firms face unique challenges compared to the services (i.e., nonmanufacturing) firms due to their greater visibility and higher public attention. In other words, the presence of the manufacturing firms are more prominent compared to the non-manufacturing ones and this makes it imperative for them (i.e., the manufacturing firms) to pursue CSR activities (Shabbir and Wisdom, 2020). Moreover, they endeavour to improve their business performance since they face increased pressure from the market-based decision-making agendas (Williamson, Lynch-Wood and Ramsay, 2006). Consequently, it is interesting to study the CSR behaviour of the manufacturing firms and the impact on their credit ratings. Naturally, the environmental concern is one of the most important issues that the manufacturing firms face and hence, our findings have significant implications for their (i.e., the manufacturing firms) CSR strategies. We interact the manufacturing binary variable (mfr) with the CSR expenses and then with the three components of CSR to examine the impact that the latter may have on the credit ratings of the manufacturing firms. Consistent with our earlier approach, we start with considering the entire time period, (i.e., from 2000 till 2020) and then proceed to segregate into pre- and post-2014 and report the results in table 2.6. We report the results for the manufacturing firms in columns (1) to (3) and do the same for the non-manufacturing ones using columns (4) to (6). In column (1), we report the influence of CSR of the manufacturing firms during the entire time period, and then report the pre- and post-2014 results in columns (2) and (3) respectively. Similarly, we do the same for the non-manufacturing firms and column (4) reports the results for the entire time period while columns (5) and (6) report those for the pre- and post-2014 time segments respectively.

It is evident from the results that both the non-manufacturing and the manufacturing firms benefit from CSR and the results suggest that all the three components of CSR individually also positively influence the credit ratings. In addition, the CSR expenses (csr_pat) interacted with the business group affiliation dummy (bga), also yields positive results for both manufacturing and nonmanufacturing firms. Congruent with our previous results, this phenomenon is witnessed not only for the entire time period in this study, but also in the two time segments created by the introduction of the Act in 2013. In other words, the positive influences of CSR and business group affiliation on the credit ratings are prevalent across all time periods. A closer exanimation of the influences of the three components of CSR on the credit ratings and comparing the regression coefficients for both the manufacturing and the non-manufacturing firms divulges interesting characteristics and behaviours of both types of firms. The donations (don_pat) made by non-manufacturing companies towards the CSR activities have a greater positive impact on the credit ratings compared to the manufacturing ones for all the entire time period, i.e., from 2000 till 2020 and also for the pre- and post-implementation periods of the Act. The difference in the effectiveness of the donations become even more pronounced in the post-2014 period. In other words, the effect of donations is less effective in reducing the credit risk and in obtaining higher credit ratings in case of the manufacturing firms. This is because, the firms involved with manufacturing or production have always made donations, especially to the political parties (Arora and Puranik, 2004; Sharma, 2009; Husted, 2015; Shankar, 2015) and this practice, which has been sustained over a long time, is instrumental in reducing the effectiveness of this factor (i.e., donations) as a risk measure.

The expenses incurred towards local community development is also an important technique to attract higher credit ratings. Firms in the manufacturing sector have benefitted tremendously by

doing local community development over the years and they often form and share a symbiotic relationship with the local people. The production facilities are located in the rural areas, which are substantially under-developed compared to the urban areas and are often characterized by lack of even basic necessities. The manufacturing firms, in such cases, act as a substitute for the local government and come forward to provide several public goods, which are provided either free of charge or at extremely low prices so that the local people can afford them. These include and is not limited to primary education, safe drinking water, primary healthcare, streetlights, roads, flood relief, donation of blankets and clothes, donation of books and stationery, donation of bicycles, etc. (Ghosh and Chakraborti, 2010; Guha, 2011; Srivastava, 2012; Lakra and Kumar, 2016). Such exercises provide legitimacy to those firms and consequently, their default risk is reduced and higher credit ratings are awarded (Koh, Qian and Wang, 2014; Richter and Dow, 2017).

Finally, the effect of the expenses incurred towards the environment protection and improvement (env_pat) differs starkly between the manufacturing and their non-manufacturing counterparts. Similar to the other components of CSR, this factor also influences the credit ratings positively and over the entire time period, the manufacturing firms benefit more from it. This can be attributed to the fact that for the manufacturing firms, the environmental concerns are the single most important factor in reducing their carbon footprint. In other words, manufacturing firms need to divert their maximum focus on the reduction in the release of the pollutants and effluents and also take proactive measures to improve the environment (Shanmugam, 2013; Shabbir and Wisdom, 2020; Ng et al., 2022). We now study the pre- and post-2014 results and find that nonmanufacturing firms benefit more from this channel of CSR than the manufacturing ones. This is because, before the implementation of the Act, very few non-manufacturing firms practised environmental CSR and those who did, attract higher credit ratings, since the CRAs place an extremely high value on a firm's environmental concerns (Standard & Poors, 2019). This trend continues even in the post-2014 era and we observe that the marginal benefit of the environmental CSR is enhanced for both manufacturing non-manufacturing firms. This is because, the environmental concerns have garnered more attention in recent years and it increasingly becoming more of a compliance requirement. Hence, companies, irrespective of their nature of business (i.e., manufacturing or non-manufacturing) need to take proactive steps to reduce their impact on the
environment (Mazurkiewicz, 2004; Broomhill, 2007; Arafat *et al.*, 2012; Cordeiro and Tewari, 2015).

The impact of the business group affiliation remains unchanged from our earlier models. We report that the regression coefficients of all the business group affiliation dummy interacted individually with all the three components of CSR bear the positive sign and are statistically significant at conventional levels of confidence. Therefore, we conclude that the bga-firms engaged in manufacturing or otherwise, benefit from CSR through higher credit ratings than their independent standalone counterparts. As stated earlier, the business groups formulate their CSR strategies in alignment with the national development agenda and therefore, garner greater media and analyst coverage (Choi and Moon, 2016; Sharma, 2019). This also reduces their political or regulatory risks and contributes towards reducing their default risks and consequently, such firms obtain higher credit ratings for their CSR efforts compared to the independent standalone ones. In addition, the bga-firms also benefit from the coinsurance that is provided by the parent firm along with the other affiliates within the same group (Khanna, Yafeh and Khanna, 2005; Kim, Kim and Yang, 2015; Freeman et al., 2018). Of late, the financial institutions and regulators maintain their financial stability by capturing the effects of default dependence that is prevalent amongst the affiliates of business groups (Das et al., 2007; Duffie et al., 2009). This practice is referred to as credit risk clustering and is done since firms within the same business group may face either identical or correlated risk factors whose co-movements cause correlated changes in conditional default probabilities and a default by one affiliate may be "contagious" and may result in failures of other affiliates (Li and He, 2019). This practice provides an additional level of safety for the bga-firms and hence, the impact of their CSR efforts on the credit ratings are further magnified compared to the independent standalone firms.

2.4.7 CSR expenses and business group affiliation over the years

[Insert figure 2.5 here]

We track the CSR expenses as a proportion of the net profits and the impact of the business group affiliation on the credit ratings over the last two decades and present the results in figure 2.5. The line indicates the annual CSR expenditures incurred by all the firms as a proportion of their net

profits (*csr_pat*), while the columns represent the regression coefficients of the CSR expenses interacted with the business group affiliation dummy (*bga*). The line showing the CSR expenses from the net profits captures the commitment of the firms towards their social responsibilities and we witness a sharp increase in the CSR spends in 2015 when they are made mandatory through the implementation of the Act in 2014. In case the companies spend in excess of the legal requirements, the Act allows them (i.e., the companies) to set off the excess amount against the legal requirement to spend (under sub-section 5 of the Act) in the following year. In other words, if the CSR expenses of a company exceeds the legal requirements for one year, then it can adjust its CSR spending in the following one year. Similarly, it spends more than the legal requirement for three years, it can adjust the excess amount in the next three years⁹. The graph suggests that the companies' CSR expenses are in excess of the legal requirement of 2% in 2015 and therefore, the companies reduce the same in the following year.

The government of India was quick to react to this fall in CSR expenses and publish the amendment to the Act in May 2016 and includes the registered trusts and registered societies under the gambit of organizations who are mandatorily required to spend funds towards CSR. Moreover, the companies had large unspent amounts of funds earmarked for CSR in 2016 and this resulted in another steep increase in CSR spending in 2017, where the CSR expenses are the maximum in the last two decades. Over the next two years, we see sharp declines in the CSR pay outs by the firms and this is explained by the fact that the Act, so far, did not include any punitive measures that the regulators could resort to in case a firm fails to meet the legal obligations of CSR spending. Till then, the Act merely advised the companies to spend a fixed proportion of their net profits towards CSR and specified what is accepted as CSR. In case a company fails to spend the mandated 2% of its profits, the only requirement was to provide an explanation (the Act states "comply or explain") as to why it failed to spend funds towards CSR. In 2020, we witness a modest increase in the CSR spending, and we anticipate the CSR spending to settle around the 2% of the net profits mark.

⁹ Source: The Companies Act 2013, amended upto 1st April 2021, section 135, sub-section 5, page no. 94

The columns depict the regression coefficients of the CSR expenses incurred by the firms, which are affiliated to business groups. We trace how the influence of the CSR done by bga-firms on the credit ratings undergo a change in the last two decades. In the pre-2014 period, CSR was completely voluntary, and we observe significant impact of the same on the credit ratings during the initial years of the previous decade. This is because CSR at that time, was largely undertaken by large business groups, who were influenced by the Gandhian philosophy and was altruistic in nature (Sundar, 2000, 2013). Several business houses created large manufacturing facilities and engaged with numerous benevolent activities like education, health, community development, etc. (Agarwal, 2008; Chari and Dixit, 2015; Srivastava and Sahay, 2017; Dixit and Dixit, 2018; Satapathy and Paltasingh, 2019). In 1992, India opens its economy to foreign participation and pursue the policy of liberalization, privatization, and globalization (LPG) and invites multinational companies by offering several benefits and concessions. Such companies also adopt similar CSR strategies in order to gain legitimacy with the local population (Jamali, 2010; Yin and Jamali, 2016). The impact of the CSR done by the bga-firms on the credit ratings fluctuates within a narrow band till about 2008, since the debt instruments issued by such firms are always considered safer than the ones issued by the standalone firms due to several reasons already discussed earlier.

In 2009, the Government of India launches the Corporate Social Responsibility Voluntary Guidelines (CSRVG), which forever transforms the way CSR is perceived or implemented in India. These evolve into the National Voluntary Guidelines (NVG) on Social, Environmental and Economic Responsibilities of Business in 2011. These guidelines incorporate nine principles of implementing CSR in the country and suggest that the companies embrace the "triple bottom-line" approach whereby the financial performance can be synchronised with the expectations of the society, the environment, and the various stakeholders that a firm interacts with, in a sustainable manner. The Indian Ministry of Corporate Affairs (2011) opined that adoption of the NVG will result in an improvement in a business' ability to increase its competitive strengths, enhance its reputation, augment its competence to attract and retain world-class talent and manage its relations with the investors and the society at large.

The large business groups adopt the CSRVG in 2009 and begin to align their CSR strategies with the national development agenda and therefore, the impact of CSR executed by the bga-firms become more and more pronounced over the years. We witness this increasing influence every

year, with significant jumps in 2012, 2013 and 2014. This behaviour is expected since the Government of India published the NVG on Social, Environmental and Economic Responsibilities of Business in 2011, prompting companies, particularly the large business groups, to support and complement the development agenda of the government through CSR and the firms reap the benefits by being awarded higher credit ratings. Similarly, in 2013 the new Companies Act is introduced making CSR expenses a compliance requirement and the business groups once again reinforce their support for the government's social development plans. Consequently, the CSR pursued by the bga-firms attract higher credit ratings compared to the standalone colleagues. In the following years, though, the influence of the bga-firms' CSR on the credit ratings reduces and is explained by the fact that after CSR is made mandatory, the majority of the firms commence doing CSR and as a result, the marginal benefit of CSR as a risk measure is diminished. This diminishing trend continues for the next few years, and we anticipate it to settle around the levels that we observe from 2018 till 2020.

2.4.9 Robustness checks

We now proceed to perform robustness checks of our results to substantiate our claims regarding the contrasting impact of CSR expenses on the credit ratings of the business group affiliated and independent standalone firms.

2.4.9.1 Marginal effects of CSR expenses

[Insert figure 2.6 here]

So far, we provide evidence that the bga-firms benefit more from practising identical levels of CSR engagement and attract higher credit ratings compared to the independent standalone firms. We also present both theoretical and empirical evidence to justify our hypothesis. We now proceed to provide robustness to our results and begin by analysing the predicted marginal effects of CSR expenses on the credit ratings between the bga-firms and the independent standalone firms. In figure 2.6, the line with solid circles represents the independent standalone firms, while the line with solid triangles does the same for the bga-firms and the comparison is fascinating. The slope of both the lines is positive, which implies that both bga-firms and the independent standalone

firms attract higher credit ratings as they increase the proportion of CSR expenses from their net profits. A negative value for this ratio (*cst_pat*) denotes a reported net loss for the company, while it continues to pursue its CSR objectives. Under such a scenario, an independent standalone firm marginally benefits more than a bga-firm or in other words, a bga-firm is slightly disadvantaged in terms of credit ratings compared to an independent standalone firm. This means that the bga-firms lose their competitive advantage in credit ratings over the independent standalone firms when both (i.e., bga-firms and independent standalone firms) do not engage in CSR and this relative disadvantage of the bga-firms continue till about level zero of CSR, i.e., when neither firm incurs any CSR expenses. At low levels of CSR, till about 5%, the marginal effect of CSR on the credit ratings is identical. This is expected since the legal requirement is to spend at least 2% of net profits on CSR and adhering to the compliance requirement should not yield any additional benefit.

At positive levels of CSR, both the bga-firms and the independent standalone firms attract higher credit ratings with increasing levels of CSR expenses, and this provides further testimony to our results. We also see that the bga-firms have a distinct advantage over their standalone colleagues as far as the benefits from CSR in terms of higher credit ratings is concerned. In fact, the gap between the marginal effects of CSR expenses between the bga-firms and the independent standalone firms widen with increasing proportions of CSR expenses. This implies that as firms spend more funds towards CSR activities, the credit ratings of the bga-firms increase more than those of the independent standalone firms. This is because the bga-firms derive more benefits from CSR in terms of higher credit ratings than their independent standalone counterparts. The reasons behind this competitive edge can be attributed to the alignment of their (i.e., the bga-firms) CSR strategies with the development programme of the government and also to the protection that affiliation to a business group offers, like coinsurance. In addition, as mentioned earlier, all the affiliated firms derive benefit from the CSR done by the parent firm or by any of its affiliates. Since the credit rating agencies take cognisance of both financial and non-financial factors while awarding the credit ratings to the firms, the bga-firms attract higher credit ratings than the independent standalone firms even if they engage in CSR at identical levels.

2.4.9.2 Endogeneity

Endogeneity in an econometric model happens when the explanatory (independent) variables are correlated with the residuals (also referred to as the "error term," or "disturbance term") (Brooks, 2008; Wooldridge, 2010; Lu et al., 2018). It is widely believed that endogeneity is one of the most important aspects, which is often overlooked by researchers, resulting in rejection of academic papers in different stages of review (Guide and Ketokivi, 2015). Using instrumental variables (IVs) is one of the most common techniques for addressing endogeneity issues (Sargan, 1958; Bascle, 2008). The challenge, however, lies in identifying a strong and relevant instrument, since including a bad instrument has the potential to significantly weaken the selected econometric model (Bettis et al., 2014). In the social sciences domain, multiple approaches (IV, GMM, 2SLS, 3SLS) are popular to address different types of endogeneity problems (Lu et al., 2018). The IV-based estimation is widely popular for cross-sectional and panel data, due to its strict primary assumptions in tackling endogeneity and conditions related to locating the appropriate ones. The IV approach is used to control for various sources of endogeneity arising from reverse causality (or simultaneous equations bias), selection bias, or the occurrence of incalculable confounding effects (Stock, 2015). However, it needs to be noted that the IV-based approach is not the panacea to address endogeneity problems and inappropriate use of the IV may result in further problems by producing inconsistent coefficients and conflicting interpretations. For example, selection of an instrument, which is actually endogenous, may lead to inconsistent results in LIML and 2SLS (Ullah, Akhtar and Zaefarian, 2018; Ullah, Zaefarian and Ullah, 2020).

2.4.9.2.1 Measurement error

In this study, we explore the impact of CSR expenses on the credit ratings of firms and therefore, it is imperative that we define the variables accurately in order to arrive at robust results. The dependent variable in our model are the credit ratings awarded by the independent credit rating agencies and we take the ratings as reported in the Prowessdx database, which is maintained by the Centre for Monitoring of Indian Economy (CMIE) Ltd. We construct our baseline model with the CSR expense as a proportion of the net income, incurred by the different firms as the primary explanatory variable. We also investigate the influence of the three components of CSR expense on the credit ratings, considering all the three components as proportions of the current years' net profit. Therefore, we avoid the major pitfall of other studies in the same domain. The extant studies

consider the MSCI (formerly KLD) scores as indicators of CSR engagement by firms. The main concern from doing so is that the debt instruments issued by bigger firms are usually awarded high credit ratings and they (i.e., the bigger firms) also have more financial and non-financial resources and can, therefore, devote more resources towards CSR activities. Consequently, the effect of CSR on the credit ratings cannot be studied in isolation. We circumvent this issue by measuring CSR expense as a proportion of net profit and develop our regression models further. In addition, we introduce a wide range of control variables, which are in line with the extant literature [see, for example, Luo and Bhattacharya (2006), Menz (Menz, 2010), Jiraporn *et al.* (2014), Cai, Cui and Jo (2016b), Bae, Chang and Yi (Bae, Chang and Yi, 2018)].

The major concern that studies involving CSR scores and credit ratings need to address is that of reverse causality and that arises from the fact that the bigger firms can spend a higher proportion of their net profits towards CSR activities in comparison to the smaller firms. At the same time, the debt instruments issued by the bigger companies are considered to be safer and hence, attract higher credit ratings than the ones issued by their smaller counterparts. This phenomenon is especially common for the business groups, who are bestowed with more resources at their disposal. To address this issue, we adopt a two-pronged approach. First, we consider the lagged value of our principal explanatory variable and conduct the instrumental variable two-stage least squares (IV-2SLS) regression analysis to check for robustness in our results. This approach is the common practice in social sciences to eliminate the possibility of confounding results due to the potential presence of endogeneity in our data (Bellemare, Masaki and Pepinsky, 2017a; Wang and Bellemare, 2020). Second, consistent with the existing literature (Luo and Bhattacharya, 2006; Menz, 2010; Jiraporn *et al.*, 2014; Cai, Cui and Jo, 2016a; Bae, Chang and Yi, 2018), we consider a wide range of variables as controls in our model to resolve the financial and resource disparities between the bigger and smaller firms.

2.4.9.2.2 Omitted variable or selection bias

Omitted variable bias comes from various sources, including omitted regressors or omitted interaction terms or polynomial terms. To avoid this bias, we consider all the variables based on extant literature (Luo and Bhattacharya, 2006; Menz, 2010; Jiraporn *et al.*, 2014; Cai, Cui and Jo, 2016a; Bae, Chang and Yi, 2018) in similar areas of CSR, credit ratings, business groups and

financial performance. This bias may also arise in case the sample selection is not done randomly and hence, may produce inconsistent results. In other words, we need to ensure that the sample selection is done randomly in order to produce robust and consistent results. This is because econometric and social science literature cautions against results from statistical analyses based on non-randomly selected samples since they tend to steer towards erroneous conclusions (Greene, 2002; Gujarati, 2004; Brooks, 2008). Sample selection can also be deemed as a type of omitted variable bias (Heckman, 1979, 1990). According to econometric theory, self-selection impedes forthright causal effects and the Heckman selection bias correction is one of the most popular ways to mitigate selection issues in social science data and to estimate causal effects (Bascle, 2008). The Heckman correction is a two-step statistical approach, which is aimed at correcting for nonrandomly selected samples.

Firms formulate their strategies, including the CSR strategies, based on their expectations of how they (i.e., the CSR strategies) might benefit them. In relation to our study, it can be said that whenever a company spends funds towards CSR to achieve some purpose, improving the credit ratings in our case, the credit ratings agencies act as evaluators to determine whether those funds have accomplished their objectives. There can be two sources of fallibility in our results, as under:

- 1. Self-selection may make the bga-firms attract higher credit ratings than the standalone firms even without incurring any CSR expenses
- "Creaming" to make their ratings more appealing, the credit rating agencies are more likely to evaluate only those instruments whose ratings would be higher even without CSR expenses

The Heckman correction for selection bias is likely to amend these possible errors. To conduct this test, we introduce a number of variables that are not present in our baseline model. These variables may affect a firm's decision to participate in CSR but are unlikely to influence the credit ratings of a firm. In practice, many statisticians suggest including all the possible variables and perform the regression analysis and likewise conduct the selection bias test. However, Heckman argues that doing so causes the impact estimate "not identified" (Heckman, 1976). The Heckman correction eliminates from the comparison of participants and non-participants in CSR activities and those instruments which would not be rated by the CRAs.

To perform the Heckman two-step selection bias test, we include a number of variables which are not part of the baseline model. The variables¹⁰ are:

pat: The net profit or profit after tax of a firm

pbit: The operating profit or the profit before interest and tax

pat_sales: The net profit divided by the net sales of a firm

pat_total assets: The net profit divided by the net total assets of a firm

pbit_sales: The operating profit divided by the net sales of a firm

pbit_total_assets: The operating profit divided by the net total assets of a firm

[Insert table 2.7 here]

Table 2.7 reports the results of the two-step Heckman selection bias test, and we report that the variables, which are not part of the baseline model, are dropped from the second step. This implies that our model does not suffer from omitted variable bias. In other words, the results of this test provide evidence that we define our regression models adequately by the variables that are included in the baseline model and the subsequent models.

In addition, and more importantly, the Inverse Mills Ratio (IMR), denoted by lambda, is insignificant. The IMR times its coefficient is designed to detect the expected value of the error in the credit rating equation condition on CSR expenses. This would reflect the idea that the firms with large negative rating errors are not doing CSR and hence, the expected value of the rating error is no longer zero for some of the firms who actually do incur CSR expense. We can use the coefficient of the IMR to test for selection, since it represents the covariance between the errors in the credit ratings and the CSR participation equation under the assumptions of the model. Since the variance in the CSR participation equation is normalized to one and the denominator is the

¹⁰ The detailed explanations of the variables, their sources and calculations are provided in appendix 2.2.

product of two standard deviations, which are positive numbers, it is adequate to examine that the numerator is zero to learn about selection. In our model, the IMR is statistically insignificant, and we can infer that the data is consistent with no selection bias.

2.4.9.2.3 Simultaneity

The problem of simultaneity appears when two variables simultaneously influence/cause each other and possess reciprocal feedback loops (non-recursive models). Despite the fact that the problem may be simple to comprehend, its statistical resolution is complicated, especially in cases involving multiple constructs. This problem may be solved by using instrumental variables (Sargan, 1958). In our study, we examine the impact of CSR expense on credit ratings, i.e., the causal relationship between the two, we must address the simultaneity bias since there may be a possibility of influencing each other. In other words, higher credit ratings are typically awarded to debt instruments issued by larger firms with sound financial performance and hence, they (i.e., the larger firms) allocate more resources towards CSR initiatives. Hence, there may exist a case of reverse causality between the CSR expenses and credit ratings. This makes it imperative to address simultaneity bias in our study. We undertake to resolve this issue by incorporating a one-year lag in our primary explanatory variable as well as in all the control variables in the baseline model. All the subsequent regression models have a one-year lag incorporated in all the explanatory variables. Therefore, there is no scope of simultaneity in any of our regression models. However, we still test for endogeneity to provide further robustness to our results and conduct the IV-2SLS regression analysis. In order to determine the instrumental variable (IV) in our IV-2SLS regression model, we follow earlier studies [see for example, Wooldridge (2005) Angrist and Pischke (2009), Reed (2015), Bellemare, Masaki and Pepinsky (2017b)] in econometrics, social sciences and allied domains and consider the primary explanatory variable lagged by a one-year period. In other words, we consider the CSR expense as a proportion of the net profits of the year before last as the instrument in our IV-2SLS regression model. That is to say, for example, we consider the CSR expense as a proportion of net profit of 2010 as the explanatory variable for the credit ratings of 2012. We present the results in table 2.8 and report that our results are robust and are not influenced by endogeneity.

[Insert Table 2.8 here]

The first-stage and second-stage regression results are reported in columns (1) and (2) respectively in table 2.8. The instrument in our model is the primary explanatory variable lagged by one year (L2.car_pat) and the first-stage regression results show that it has a significant and positive influence on the credit ratings. This implies that a higher proportion of net profit spent towards CSR does result in a higher credit rating. In addition, consistent with the results from our earlier regression models, the primary explanatory variable (csr_pat) has a significant and positive impact and the bga-firms benefit from identical levels of CSR by attracting higher credit ratings. The control variables retain their original symbols, signifying their influences on the credit ratings remain steadfast. Factors like business group affiliation, sales, return on assets, capital intensity, interest coverage, margin, institutional shareholding and audited by Big4 have positive influences on the credit ratings, while leverage has a negative impact. Of more interest and importance are the second-stage regression results and we observe that the instrument (L2.csr_pat) has no influence on the credit ratings. At the same time, the primary explanatory variable (csr_pat) positively and significantly influences the credit ratings and the bga-firms continue to attract higher credit ratings from identical levels of CSR engagement compared to the standalone firms. The impacts of the control variables are reported to be the same as our earlier regression models. The results of the IV-2SLS analysis confirm that endogeneity does not manipulate our principal findings.

2.5 Conclusion

Credit ratings reveal a wealth of information about the firms and play a vital role in financing and investment decision making (Ederington, Yawitz and Roberts, 1987). While institutional investors like pension funds, banks and insurance firms depend on credit ratings to make their portfolio allocation decisions and also to allocate regulatory capital, central banks use them (i.e., the credit ratings) as proxies to measure the quality of collateral. Company managers formulate and evaluate corporate strategies considering the extent to which the credit rating of their companies may be affected (Hilscher and Wilson, 2009). Of late, CSR has become a means for the companies to improve their corporate image and also to propagate the notion that they (i.e., the firms) do business not only to foster the interests of its shareholders, but also for the society at large. It is a myopic view that the sole interest of a firm is to generate higher and higher profits for its shareholders, ignoring the interests of its broader stakeholders. Hence, when a firm actively engages in CSR and apportions a proportion of its net profit towards the societal benefit and makes donations towards the national development, incurs expenses towards local community development and invests in pollution curbing measures, it (i.e., the firm) is rewarded with support from the wider community, especially during any economic downturn. This promise of a support reduces the likelihood of default and in turn, benefits the shareholders. In this study, we set out to explore the effects of CSR expense on credit ratings (CR) and more importantly, the how affiliation to a business group, moderates this relationship.

We conduct a wide range of analyses and provide evidence of a positive relationship between CSR expense of a firm as a proportion of its net profit and its credit ratings. We document that not only the aggregate CSR expense positively and significantly influences the credit ratings, but also all the three components of CSR expenses individually also hold similar positive sways on the latter. The results suggest that as a firm dedicates a higher proportion of its net profit towards the benevolent CSR activities, the higher are its likelihood of being rewarded with a higher credit ratings, even though they engage with CSR identically as standalone firms. In addition to having the safety net of coinsurance created by its parent firm along with its other affiliates, a bga-firm also benefits from the participation of its parent company in the national development agenda, which in turn translates into a lower credit risk and a higher credit rating. As a special case, we

examine the influence of the CSR expense for the manufacturing firms and find that the cumulative CSR expenses positively and significantly impact the credit ratings as do all its three components individually.

We conduct this study over a span of two decades, from 2000 till 2020 and draw strong and reliable conclusions regarding the CSR-CR relationship. Within our sample time frame, India makes CSR expenses mandatory through the introduction of the Companies Act, 2013. As a result, we analyse the CSR-CR relationship over three time periods and start with the entire time period, from 2000 till 2020 and provide evidence of a positive influence of CSR on the credit ratings. Thereafter, we proceed to examine the CSR-CR association over both the time segments, i.e., pre- and postlegislation. We perform the regression analysis over all the three different time segments in every step of our analysis and conclude that CSR expenses positively and significantly influence the credit ratings. In some regression models, we notice that the influence of CSR expenses on the credit ratings are higher, especially in the pre-2014 era and expectedly, the impact of CSR expense is reduced in the mandated era. Most analyses involving the relation between corporate actions and outcomes are susceptible to endogeneity and the biases may come from selection methods and more importantly, from reverse causality (Bannier, Bofinger and Rock, 2022). We address the issues by employing a wide range of robustness tests and check for sample selection bias and reverse causality and find that our results are upheld. Considering all our results, we find ample evidence in support of our hypothesis that CSR expenses positively influence the credit ratings, and this effect is more pronounced in case of the business affiliated firms.

Our results are consistent with extant studies in the domain of CSR, credit ratings and business groups and complement those by Attig *et al.* (Attig *et al.*, 2013) and Bannier *et al.*, (2022), where the influence of CSR is discussed in relation to its impacts on the credit ratings and credit risk respectively. More broadly, our findings can be read in conjunction with several other studies with whom our results are congruent, for example, Holmstrom *et al.* (2006), Menz (Menz, 2010), El Ghoul *et al.* (2011), Huang, Hu and Zhu (2018) and Barth, Hübel and Scholz (2022). These studies provide evidence of the positive influence of CSR on lowering the cost of debt, reducing the credit risk, and improving the credit ratings. However, the dependence on MSCI (formerly KLD) scores limit their applicability primarily to the developed markets, where MSCI scores are awarded to firms according to their socially responsible actions. In most of the emerging markets, MSCI

scores and not present and therefore, the first challenge lies in defining the extent of social awareness of the firms. In addition, emerging markets are typically characterised by the presence of large business groups who dominate the commercial activities in that country. It is only natural that the business groups conduct CSR in stark contrast to the standalone firms and are more efficient in exploiting the risk mitigation capabilities of CSR compared to the latter class of firms.

In this study, we address both these issues and consider the CSR expenses incurred by the firms from their net profits as the measure of their extent of social and moral obligations and also examine the CSR-CR relationship for the firms, which are affiliated to business groups. Our study contributes to finance literature in multiple ways and addresses several gaps in the understanding of the CSR-CR relationship. Our results will help the corporate managers of the companies create their CSR strategies with a clear understanding of the influence of the same on the credit ratings of the long-term debt instruments. Our findings are applicable and relevant for companies irrespective of their revenues, sectors, and affiliation and hence, the managers of all the companies can benefit from this study and can strategically formulate both their CSR and long-term borrowing policies. Since we compare the influences of all the different avenues of CSR and identify the most advantageous ones, this would further benefit the professionals while formulating their CSR programs, especially in the regime of mandatory CSR expenditures. The regulators can also devise the preventive steps to impede the companies from abusing CSR to achieve their hidden agendas rather than serving the larger society. The companies which exploit CSR to realize their selfish motives rather than benefiting the society, can also attract lower credit ratings by the CRAs. Therefore, our findings are relevant for the CRAs who can identify such malicious firms, and also the firms who implement CSR as a reaction to the legislation rather than embedding societal improvements in their long-term strategies. Finally, the parameter of firm CSR engagement that we use in this study, presents the academia with a pertinent measure of CSR participation by the firms, and we hope that this will facilitate further research on CSR, especially in the context of the emerging economies.

Even though we are confident of our results, we are cautiously aware of its shortcomings as well. We depend solely on the quantitative data for our analyses and do not incorporate the qualitative aspects of credit ratings and CSR. Therefore, we intentionally refrain from providing answers to the ensuing questions concerning the qualitative attributes influencing the CSR-CR relation and leave this for future research.

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List of tables

Table	2.1:	Summary	Statistics	of	the	key	regression	variables
							0	

Variable	Observations	Mean	Std. dev.	Min	Max
mean_rating	7,603	11.957	4.569	1	23
L.csr_pat	7,603	.017	.482	-15	62
L.csr_assets	7,603	.001	.003	0	.145
L.Insales	7,603	7.665	2.552	2.303	15.471
L.ROA	7,603	.022	.184	.808	5.765
L.lnassets	7,603	8.445	1.989	.511	16.145
L.cap_int	7,603	.957	.104	.058	.411
L.lev	7,603	.353	.221	0	.521
L.int_cov	7,603	12.748	48.524	1	51.193
L.margin	7,603	7.354	22.678	-11.204	27.288
L.PSII	7,603	.643	.188	0	.628
L.aud_d	7,603	.229	.420	0	1
L.bga	7,603	.003	.054	0	1
L.mfr	7,603	.176	.381	0	1
L.don_pat	7,603	.007	.216	-15	15.947
L.soccom_pat	7,603	.008	.408	-9.573	62
L.env_pat	7,603	.002	.997	-12.083	4.409

Variables	mean_ rating	L.csr pat	L.csr_ assets	L.Insales	L.ROA	L.Inassets	L.cap int	L.lev	L.int cov	L.margin	II.PSII	L.aud d	L.bga	L.mfr	L.don pat	L.soccom pat	L.env pat
mean_rating	1																
L.csr_pat	0.02	1															
L.csr_assets	0.11	0.10*	1														
L.Insales	0.35*	0	0.06*	1													
L.ROA	0.36*	0	0.08*	0.14*	1												
L.lnassets	0.37*	0.01	0.01	0.74*	0.09*	1											
L.cap_int	0.03*	0.01	0.04*	0.07*	0.04*	0.09*	1										
L.lev	-0.30*	-0.01	-0.04*	-0.06*	-0.51*	-0.02*	0	1									
L.int_cov	0.37*	0.01	0.11*	0.07*	0.32*	0.03*	0.04*	-0.17*	1								
L.margin	0.03*	0	0	0.06*	0	0.04*	0.01	0	0.01	1							
L.PSII	0.40*	0.01	0.07*	0.38*	0.15*	0.45*	0.04*	-0.05*	0.13*	0.02*	1						
L.aud_d	0.27*	0	0	0.26*	0.05*	0.29*	0.11*	-0.04*	0.05*	0	0.23*	1					
L.bga	0.02*	0.01	0	0.02*	0	0.02*	0.03*	0	0.02*	0	0.04*	0.02*	1				
L.mfr	0.15*	0.01	0.06*	0.26*	0.06*	0.06*	0.13*	0	0.03*	0.01	0.04*	0.02*	0.01*	1			
L.don_pat	0.02	0.49*	0.11*	0	0	0.01	0.01	0	0.01	0	0	0	0.02*	0	1		
L.soccom_pat	0.01	0.87*	0.03*	0	0	0	0.01	0	0.01	0	0.01	0	0	0.01	0.05*	1	
L.env_pat	0.01	0.22*	0.12*	0.01	0	0	0.01	0	0	0	0.01	0.01	0.02*	0.02*	0.02*	0	1
***p<0.01, **p	o<0.05, *	p<0.1															

Table 2.2: Pairwise correlations of the key regression variables
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Table 2.3: OLS results showing the impact of CSR engagement on credit ratings

Ordinary least squares (OLS) regression results showing the impact of CSR expenses as a proportion of net profits (xr_pat) on the credit ratings of the firms over different time periods. In our baseline model, we consider the credit ratings of all the firms over the entire time period and report the result in column (1). In the next step, we segregate the time period into pre- (i.e., 2000 - 13) and post-2014 (i.e., 2015 - 20), since the mandate regarding the CSR expenses was introduced in 2014 and report the results in columns (2) and (3) respectively. We then explore the impact of business group affiliation and interact the business group affiliation dummy (*bga*) with the CSR expenses as a proportion of the net profits (*xr_pat*). At first, we consider the entire time period and report the results in column (4). Thereafter, we segregate the time period into pre- (i.e., 2000 - 13) and post-2014 (i.e., 2015 - 20) and report the results in columns (5) and (6) respectively. We use the random effects model so far to include the time-variant variables in our results. We repeat the same analysis using the fixed effects model and report the results in columns (7), (8) and (9). As prevalent with the FE models, the time-invariant variables are eliminated from the outputs. For both the regression models, we do not consider data from 2014 since the legislation was implemented in that year.

0			/						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	The impact	The impact	The impact	The impact	The impact	The impact	The impact	The impact	The impact
	of CSR	of CSR	of CSR	of CSR	of CSR	of CSR	of CSR	of CSR	of CSR
	expenses as a	expenses as a	expenses as a	expenses as a	expenses as a	expenses as a	expenses as a	expenses as a	expenses as a
	proportion	proportion	proportion	proportion	proportion	proportion	proportion of	proportion of	proportion of
	of net profit	of net profit	of net profit	of net profit	of net profit	of net profit	net profit	net profit	net profit
	<i>(csr_pat)</i> on	<i>(csr_pat)</i> on	<i>(csr_pat)</i> on	(csr_pat)	(csr_pat)	(csr_pat)	(csr_pat)	(csr_pat)	(csr_pat)
	the credit	the credit	the credit	interacted	interacted	interacted	interacted	interacted	interacted
	ratings of the	ratings of the	ratings of the	with the	with the	with the	with the	with the	with the
	firms from	firms from	firms from	business	business	business	business	business	business
	2000 - 20 for	2000 - 13 for	2015 - 2020	group	group	group	group	group	group
	all firms,	all firms,	for all firms,	affiliation	affiliation	affiliation	affiliation	affiliation	affiliation
	irrespective	irrespective	irrespective	dummy on					
	of affiliation	of affiliation	of affiliation	the credit					
				ratings of the					
				firms from					
				2000 - 20	2000 - 13	2015 - 2020	2000 - 20,	2000 – 13,	2015 – 2020,
							using the	using the	using the
							fixed effects	fixed effects	fixed effects
							model	model	model
L.csr_pat	.371***	.379**	.361***	.389***	.379**	.473***	.390*	.401*	.483**
	(.098)	(.185)	(.101)	(.109)	(.185)	(.132)	(.225)	(.297)	(.029)
L.bga	.753***	.345***	.325***	.829***	.378***	.314***			
	(.002)	(.012)	(.252)	(.007)	(.032)	(.242)			
L.bga#L.csr_pat				.425***	.411***	.382***	.473***	.543***	.458***
				(.051)	(.035)	(.014)	(.015)	(.026)	(.002)
L.Insales	.165***	.178**	.355***	.165***	.178**	.354***	.553***	.351**	.711***
	(.005)	(.077)	(.068)	(.005)	(.077)	(.068)	(.135)	(.164)	(.158)
L.ROA	4.387***	7.111***	2.693***	4.388***	7.111***	2.695***	3.532***	6.060***	1.348*

	(.394)	(.939)	(.540)	(.394)	(.939)	(.540)	(1.184)	(1.216)	(.696)
L.lnassets	.168***	.562***	.386***	.169***	.562***	.387***	1.125***	.623***	.863***
	(.059)	(.087)	(.008)	(.059)	(.087)	(.008)	(.166)	(.193)	(.258)
L.cap_int	1.921***	.428*	1.831**	1.919***	.428**	1.815**	1.041*	.589*	2.305*
	(.561)	(.085)	(.766)	(.561)	(.851)	(.766)	(1.159)	(1.397)	(1.558)
L.lev	-3.922***	-3.441***	-3.768***	-3.923***	-3.441***	-3.768***	-3.741***	-1.601**	-1.593**
	(.263)	(.423)	(.360)	(.263)	(.423)	(.360)	(.552)	(.703)	(.717)
L.int_cov	0***	0***	0***	0***	0***	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
L.margin	0*	0	0**	0*	0	0**	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
L.PSII	7.012***	4.337***	6.987***	7.012***	4.337***	6.981***	5.851***	2.473**	4.433***
	(.386)	(.530)	(.574)	(.386)	(.531)	(.574)	(1.003)	(1.122)	(1.599)
L.aud_d	1.556***	1.333***	1.004***	1.557***	1.333***	1.005***			
	(.131)	(.199)	(.174)	(.131)	(.199)	(.174)			
Observations	7,603	3,202	3,754	7,603	3,202	3,754	7,603	3,202	3,754
Industry effects	Yes	Yes	Yes						
Year effects	Yes	Yes	Yes						
R-Squared	.434	.411	.466	.452	.511	.565	.334	.358	.382

Standard errors are in parentheses *** p < .01, ** p < .05, * p < .1

The credit ratings are converted to an ordinal scale, ranging from 0 (NM) to 23 (AAA+). The number of observations vary depending on the time period and the nature of the firms considered in each model.

Table 2.4: Ordered logistic regression results showing the impact of CSR engagement on credit ratings

Ordered logistic regression results showing the impact of CSR expenses as a proportion of net profits (csr_pat) on the credit ratings of the firms over different time periods. In our baseline model, we consider the credit ratings of all the firms over the entire time period and report the result in column (1). In the next step, we segregate the time period into pre- (i.e., 2000 – 13) and post-2014 (i.e., 2015 – 20), since the mandate regarding the CSR expenses was introduced in 2014 and report the results in columns (2) and (3) respectively. We then explore the impact of business group affiliation and interact the business group affiliation dummy (*bga*) with the CSR expenses as a proportion of the net profits (csr_pat). At first, we consider the entire time period and report the results in column (4). Thereafter, we segregate the time period into pre- (i.e., 2000 – 13) and post-2014 (i.e., 2015 – 20) and report the results in columns (5) and (6) respectively. We use the random effects model and do not consider data from 2014 since the legislation was implemented in that year.

		8				
	(1)	(2)	(3)	(4)	(5)	(6)
	The impact of CSR	The impact of CSR	The impact of CSR	The impact of CSR	The impact of CSR	The impact of CSR
	expenses as a	expenses as a	expenses as a	expenses as a	expenses as a	expenses as a
	proportion of net	proportion of net	proportion of net	proportion of net	proportion of net	proportion of net
	profit <i>(csr_pat)</i> on the	profit <i>(csr_pat)</i> on the	profit <i>(csr_pat)</i> on the	profit <i>(csr_pat)</i>	profit <i>(csr_pat)</i>	profit <i>(csr_pat)</i>
	credit ratings of the	credit ratings of the	credit ratings of the	interacted with the	interacted with the	interacted with the
	firms from 2000 –	firms from 2000 –	firms from 2015 -	business group	business group	business group
	20 for all firms,	13 for all firms,	2020 for all firms,	affiliation dummy	affiliation dummy	affiliation dummy
	irrespective of	irrespective of	irrespective of	on the credit ratings	on the credit ratings	on the credit ratings
	affiliation	affiliation	affiliation	of the firms from	of the firms from	of the firms from
				2000 - 20	2000 - 13	2015 - 2020
L.csr_pat	.187***	.343**	.238***	.152***	.253**	.398***
	(.405)	(.587)	(.104)	(.024)	(.302)	(.404)
L.bga	.792***	.079***	1.171***	.019***	.081***	.041***
	(.324)	(.325)	(.112)	(.441)	(.588)	(.121)
L.bga#L.csr_pat				.302***	.563***	.466***
				(.421)	(.855)	(.509)
L.Insales	.105***	.165**	.455***	.112***	.185**	.705***
	(.047)	(.082)	(.094)	(.417)	(.062)	(.406)
L.ROA	6.118***	6.857***	4.361***	7.001***	4.744***	2.618***
	(.551)	(.988)	(.911)	(.583)	(.804)	(.141)
L.lnassets	.489***	.748***	1.149***	.387***	.753***	1.171***
	(.059)	(.099)	(.111)	(.078)	(.071)	(.122)
L.cap_int	2.023***	.248*	2.143**	2.201***	.568*	2.031**
	(.489)	(.089)	(.888)	(.456)	(.045)	(.245)
L.lev	-3.972***	-4.037***	-5.161***	-3.712***	-4.711***	-5.117***
	(.251)	(.448)	(.444)	(.212)	(.481)	(.244)
L.int_cov	0***	0***	0***	0***	0***	0***
	(0)	(0)	(0)	(0)	(0)	(0)
L.margin	0*	0	0**	0*	0	0**
	(0)	(0)	(0)	(0)	(0)	(0)

L.PSII	5.553***	4.273***	7.839***	5.301***	3.311***	6.791***
	(.348)	(.546)	(.728)	(.418)	(.601)	(.312)
L.aud_d	1.235***	1.267***	.781***	1.345***	1.786***	1.643***
	(.112)	(.215)	(.185)	(.211)	(.125)	(.015)
Observations	7,603	3,202	3,754	7,603	3,202	3,754
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R ²	.314	.361	.376	.468	.575	.542

Standard errors are in parentheses *** p < .01, ** p < .05, * p < .1The credit ratings are converted to an ordinal scale, ranging from 0 (NM) to 23 (AAA+). The number of observations vary depending on the time period and the nature of the firms considered in each model.

Table 2.5: OLS results showing the impact of the different components of CSR engagement on credit ratings

Ordinary least squares (OLS) regression results showing the impact of the three different components of CSR expenses as a proportion of net profit (PAT), on the credit ratings of the firms. The three components of CSR expenses are donations (don), social & community development expenses (soccom) and finally, pollution & environment related expenses (env). The proportion of donations to the net profits is measured as don/PAT and is represented by the variable don_pat. The same for social and community development expenses is calculated as socom/PAT, represented by the variable soccom_pat. The same for pollution and environment related expenses is calculated as env/PAT, represented by the variable env_pat. Thereafter, the components are interacted with the business group dummy (bga) and the results are presented in table 2.4. The impacts of the three components are measured over the entire time period, i.e., from 2000 - 20 in the baseline model. The impacts of the donations (don_pat), the social & community development related expenses (soccom_pat) and the pollution & environment related expenses (env_pat) as proportions to net profits on the credit ratings of the firms, interacted with the business group affiliation dummy (bga) are presented in columns (1), (4) and (7) respectively. We then proceed to split the time period into pre- and post-mandate eras, i.e., from 2000 - 13 and 2015 - 20. Columns (2), (5) and (8) report the impacts of the components of CSR on the credit ratings of firms in the pre-mandate era, while columns (3), (6) and (9) report the same for the post-mandate era. We first apply the random effects model to measure the impacts and thereafter, use the fixed effects model to do the same. We report that the signs of the coefficients are identical for both random and fixed effects models, indicating that the CSR expenses positively influence the credit ratings and the same can be stated for its components as well. The control variables, though not presented in table 2.4, retain their signs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	The impact	The impact	The impact	The impact	The impact	The impact	The impact	The impact	The impact
	of	of	of	of social and	of social and	of social and	of pollution	of pollution	of pollution
	donations	donations	donations	community	community	community	and	and	and
	as a	as a	as a	development	development	development	environment	environment	environment
	proportion	proportion	proportion	expenses as a	expenses as a	expenses as a	related	related	related
	of net	of net	of net	proportion of	proportion of	proportion of	expenses as a	expenses as a	expenses as a
	profit	profit	profit	net profit	net profit	net profit	proportion	proportion	proportion
	(don_pat)	(don_pat)	(don_pat)	(soccom_pat)	(soccom_pat)	(soccom_pat)	of net profit	of net profit	of net profit
	interacted	interacted	interacted	interacted	interacted	interacted	(env_pat)	(env_pat)	(env_pat)
Random Effects	with the	with the	with the	with the	with the	with the	interacted	interacted	interacted
models	business	business	business	business	business	business	with the	with the	with the
	group	group	group	group	group	group	business	business	business
	affiliation	affiliation	affiliation	affiliation	affiliation	affiliation	group	group	group
	dummy	dummy	dummy	dummy <i>(bga)</i> ,	dummy <i>(bga)</i> ,	dummy <i>(bga)</i> ,	affiliation	affiliation	affiliation
	<i>(bga)</i> , on	<i>(bga)</i> , on	<i>(bga)</i> , on	on the credit	on the credit	on the credit	dummy <i>(bga)</i> ,	dummy <i>(bga)</i> ,	dummy <i>(bga)</i> ,
	the credit	the credit	the credit	ratings of the	ratings of the	ratings of the	on the credit	on the credit	on the credit
	ratings of	ratings of	ratings of	firms from	firms from	firms from	ratings of the	ratings of the	ratings of the
	the firms	the firms	the firms	2000 - 20	2000 - 13	2015 - 20	firms from	firms from	firms from
	from 2000	from 2000	from 2015				2000 - 20	2000 - 13	2015 - 20
	- 20	- 13	- 20						
L.csr_pat	.370**	.378**	.362***	.389**	.380**	.474**	.369***	.372***	.472***
	(.146)	(.039)	(.164)	(.189)	(.193)	(.439)	(.113)	(.198)	(.133)
L.bga	.754***	.344***	.326**	.830**	.380***	.316***	.571***	.536***	.682***

	(.808)	(.372)	(.266)	(.802)	(.376)	(.255)	(.807)	(.372)	(.265)
L.bga#L.csr_pat	.426***	.410**	.385***	.488***	.734**	.507***	.538**	.846**	.833***
	(.132)	(.397)	(.719)	(.294)	(.585)	(.483)	(.253)	(.325)	(.241)
L.don_pat	.812***	.559**	.638**						
	(.260)	(.488)	(.526)						
L.bga#L.don_pat	3.505**	4.067***	1.323**						
	(.140)	(.845)	(.739)						
L.soccom_pat				1.112**	1.512**	1.033**			
				(.250)	(.686)	(.515)			
L.bga#L.soccom_pat				1.217**	1.458*	1.778***			
				(.914)	(.258)	(.291)			
L.env_pat							.662**	.315**	1.484***
							(.580)	(.606)	(.602)
L.bga#L.env_pat							.266***	2.571**	3.966**
							(.553)	(.853)	(.608)
Fixed Effects m	odels								
L.csr_pat	.297**	.076***	.738**	.338**	.398***	.518**	.268***	.294**	.471***
	(.315)	(.495)	(.325)	(.454)	(.306)	(.488)	(.255)	(.323)	(.291)
L.bga#L.csr_pat	.929***	.078***	8.465*	.048**	1.727***	.545*	.094***	.636**	.445***
	(.299)	(.572)	(.869)	(.455)	(.245)	(.488)	(.255)	(.558)	(.290)
L.don_pat	.286**	.302***	1.465**						
	(.636)	(.615)	(.744)						
L.bga#L.don_pat	10.919***	69.244**	9.229**						
	(.331)	(1.784)	(2.909)						
L.soccom_pat				1.071***	1.463***	1.208***			
				(.604)	(.362)	(.742)			
L.bga#L.soccom_pat				12.513**	15.286***	21.131***			
				(5.526)	(6.248)	(5.530)			
L.env_pat							.537***	.348**	2.029***
							(.696)	(.562)	(1.458)
L.bga#L.env_pat							3.222**	6.835***	5.725***
							(1.383)	(1.874)	(2.101)
Observations	7,603	3,202	3,754	7,603	3,202	3,754	7,603	3,202	3,754

Standard errors are in parentheses. *** p < .01, ** p < .05, * p < .1. The credit ratings are converted to an ordinal scale, ranging from 0 (NM) to 23 (AAA+). The number of observations vary depending on the time period and the nature of the firms considered in each model. The control variables retain their symbols from tables (3) and (4) and hence are not mentioned here.

Table 2.6: Fixed effects OLS results showing the impact of CSR engagement on credit ratings of the manufacturing and nonmanufacturing firms

Ordinary least squares (OLS) regression (fixed effects models) results showing the impact of the CSR expenses, along with its three different components expenses as proportions of net profits (PAT), on the credit ratings of the manufacturing and non-manufacturing firms. The three components of CSR expenses are donations (don), social & community development expenses (soccom) and finally, pollution & environment related expenses (env). The proportion of donations to the net profits is measured as don/PAT and is represented by the variable *don_pat*. The same for social and community development expenses is calculated as soccom/PAT, represented by the variable *soccom_pat*. The same for pollution and environment related expenses is calculated by env/PAT, represented by the variable *soccom_pat*. The same for pollution and environment related expenses is calculated by env/PAT, represented by the variable *env_pat*. The impacts of the three components are measured over the entire time period (i.e., 2000 - 20) in the baseline model. Thereafter, the time period is segregated into preand post-mandate, i.e., from 2000 - 13 and 2015 - 20. The impacts of the CSR expenses and its three components as proportions of the net income during 2000 - 20, 2000 - 13 and 2015 - 20 are presented in columns (1), (2) and (3) respectively for the manufacturing firms. The results of the same analyses for the non-manufacturing firms are presented in columns (4), (5) and (6) respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	The impact of CSR					
	expenses and its					
	components as					
	proportions of net					
	profit (csr_pat,					
	don_pat,	don_pat,	don_pat,	don_pat,	don_pat,	don_pat,
	soccom_pat &					
	env_pat) on the					
	credit ratings of the					
	manufacturing firms,	manufacturing firms,	manufacturing firms,	non-manufacturing	non-manufacturing	non-manufacturing
	interacted with the	interacted with the	interacted with the	firms, interacted	firms, interacted	firms, interacted
	business group	business group	business group	with the business	with the business	with the business
	affiliation (bga)	affiliation (bga)	affiliation (bga)	group affiliation	group affiliation	group affiliation
	dummy for the	dummy for the	dummy for the	(bga) dummy for the	(bga) dummy for the	(bga) dummy for the
	period 2000 – 20	period 2000 – 13	period 2015 – 20	period 2000 – 20	period 2000 – 13	period 2015 – 20
L.csr_pat	.446**	.515*	.148**	.571*	.341**	.763*
	(.164)	(.271)	(.149)	(.389)	(.399)	(.400)
L.bga#L.csr_pat	2.734**	3.454***	2.383**	1.631**	1.946*	1.735*
	(1.065)	(1.076)	(1.580)	(.388)	(1.641)	(.400)
L.don_pat	.335**	.221**	.624**	.639**	.395***	.917***
	(.307)	(.182)	(.462)	(.684)	(.446)	(.887)
L.bga#L.don_pat	5.910***	5.504***	5.334***	1.712**	1.896*	1.948**
	(1.781)	(1.907)	(2.034)	(.684)	(1.638)	(.886)

L.soccom_pat	1.117***	2.747**	.947***	.594***	.331***	.849**
	(.207)	(1.611)	(.206)	(.387)	(.124)	(.394)
L.bga#L.soccom_pat	2.906**	3.215***	2.715***	1.412**	1.452*	1.569***
	(1.588)	(1.625)	(.919)	(.072)	(1.047)	(1.427)
L.env_pat	2.636***	.981**	3.771*	1.648***	1.957*	4.781***
	(.531)	(.437)	(2.089)	(.377)	(1.025)	(.601)
L.bga#L.env_pat	3.041***	2.867***	3.835***	2.011***	2.604***	3.554***
	(1.089)	(1.169)	(1.415)	(.248)	(1.713)	(1.876)
Observations	3,889	1,727	1,833	3,714	1,475	1,921
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	.524	.435	.376	.457	.504	.482

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

The credit ratings are converted to an ordinal scale, ranging from 0 (NM) to 23 (AAA+). The number of observations vary depending on the time period and the nature of the firms considered in each model. The control variables retain their symbols from tables (3) and (4) and hence are not mentioned here.

Table 2.7: 2-step Heckman correction for sample selection bias

The 2-step Heckman correction for sample selection results show the selection bias for the proportion of CSR expenses to the net profit of a firm, calculated as CSR/PAT and represented by *csr_pat*. In columns (1) and (2), we report the selection bias tests in comparison to the firms with CSR expenses but without any debt. The Inverse Mills Ratio, i.e., lambda, is presented in the last row of the table and is statistically insignificant, implying that there is no selection bias in our study.

	First-step	Second-step
I est pat	(<i>1)</i>	(<i>2)</i>
Lesi_pat	(021)	(130)
I boa	198***	1 645***
L.Uga	(119)	(068)
I bga#I csr pat	499*	401**
L.ogan L.csi_pat	(525)	(063)
Linsales	190***	603***
Linisaids	(008)	(073)
LROA	172**	6.912***
Litton	(076)	(500)
Linassets	.127***	.993***
	(010)	(.053)
L.cap int	.754***	2.200***
I - I	(.096)	(.509)
L.lev	057***	-4.548***
	(.012)	(.253)
L.int_cov	.012**	.145***
	(.001)	(.024)
L.margin	.048*	.785***
Ũ	(.039)	(.047)
L.PSII	.192***	5.382***
	(.063)	(.316)
L.aud_d	.211***	1.553***
	(.024)	(.121)
L.pat	.026***	
	(.068)	
L.pbit	.045*	
	(.002)	
L.pat_sales	.002***	
	(.003)	
L.pat_total_assets	.011*	
	(.001)	
L.pbit_sales	.014*	
	(.003)	
L.pbit_total_assets	.126**	
	(.113)	

/mills: lambda	.380
	(.442)
Observations	18,704

Standard errors are in parentheses

*** p < .01, ** p < .05, * p < .1The credit ratings are converted to an ordinal scale, ranging from 0 (NM) to 23 (AAA+). The number of observations vary depending on the time period and the nature of the firms considered in each model.

as a proportion of net income on the credit ratings of firms. We select the one-year lagged value as the instrument and			
report the results. The results suggest the	(1)	(2)	
	First stage	Second stage	
L2.csr pat	3.492***	0	
-1	(.918)		
L.csr_pat	3.157**	.436*	
- 1	(1.045)	(.237)	
L.bga	1.703***	.599**	
0	(.717)	(.096)	
L.bga#L.csr_pat	1.664***	.223**	
0 -1	(.531)	(.038)	
L.Insales	.122*	.216**	
	(.494)	(.097)	
L.lnassets	.689*	.134*	
	(1.040)	(.111)	
L.ROA	3.159*	4.147***	
	(1.283)	(1.598)	
L.cap_int	6.237*	1.981**	
	(2.026)	(.859)	
L.lev	-3.052*	-3.854***	
	(6.625)	(.511)	
L.int_cov	.325*	.028***	
	(.017)	(.003)	
L.margin	.984*	.691***	
	(.324)	(.254)	
L.PSII	6.761*	7.026***	
	(4.163)	(.763)	
L.aud_d	3.027**	1.492***	
	(1.783)	(.194)	
Constant	4.679	3.129***	
	(2.941)	(1.084)	
Industry effects	Yes	Yes	
Year effects	Yes	Yes	
Observations	7,603	7,603	

Table 2.8: IV-2SLS regression results showing the impact of CSR engagement on credit ratings

Instrumental variable Two Stage Least Squares (IV-2SLS) regression analysis results showing the effect of CSR expenses

Standard errors are in parentheses

****p*<.01, ***p*<.05, **p*<.1

The credit ratings are converted to an ordinal scale, ranging from 0 (NM) to 23 (AAA+). The number of observations vary depending on the time period and the nature of the firms considered in each model.

List of figures

Figure 2.1: The interrelationship between the stakeholder theory and CSR



Source: Corporate Social Responsibility and Stakeholder Theory: Learning From Each Other (Freeman and Dmytriyev, 2017)

Figure 2.2: The interrelationship between risk management theory and CSR



Source: CSR, Risk Management Practices, and Performance Outcomes: An Empirical Investigation of Firms in Different Industries (Singh and Hong, 2023)





Source: Firm resources & sustained competitive advantage (Barney, 1991)

Figure 2.4: The interlocking of the four pillars of CSR with ESG criteria lists

		Environmental	Social	Governance
~	Environmental	Biodiversity Climate change Innovation Pollution & resources Water usage	Animal welfare	
The Four Pillars of CSF	Workplace		Customer responsibility Health & safety Human rights Labour standards Privacy & data security Product responsibility	Anti-corruption Board independence Corporate governance Diversity & inclusion Ethics Ownership Tax transparency
	Community		Community Health & safety Human rights	
	Philanthropy		Philanthropy	
	:			CSR strategy Risk management

Source : https://csr-accreditation.co.uk/esg/



Figure 2.5: Comparison between CSR engagement by business group affiliated and independent standalone firms

Figure 2.5 shows the annual CSR expenses as a proportion to the net profits (*csr_pat*) and the annual regression coefficient of csr_pat interacted with the business group affiliation (*bga*) dummy. The red line indicates the former, while the blue stacked columns represent the regression coefficients.

Figure 2.6: Predicted marginal effects of CSR engagement by business group affiliated and independent standalone firms



Figure 2.6 shows the comparison results of the marginal effects of the CSR expenses as a proportion of the net profits on the credit ratings of the business group affiliated firms, represented by bga=1 and standalone firms, represented by bga=0. In all our models, a lag of one year is incorporated, which explains the business group affiliation dummy (bga) preceded by L.

Appendices

Credit rating	Rating score
AAA+	23
AAA	22
AAA-	21
AA+	20
AA	19
AA-	18
A+	17
А	16
A-	15
BBB+	14
BBB	13
BBB-	12
BB+	11
BB	10
BB-	9
B+	8
В	7
B-	6
C+	5
С	4
C-	3
D	2
NM	1

Appendix 2.2: Description of regression variables and sources

Variable	Description	Source		
Dependent va	Dependent variable			
mean_rating	It represents the credit ratings of the long-term debt instruments. Its calculation involves multiple steps. First, the credit ratings are scored from 1 meaning NM (Not Meaningful) to 23 denoting AAA+ (Highest Safety), as explained in Appendix 2.1. Since firms issue debts multiple times in a year, the ratings vary from one instrument to the other. Hence, in the next step, the average annual credit rating is calculated considering the credit ratings of all long-term debts issued by a firm in a year.	Our calculation from Prowess data.		
Explanatory CSR variables				
csr_pat	It is the proportion of the net profit of the current year that a firm devotes towards CSR activities.	Our calculation from Prowess data.		
don_pat	It is the proportion of the net profit of the current year that a firm spends as philanthropic donations.	Our calculation from Prowess data.		
soccom_pat	It is the proportion of the net profit of the current year that a firm spends towards social and community development.	Our calculation from Prowess data.		
env_pat	It is the proportion of the net profit of the current year that a firm directs towards lowering pollution and improving the environment.	Our calculation from Prowess data.		

Control variables			
Insales	It is the natural logarithm of the annual sales of a firm. The total sales are reported in million INR and subsequently, the logarithms are calculated.	Our calculation from Prowess data.	
lnassets	It is the natural logarithm of the total assets of a firm. The total assets have been reported in million INR and subsequently, the logarithms have been calculated.	Our calculation from Prowess data.	
int_cov	It is the interest coverage ratio of a firm.	Prowess. Taken as reported.	
ROA	It represents the return on assets of a firm.	Prowess. Taken as reported.	
cap_int	It represents the capital intensity of the business and is not reported. Its calculation involves finding out the gross tangible assets, which is done by deducting the gross intangible assets from the gross fixed assets, which are taken as reported. The gross tangible assets are then divided by the total assets to derive the capital intensity. The formula used is Gross fixed assets – Gross intangible assets = Gross tangible assets; Gross tangible assets / total assets = capital intensity.	Our calculation from Prowess data.	
lev	It represents the degree of leverage (DOL) of a firm and is not reported. Hence, it has been calculated by dividing the long-term borrowings by the total assets of the firm. The formula used is Long-term borrowings / Total assets.	Our calculation from Prowess data.	
PSII	It represents the proportion of shares held by institutional investors and is not reported. This is derived by deducting the proportion of shares held by non-institutional investors from 1. The formula used is (1 – Proportion of shares held by non-institutional investors) = Proportion of Shares held by Institutional Investors.	Our calculation from Prowess data.	
margin	It represents the operating margin of a firm and is not reported. It has been calculated by dividing operating profit by sales. The formula used is Operating profit / Sales.	Our calculation from Prowess data.	
aud_d	It is a binary variable, which takes either 0 or 1. The value of 1 is assigned if the firm is audited either by any of the Big 4 auditing and consulting firms or their associates in the current period. If the firm is audited by any other firm, a value of 0 is assigned ¹¹ .	Our calculation from Prowess data.	

¹¹ In India, the Big 4 (Deloitte, PwC, E&Y, KPMG) auditing firms operate on their own and also through their associates, who are expected to have the same impact. At the time of this study, there are 36 associates of the Big 4 auditing firms in India. Hence the variable aud_d is assigned a value 1 if it is audited by either any of the Big 4 or by any of their associates.

bga	It is a binary variable representing the ownership of the firm, assumes the value one (1) if the firm belongs to a business	Our calculation
	group, zero (0) otherwise.	data.
mfr	It is a binary variable representing the nature of the firm, assumes the value one (1) if the firm is involved in manufacturing or production, zero (0) otherwise.	Our calculation from Prowess data.
pat	It is the profit after tax or the net profit of a firm.	Prowess. Taken as reported.
pbit	It is the profit before interest and taxes or the operating profit of a firm.	Prowess. Taken as reported.
pat_sales	It is the ratio of the net profit to the net sales of a firm.	Our calculation from Prowess data.
pat_total assets	It is the ratio of the net profit to the net assets of a firm.	Our calculation from Prowess data.
pbit_sales	It is the ratio of the operating profit to the net sales of a firm.	Our calculation from Prowess data.
pbit_total_assets	It is the ratio of the operating profit to the net assets of a firm.	Our calculation from Prowess data.
Appendix 2.2 presents the descriptions and sources of all the variables in this study. The dependent variable in this study is credit rating <i>(mean_rating)</i> , while the independent variable is the CSR expenses as a proportion of net profits <i>(csr_pat)</i> of a firm. The sample comprises of 7,603 firm–year observations over the period 2000 – 2020.		

Chapter Three

Exclusive CSR Announcements and Capital Market Reactions

3.1 Introduction

In this study, we use the event study methodology to examine the short-term impact of the exclusive CSR announcements by the corporate houses, on their stock returns and also identify the firm-specific characteristics that explain the investors' reactions to those announcements. Prior to the pandemic, companies declare their participation in the benevolent activities when they make their periodic financial performance public. This resulted in a severe lack of scope to investigate the investors' reaction to the exclusive CSR announcements and consequently, the market reaction to CSR announcements is hitherto unknown. However, at the onset of the pandemic, we witness a drastic change as several companies announce their participation and contribution towards alleviating the grave situation without any reference to their earnings, dividend pay-outs or restructuring. This gives us the opportunity to examine the short-term influences of the exclusive CSR announcements on the stock returns. In addition, we explore the contrasting effects of the CSR announcements on the stocks of the companies, segregated on the basis of the extent to which they are economically impacted by the pandemic. Finally, we examine the moderating impacts of financial distress risk and bankruptcy risk on the relationship between CSR announcement and short-term stock returns.

We conduct this study based on firm-level data from the US market, since such firms exclusively declare their CSR activities focusing on pandemic relief. In the EMEs, companies participate in pandemic relief by simply making monetary donations to the political party in power and do not explore other avenues of benevolence (Rajan, 2021). Therefore, it is not worthwhile to undertake this study in an EME. The firms in the USA, on the other hand, differ substantially in their participation of pandemic relief efforts from their counterparts in the EMEs. The majority of the corporate houses announce their participation towards the pandemic relief efforts and make substantial monetary and non-monetary contributions (Zhang, 2021). In addition, the US firms also explore various channels through which they could participate in pandemic relief efforts and such efforts are primarily centred around their employees and the local community. In addition, such firms also provide funding for vaccine research and also temporarily convert their production factories into medical facilities (McKibbin and Fernando, 2020; Zhang, 2022). The corporate houses make these announcements at the height of the pandemic and only describe their benevolent activities during the pandemic and do not refer to the earnings, nor pay-outs nor restructuring. It is, therefore, interesting to examine the reactions

of the investors to the exclusive CSR announcements and the motivations of a firm to pursue CSR, braving the uncertainties resulting from the unprecedented phenomenon.

Irrespective of the nature of business and the severity of the impact of the pandemic, companies participate in pandemic relief and therefore, it is fascinating to assess the immediate capital market reactions to the exclusive CSR announcements. We make this study exhaustive and consider all the 313 exclusive corporate CSR announcements that are made in the USA in 2020 and study the short-term investor reactions to those announcements. Thereafter, we isolate the firm-specific characteristics that explain the movement of the stocks of the CSR-announcing firms by assessing the moderating impacts of financial constraints risk and bankruptcy risk. Our results suggest that the CSR efforts by the firms which are highly affected by the pandemic, generate substantially higher returns than their less affected counterparts. In particular, the investors react more positively towards the stocks of the firms which have high levels of financial constraints risk and are also highly affected by the pandemic. Considering the moderating impact of the bankruptcy risk, we find that the firms which are closer to bankruptcy, generate more cumulative abnormal returns in the short-term. Here also we find that the firms which are highly affected by the pandemic and are closer to the bankruptcy, gain significantly more than their less affected and financially stronger counterparts.

3.1.1 Motivation

The literature has ample evidence of the attempts explaining the impact of the different kinds of corporate announcements on the short-term stock returns. The corporate announcements regarding mergers and acquisitions (Shaheen, 2006; Rani, Yadav and Jain, 2015; Adnan and Hossain, 2016), dividend pay-outs (Grinblatt, Masulis and Titman, 1984), and restructuring like stock splits (Grinblatt, Masulis and Titman, 1984; Lamoureux and Poon, 1987) dominate the inquiries dealing with their impacts on the stock returns and investor reactions. The event studies related to the CSR initiatives of a firm primarily analyse the market reaction to the inclusion/exclusion of the stock in a sustainability index (Martin Curran and Moran, 2007; Clacher and Hagendorff, 2012), announcement of CSR rankings (Cordeiro and Tewari, 2015) and timing of the CSR announcements (Arya and Zhang, 2009). However, hitherto there is no study on the changes in the stock returns due to CSR announcements, which are made in isolation. In other words, there is a lack of studies which analyse the investors' reactions to the exclusive CSR announcements, i.e., the ones which only describe benevolent initiatives of the firm, without any reference to its earnings, dividends, or restructuring. It is worthwhile,

especially for the companies, to know the impact of the CSR announcements on their stock returns since this is an important consideration while formulating their CSR policies, given the fact that all corporate strategies are aimed at maximizing the shareholders' wealth. The dearth of studies exploring the impact of the CSR announcements on the stock returns has also resulted in a serious lack of understanding of the attributes of the firms which can explain the changes in the stock returns caused by corporate announcements, which are solely centred around the benevolence of the firm.

The pandemic serves as an ideal background for this study due to multiple reasons. First of all, it is during the pandemic that for the first time, companies make exclusive CSR announcements, giving us the perfect opportunity to conduct this study. Second, the pandemic affects all companies across the globe, irrespective of the nature of their business, with varying degrees of severity. Despite the unprecedented and unexpected financial challenges that stifle them, corporate houses pledge large amounts of both monetary and non-monetary assistance towards the various relief efforts to alleviate the hardships that their employees and the members of the local community face. Therefore, isolating and assessing the individual impacts of the firm-specific characteristics on the stock returns is another aspect that is both important and interesting to examine. Finally, it is essential to identify the theory of the firm that best explains the variation in the stock returns caused by the CSR announcements by the firms.

The stakeholder theory suggests that CSR can help a firm, especially during financial duress, by involving its stakeholders and can utilise their support for financial benefits (O'Riordan and Fairbrass, 2008; Fernando and Lawrence, 2014; Ali and Abdelfettah, 2016; Richter and Dow, 2017). In contrast, the agency theory proposes that CSR can be considered as a financial burden on the firm as the funds are being channelized for an objective that is different from financing the profitable business projects, thereby making the firm financially worse off than what it could be without engaging in CSR (Prior, Surroca and Tribó, 2008). Otherwise, CSR may only be a consideration, which is separate from the other business operations without any impact on the financial performance of the firm and would only be an integral factor of the internal structure of the firm and a genuine altruistic behaviour of the firms that can afford to do it (Cooper and Uzun, 2019). It is interesting to recognise which of the conflicting theories of CSR best explains the investors' reactions to the CSR announcements during the pandemic. Moreover, the corporate CSR responses towards the relief efforts of the pandemic comes from almost all industries with varying degrees of acuteness. Therefore, it is interesting to explore

the motivations behind pursuing CSR initiatives at a time when the economic activities of the majority of the firms are adjourned, aggravating their financial performance.

3.1.2 Contribution

This study contributes to the existing literature, and CSR literature in particular, in more ways than one. First, we expand the theories of market efficiency and link them with the exclusive announcements of benevolent activities of the firms. Second, this study also links the theories of market efficiency to the varying degrees of severity of the financial impact of the pandemic. Finally, we contribute to the theories of the market and expand their scope to encompass both financial constraints risk and bankruptcy risk.

Our study has significant insinuations for members of various stratum of the society, including industry professionals, the literature, and policymakers. This study further reinforces the notion that there exists a strong positive association between CSR and financial performance. This strong association is especially important for the firms with high financial constraints risk and the ones which are close to bankruptcy. The corporate managers who are responsible for CSR budgets and processes, can draw useful information particularly at the time when the company is undergoing financial distresses like high financial constraints risk or even bankruptcy risks. From an academic perspective, this study fills a crucial gap in the existing literature concerning CSR and investor reaction. This is the first attempt to measure the influence of the exclusive CSR announcements on the short-term stock returns. More specifically, this study establishes an important link between the investors' reactions to the exclusive CSR announcements, the severity of the impact of the pandemic on firms from different industries, financial constraints risk and bankruptcy risk and explains the rationales behind such behaviour of the stock returns. Since we provide strong evidence of an advantage to the companies for being socially responsible, the regulators can modify the existing rules or even bring about new ones to inspire firms to move towards that direction.

The rest of the chapter is organized as follows. We discuss the relevant literature in section 2 and follow it up with the description of the data in section 3. We discuss the event study research methodology and the various tests that it (i.e., the event study) uses in section 4, and we report the results of our analyses in section 5. Finally, section 6 concludes the chapter.

3.2 Review of Literature

3.2.1 Background

On 11th March 2020, in his opening remarks at the media briefing on the coronavirus, the Director-General of the World Health Organization (WHO), Dr Tedros Adhanom Ghebreyesus declares the covid-19 as a pandemic¹². With the spread of the virus, new information arrives in the financial markets prompting studies covering various aspects of the crisis and its economic impact. It also creates an overall scepticism regarding the established theories of market efficiency and interrogates the investors for underreaction or overreaction to news. The event studies concerning the pandemic predominantly discuss the reaction of the market index to the various announcements regarding lockdowns and the release of information regarding the number of infected and deceased people. However, no study explores the impact of the corporate CSR announcements during the pandemic on their stock returns. In this study, we examine the short-term stock market reactions to the positive news from companies during the pandemic. In this section, we provide a discussion of the relevant theories and also summarise the findings of the major studies done in the area.

3.2.2 Efficient Market Hypothesis (EMH) and the event study methodology

The event study methodology is the appropriate method to assess the short-term impact of new information on the stock returns (Peterson, 1989; Binder, 1998; McWilliams, Siegel and Teoh, 1999; Corrado, 2011) and econometrics literature suggests that the markets need to be at least semi-strong efficient for its application (Kothari and Warner, 2007).

3.2.2.1 Efficient Market Hypothesis (EMH)

An efficient market is one in which the prices of the assets reflect all past and present information, and the prices only react to new information and EMH states that it is not feasible to outperform the markets constantly on a risk-adjusted basis. This is because, markets receive new information at random and therefore, the timings of both upward and downward price movements are unknown, causing the stock returns to move randomly. An important aspect

¹² Source : https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

of the market efficiency theories is that the prices only react to information that the investors do not expect, since otherwise, that piece of information would already be reflected in the price of the securities. Therefore, the main inference of the EMH is that the financial instruments always trade at their fair value, implying that it is an impossible task to sell overvalued stocks at a premium or to buy the undervalued ones at a discount. In a highly efficient market, the investors are better off by adopting a passive investment strategy rather than an active investment strategy, thereby avoiding transaction costs, or paying for information (Fama, 1970).

Fama (1970) suggests three forms of market efficiency, viz., weak form, semi-strong form and strong form, and also defines each form according to the level of information that is reflected in the asset prices. In case a market has weak form of efficiency, the security prices reflect only the past information, and the investors cannot predict the future price changes. Therefore, this form of market efficiency assumes that technical analysis does not tender excess return over the market on a consistent basis. In semi-strong form of efficiency, the security prices reflect all the publicly available information, which includes financial statements and market price data. Evidently, it is an improvement over the weak form, since it suggests that neither technical nor fundamental analyses can provide an advantage over the market. Finally, in case the markets have strong-form efficiency, the security prices reflect all public and private information. Hence, an investor cannot earn excess profit even from inside information. However, this is an extremely unlikely scenario because of the stringent legal prohibitions against insider trading (Fama, 1970).

3.2.2.2 The event study methodology

The event study methodology is a statistical technique to investigate the effect of the announcement of an event of economic significance or any news concerning the structure or value of a firm. The fundamental mechanism of this method is to first define the precise dates of the events and thereafter constructing a measure to assess the economic impact of the events, using the asset prices over short time periods, typically a couple of days. This method is dependent on the assumption that the stock markets are at least semi-strong efficient with respect to reflecting current information and investor expectations (Kothari and Warner, 2007). Applying event study methodology, it is possible to draw reliable inferences regarding the reaction of the markets, investors, and the shareholders to specific economic news and announcements (Bowman, 1983; Peterson, 1989; Harrington and Shrider, 2007).

Using the event study methodology, prior research primarily focuses on the relationship between environmental performance and financial performance. For example, Hamilton (1995) uses the event study methodology to assess the stock market reaction to the Toxics Release Inventory (TRI) pollution information and finds that the existence of a negative relationship between abnormal return and TRI pollution. Klassen and McLaughlin (1996) suggest that strong environmental performance does translate into significant positive abnormal stock returns. Similarly, Konar and Cohen (1997) propose that public announcement of the TRI emissions results in significant negative abnormal stock returns. Lorraine, Collison and Power (2004) submit that there is exists a weak association between the abnormal returns and an announcement of Environmental Agency (EA). While a number of studies explore the influence of environmental performance on the stock returns, only a handful of them use the event study methodology and examine the impact of CSR on shareholders' wealth (Godfrey, Merrill and Hansen, 2009).

Several existing studies explore the impact of various aspects of CSR on stock returns. For example, Arya and Zhang (Arya and Zhang, 2009) study the publication dates of the adoption of revised and updated CSR laws by the firms and find that the early adopters of new CSR initiatives generate lower returns for the shareholders compared to the late adopters, indicating that the shareholders perceive that the CSR schemes during the early phase of institutional reforms reflect adverse information concerning the general conditions of the firm. On the other hand, Reddy and Gordon (2010), propose that publication of reports covering the CSR efforts of a firm can generate positive abnormal returns. Similarly, Cordeiro and Tewari (2015) consider the publication of the position of the firm in the Newsweek Green Rankings and find that the investors react positively to the firms which are highly placed in the ranks, which suggests that the investors appreciate the firms which pursue sustainable business practices. Even though Cheung (Kong Cheung, 2011) and Oberndorfer et al. (2011) study the impact of inclusion and exclusion of a firm on a sustainability index, they offer conflicting results. While Cheung (Kong Cheung, 2011) finds a positive association between inclusion of a firm on a sustainability index, Oberndorfer et al. (2011) find a negative impact of the same event on the stock returns. Such contradictory findings from similar events reveal a weakness of the event study methodology (McWilliams, 1999). The event study is highly sensitive to even minor variations in research design and implementation and therefore, studies exploring influences between similar variables (for example, the impact of news regarding inclusion or exclusion of a company's stock in a sustainability index) may produce conflicting results. McWilliams
(1999) further cautions against drawing erroneous and unreliable inferences from the significance of events.

The event study method is primarily based on daily observations and typically reflects the short-term market reactions towards new information. This entails that the significant impact on the stock returns obtained through this methodology, declines, at least theoretically, over time (Eckbo, Maksimovic and Williams, 1990; Woolridge and Snow, 1990; Wooldridge, 2005; Kothari and Warner, 2007; Brooks, 2008). We measure the short-term impact of the CSR announcements and thereafter, proceed to conduct the second-stage cross-section regression analysis in order to study the relationship between the short-term stock returns, the different channels of corporate participation in alleviation of the pandemic, the difference in the severity of impact of the pandemic and finally, the financial constraints and bankruptcy risks of the firms. We follow Ziegler, Schröder and Rennings (2007) and apply the cross-sectional regression analysis of the CSR variables on the short-term stock returns of the firms. A further advantage of incorporating cross-sectional regression analysis in our research is that the model accurately specifies the potential determinants of firm performance, for instance, investment in research and development (McWilliams and Siegel, 2001). Congruent with the studies using this methodology, we use the eventstudy2 (Kaspereit, 2015) command in Stata to estimate the cumulative abnormal returns over the short event windows.

3.2.3 Corporate announcements & CSR during the pandemic

With the spread of the coronavirus pandemic, many companies come forward and complement the governments' efforts to combat the covid-19 outbreak. Companies like Microsoft, Twitter, Berkshire Hathaway, etc. pledge billions of dollars towards supporting the local community, employees, medical care workers, food banks, and also provide funding towards the research to develop the vaccine¹³. In this sub-section, we highlight some of the most prominent corporate announcements towards the pandemic relief and the dates that we consider as the event dates in our study.

¹³ Source: Billionaire Tracker: Actions The World's Wealthiest Are Taking In Response To The Coronavirus Pandemic (https://www.forbes.com/sites/hayleycuccinello/2020/03/17/billionaire-tracker-covid-19/)

Baxter International Inc., a global medical products company, publish its first reaction to the pandemic on 17 March 2020. It highlights product supply, product donations, personal protection equipment (PPE), critical support for healthcare workers, etc. However, it does not specify any monetary donation. The company provides an update on 2 April 2020 and declare that through the Baxter International Foundation, the company is providing financial support to multiple groups which are addressing the needs of patients, health workers and communities at local, national, and global levels. The company, however, does not specify the amount of monetary donation. A few days later, on 17th of the same month, the company makes a press release that it is making a monetary donation of more than \$2 million to various humanitarian relief organizations, which are working on the front lines of the pandemic globally. This includes a \$1 million grant to Save the Children, who is working around the world to provide supplies, training, and information to prevent the pandemic, in addition to comprehensive efforts to strengthen communities and keep children and families safe—supporting food security, helping children continue to learn, and more.

It also includes support for World Vision's Covid-19 Global Emergency Response, and geographic-specific support to Direct Relief in Europe, Project Hope in Asia, Americares in Latin America and the iBio Institute and local United Way chapters in the Chicagoland area. These latest donations build on initial grants to the global United Nations Foundation/WHO Covid-19 Solidarity Response Fund, IsraAID and Partners in Health. Finally, the Foundation is supporting its pre-existing grantee base by providing options to reallocate and/or extend funds as appropriate during this time. In view of the above, we take 17 April 2020 as the event date, since that day marks the announcement of the monetary donation of more than \$2 million, towards the pandemic. In a similar vein, on 18 March, Boston Beer's Samuel Adams and The Greg Hill Foundation, launch the Restaurant Strong Fund to support the personnel involved in the hospitality sector in the Boston area. Even though the fund is very successful, having raised nearly \$500,000 within the first week of its inception, the company expands its operations to 20 total states and donates over \$2 million on 3 April 2020. So, for our research, we consider 3 April 2020 as the event date for Boston Beers.

On the other hand, companies like Boston Scientific do not have a press release for their donations towards Covid-19. The company donates more than \$18 million in aid through monetary and supply donations and by volunteering and providing expertise and resources in engineering and manufacturing (page 6 in the 2020 CSR Performance Report). The company

declares all this information in its 2020 CSR Performance Report, which is released on 15 April 2021. However, the first time that the company mentions the impact of the pandemic on its earnings and the actions that it takes to combat it, is made during the announcement of the first quarter financial results on 29 April 2020. Therefore, we consider 29 April 2020 as the event date. We extend a similar treatment to the Camden Property Trust, which creates a \$5 million fund to extend support to its residents who lose their jobs due to the pandemic, on 3 April. A week later, on 16 April, it establishes a \$1 million employee fund for coronavirus related expenses. Therefore, we consider the first announcement made on 3 April as the event date.

In response to the pandemic, on 16 March, Campbell announces a donation of \$1 million in cash and food to food banks and local pantries in their hometowns. A few days later, on 27 March, the company follows it up by an increase of the initial donation by even more. The date of the first announcement, i.e., 16 March, is taken as the event date. Chevron commits more than \$12 million towards covid-19 and as the first step, donates \$500,000 on 18 February 2020, as reported by the US Chamber of Commerce. The company, of course, does not stop at that and proceed to support other relief efforts as well. Hence, as the event date, 18 February 2020 is considered, even though it is days ahead of the declaration of the outbreak of the covid-19 as a pandemic.

Similarly, on 3 March 2020 Cigna Foundation declares that it intends to donate \$300,000 to help those affected by the coronavirus. Despite the fact that the company makes the declaration days ahead before it was labelled as a pandemic, 3 March is considered as the event date. On 18 March, Chipotle Mexican Grill announces its partnership with Uber Eats to provide free delivery on its orders and we consider 18 March 2020 as the event date. Energy company, Con Edison, presents an interesting case. On 17 March, right after the declaration of the pandemic, the company announces its responses, without specifying the monetary amount. However, it makes the monetary donation of more than \$3.5 million, on 4 May 2020 and hence, we take 4 May as the event date. The Cummins Foundation donates a total of more than \$2 million towards covid-19 and the first announcement is made on 8 April, when it announces a donation of half a million. The company follow it up with more announcements, but since the first announcement is made on 8 April, we take that as the event date.

Dell Technologies, the IT giant, donates \$4 million on 26 March and on 8 April 2020, commits more than \$100 million towards the pandemic relief effort. Therefore, in this case, we consider 8 April as the event date. On 24 March 2020, Elanco Animal Health outlines its response to

covid-19, but makes a financial donation of more than \$700,000 on 27 March. Hence, we take 27 March 2020 as the event date. One of the largest logistics companies in the world, FedEx, does not make any monetary contribution towards the pandemic relief efforts, primarily because it provides unparalleled logistic support in delivering the vaccines to all corners of the world. However, on 26 March 2020, it announces a grant of \$1 million for small businesses, prompting us to take that day as the event date. On 6 May 2020, Fortinet Inc., declares a donation of \$2 million towards covid-19 relief efforts and therefore, we take 6 May as the event date.

General Mills makes its first announcement of a donation of \$5 million towards the pandemic on 1 April 2020. The firm then follows it up with a series of more donation announcements and expands its scope as well as the fund corpus to more than \$14 million, as of 31 October 2020. We consider 1 April 2020 as the event date since that is the date of the first announcement by the company. Graphic Packaging declares its donation on 21 April 2020, and therefore, we consider 21 April 2020 as the event date. On 2 April 2020, Herbalife Nutrition announces that \$333,000 of the \$1 million pledged to the World Food Program USA's Emergency Response Funds is to be directed towards providing relief for the coronavirus relief efforts. Therefore, we take the allocated amount as the donation and 2 April 2020 as the event date. The Hershey Company commits over \$2 million towards the pandemic relief efforts and the first announcement towards that effect is made on 24 April 2020, when the company commits \$1 million. Needless to say, we take 24 April 2020 as the event date and \$1 million as the donation amount.

Hillrom donates more than \$2 million for the covid-19 affected patients in China in January. On 19 March 2020, the firm announces a further donation of \$3 million in medical devices for US hospitals, along with \$50,000 donation to the American Nurses Foundation. This brings the total amount of donation to \$5.50 million and hence, we take 19 March 2020 as the event date. Humana Foundation donates \$500,000 on 17 March 2020 and on 30 April 2020, commits a further \$50 million towards the pandemic relief efforts. We consider the first date, i.e., 17 March as the event date. Intercontinental Exchange (ICE) announces its covid-19 response on 17 March and an update the very next day. Finally, the company commits a monetary donation amounting to \$10 million on 3 April 2020, which we consider as the event date. Intel, the IT giant, announces a donation of \$1 million to the International Red Cross in January 2020 towards covid-19 relief, much before the WHO declares it as a pandemic. Post the

announcement by the WHO, on 23 March, Intel donates more than 1 million PPE kits. On 26 March, the firm increased its donations by \$6 million, taking the total to around \$10 million. Finally, on 7 April, Intel commits \$50 million, and we take 26 March 2020 as the event date since that is the day that the firm makes a monetary donation.

Kimberly-Clark announces its initial covid-19 response on 6 April with a donation of more than \$8 million through its foundation. It follows up with an additional donation of another \$500,000 on 22 April 2020 and as the event date, we take 6 April 2020. Marathon Petroleum donates \$1 million towards community relief on 9 April 2020 and that day is considered as the event date. Right at the onset of the pandemic on 10 March 2020, MasterCard (MC) launches an initiative to speed development and access vaccines for the covid-19, along with commitments from Bill & Melinda Gates Foundation and Wellcome, each contributing upto \$50 million, while MasterCard commits \$25 million. On 30 March, MC awards \$20 million initial grants to find clinical trials and on 7 April 2020, it commits \$250 million towards the pandemic relief. As event date, however, we take 10 March 2020, since that is the first day of the announcement towards pandemic relief. Well before the WHO declares the pandemic, on 10 February 2020, Medtronic Foundation donates \$1.20 million towards the covid-19 relief efforts. The company followed it up with an additional donation of \$10 million on 25 March 2020. Consistent with our previous considerations as the event date, we consider 10 February as the event date.

Nike, the sports apparel giant, makes its first donation on 18 March 2020, amounting to more than \$10 million. The firm then releases updates on 3 April (\$17 million), 4 May (\$25 million), & 3 June (\$30 million). As event date, we take 18 March 2020, since that day marks the first donation by the firm. On 23 March 2020, Palo Alto Networks announces that it would join the Pledge 1% in the latter's Covid-19 Coronavirus Regional Response Fund, wherein the Bay Area companies come together to distribute \$22 million in funding in response to the pandemic and therefore, we consider that as the event date. Duluth-based financial services company, Primerica, donates \$100,000 on 12 May 2020, which is taken as the event date. Insurance major, Progressive Insurance, provides premium relief to its customers amounting to more than \$1 billion and makes the announcement on 8 April 2020. Exactly, one month later, on 8 May 2020, the firm makes a monetary donation of \$8 million, and we take 8 May 2020 as the event date.

Fashion brand PVH Corporation, donates \$1 million on 31 March 2020 and an additional \$1 million on 16 April 2020, taking the total amount of donation to \$2 million and consistent with

our approach, we take 31 March 2020 as the event date. S&P Global Foundation announces a donation of \$2 million on 24 March 2020 and follows it up with another \$2 million on 14 April 2020, bringing the total donation amount to \$4 million. We take 24 March 2020 as the event date, since that date marks the first donation announcement made by the company. Santander US announces covid-19 relief efforts with setting up of a \$25 million fund on 23 March 2020. On 27 April 2020, it mobilises \$100 million to help combat the pandemic and as event date, we take 23 March 2020. Sempra Energy, through its foundation, donates \$1 million on 23 March 2020 to wards the pandemic relief efforts. However, by 15 June, the total amount of its relief aid reaches \$12 million. As event date, however, we take 23 March 2020 to ensure consistency in our study. Pittsburgh-based health insurer Highmark announces grants totalling \$2 million on 2 April 2020 and the very next day, makes two further donations amounting to \$507,000. As the event date, we consider 2 April 2020. Truist Financial Corporation pledges \$25 million towards the pandemic relief on 17 March 2020 and doubles its commitments to \$50 million on 20 May 2020 and hence, as event date, we take 17 March 2020.

In a nutshell, we collect the data for all the companies from their press releases listed in their respective websites and in order to ensure the authenticity of the data, we verify all the details using the Bloomberg database. A preliminary analysis of the pandemic relief announcements shows that multiple companies donate more than once towards the cause, and we maintain consistency by considering the first date of their announcements as the event dates for all the companies in our sample, which consists of 313 companies from thirty-two industries.

Companies engage with CSR even in a crisis because of the reputation insurance that the latter provides by acting as a reservoir of goodwill that insulates the firm from the negative effects of a crisis (Janssen, Sen and Bhattacharya, 2015). The social capital and trust that a firm builds up through its past CSR engagement, help it overcome a crisis, as seen in case of many firms that maintain their CSR activities during the financial crisis of 2008 (Lins, Servaes and Tamayo, 2017; Berkman, Li and Lu, 2020). The CSR activities of a firm generate social capital and trust and also serve as a good measure of its social capital (Degli Antoni and Sacconi, 2011). It is argued that if a firm's social capital helps develop trust and cooperation with its stakeholders, it benefits when being responsible is very valuable, such as in a crisis (Lins, Servaes and Tamayo, 2017). The firms with high CSR engagement experience higher profitability, growth, and revenues per employee in comparison to the firms with low CSR engagement. This suggests that the trust that a firm creates by investing in social capital over

the years between itself and its stakeholders including its investors, bears fruit when the general level of trust in companies and the markets experience a negative shock (Lins, Servaes and Tamayo, 2017).

A firm's genuine and authentic CSR builds strong camaraderie among its customers, and the general public, since such steps result in strong expectations from the leading brands, especially their preferred brands, during the pandemic concerning their efforts to combat the spread of the virus. The consumers feel proud of their brands when the latter donates money and equipment during the pandemic and the resultant bond between the consumer and the brand is more meaningful and lasting than the ones that are created during peaceful times. Therefore, the pandemic offers great opportunities for the firms to actively involve with their CSR strategies and programs (He and Harris, 2020; Bae *et al.*, 2021) and we witness strong CSR engagement during the pandemic, are greeted with a positive reaction from the investors. In other words, we hypothesize that there exists a positive relationship between CSR performance and the short-term investor reaction. Formally, we state our hypothesis as:

H₁: A strong CSR performance during the pandemic results in significantly higher shareholder returns.

In addition, given the fact that the pandemic has different impacts on industries, we also hypothesize that the severity of the impact of the pandemic moderates the relationship between CSR and the stock market returns, expressed by the cumulative abnormal returns (CAR). This is because the effect of CSR on firm performance is contingent on economic conditions and business environments (Lee, Singal and Kang, 2013). Given the fact that the pandemic affects different industries in various degrees (He *et al.*, 2020; Soltanisehat, Barker and González, 2023) the continuation of discretionary expenses like CSR by the firms remain a challenge especially for those from industries which are highly affected by the pandemic (Schwartz and Kay, 2023). Hence, we postulate that the severity of the pandemic moderates the relationship between CSR and stock returns. Formally, we state our hypothesis as:

H₂: The severity of impact of the pandemic moderates the CSR-CAR relationship.

3.2.5 CSR & financial constraints risk

Subsequent to the widespread detection of covid-19 in the US in March 2020, experts' estimation of millions of cases in the US in the near future comes to fruition. In the wake of the reaction to the rapid spread of the disease, the stay-at-home directives which are implemented throughout the country, lead many businesses to closure and terminate their employees. The shutting down of numerous businesses leads to a spike in the unemployment rate, which touches 14.7% in April 2020, which is higher than any other point in time since the Great Depression (Trueblood et al., 2020). A firm's perceptions regarding the severity of the impact of an event (for example, a pandemic) on its cash flows and eventually on its financial performance. This has serious implications on the behaviour of the firm, especially on its perceptions regarding its access to external finance, aggravating its financial constraints. Financial constraints arise whenever there is an p between the investors and the firms (Banerjee, Gupta and Mudalige, 2019; Chen and Yang, 2020; Wong et al., 2021) and the covid-19 pandemic has aggravated this information asymmetry (Hassan et al., 2020). With an increase in the extent of the information asymmetry, a firm's ability to obtain external funds becomes more challenging (Gu et al., 2020; He et al., 2020; H. Y. Liu et al., 2020) and investors depend on both comprehensive and soft information that are disclosed by the firms, when the latter receives credit, resulting in a reduction in information asymmetry (Garcia, Mendes-dasilva and Orsato, 2017).

Prior literature posits that there exists a negative relationship between a firm's CSR activities and its financial constraints (Garcia, Mendes-da-silva and Orsato, 2017; Cui, Jo and Na, 2018; Banerjee, Gupta and Mudalige, 2019). A strong CSR performance sends positive signals to the product and financial markets, facilitating firms acquire more market share and also garner financial support. The information regarding the CSR performance of a firm is a good measure of soft information that helps investors decide whether it merits more investment, and this is especially true during the pandemic which has created severe information asymmetry (Yu *et al.*, 2022; Phillips, Roehrich and Kapletia, 2023). The CSR activities can increase firm value, thereby playing a crucial moderating role in mitigating the negative effects of the shortcomings of a firm (Brown and Hillegeist, 2007; Fatemi, Glaum and Kaiser, 2018; Wong *et al.*, 2021). High CSR engagement can improve results in their financial portfolios, since high-CSR engagement firms are more likely to be ethical yet maintain their returns and those firms have higher probabilities of survival in a crisis in a more sustainable way (Pedersen, Fitzgibbons and

Pomorski, 2021). Finally, firms with high-CSR engagement have easier access to investment funds and this access alleviates financial constraints (Banerjee, Gupta and Mudalige, 2019). However, we find that the that financial constraints risk (FCR) and the economic anxiety associated with covid-related job losses and pay cuts, has been an overlooked, yet an important predictor of a firm's risk perceptions, beliefs about disease spread, and preventative behaviours during the early days of the pandemic in 2020.

During the pandemic, the companies conduct their CSR activities through four channels, viz., sponsoring any medical support (for example, providing free treatment for the infected, etc.), providing funds for R&D for the vaccine, supporting the local community and finally, providing support for its employees. We provide a detailed discussion on the corporate CSR activities during the pandemic, the sources of data and representation in our model as well as descriptions of all the regression variables in appendix 3.1. The information regarding the CSR activities of a firm is a reliable measure of its strength from the soft information standpoint and help investors to evaluate whether the firm deserves an investment, and this is particularly true during the pandemic, since the information asymmetry is heightened at this time (Zhang, Wang and Dong, 2023). The CSR initiatives have a positive impact on the firm value (Fatemi, Fooladi and Tehranian, 2015; Harjoto and Laksmana, 2018) and also play a moderating role in mitigating the negative influences of a firm's shortcomings (Brown and Hillegeist, 2007; Fatemi, Glaum and Kaiser, 2018; Wong et al., 2021). When a firm has high CSR engagement, it is more likely to generate higher returns for the investors since such firms have higher probability of being ethical without sacrificing returns and therefore, are more likely to survive a crisis in a more sustainable manner (Pedersen, Fitzgibbons and Pomorski, 2021). Moreover, due to additional environmental protection costs, the firms which receive adequate financial support, are likely to perform better in the area of environmental protection (Guérin and Suntheim, 2021; Botrić, 2023) and hence, such firms benefit from easier access to investment funds, which in turn alleviate their financial constraints (Gupta and Krishnamurti, 2018; Banerjee, Gupta and Mudalige, 2019). This leads to our hypothesis on CSR and financial constraints risk, and we hypothesize that the financial constraints risk (FCR) moderates the impact of the CSR efforts of a firm on its stock returns during the pandemic. Formally, we state our hypothesis as:

H₃: The financial constraints risk of a firm moderates the CSR-stock returns relationship.

In addition, we extend the varying severity of the pandemic on the different industries in this model as well and hypothesize that the degree of severity of the pandemic further impacts the CSR-stock returns relationship, when the firms are segregated on the basis of their financial constraints risk.

H₄: The severity of the impact of the pandemic has different influence on the stock returns for the firms facing varying degrees of financial constraints risk.

3.2.6 CSR & bankruptcy risk

In the post-2008 period, the number of firms filing for bankruptcy has increased and consequently, this domain attracts a great deal of attention from the literature, the firm managers and the policymakers, who investigate the financial, corporate governance and the ethical issues that contribute to the risk of bankruptcy (Cooper and Uzun, 2019). One of the two main streams of studies is the one that examines the connection between accounting and market-based financial data and bankruptcy [see for example, Kwak *et al.*(2005); Reisz and Perlich (2007); Franzen, Rodgers and Simin (2007); Dawkins, Bhattacharya and Smith (2007)]. The other line of research investigates the link between corporate governance and bankruptcy risk [see for example, Fich and Slezak (2008); Parker, Peters and Turetsky (2002); Platt and Platt (2012); Robinson, Robinson and Sisneros (2012); Darrat *et al.* (Darrat *et al.*, 2016); (Eckbo, Thourburn and Wang (2016)]. In this study, we further explore the possible linkage between CSR and bankruptcy risk, especially between the firms which are highly affected and less affected by the pandemic.

The link between bankruptcy risk (BR) and CSR is a comparatively less-explored domain and the extant literature establishes a connection between the two. Firms with high Z-scores, i.e., the ones with low probability of bankruptcy, are more likely to engage in more community donations, compared to the financially less sound firms (Hogan, Olson and Sharma, 2014) and long-term survival is partly explained by the social performance of a firm (Ahn and Park, 2018). This is because building social capital amongst the primary stakeholders by CSR initiatives, assists firms in long-term survival while the firms without such relationships are more likely to fail. This implies that a firm with high CSR involvement has a lower probability of facing bankruptcy. Incorporating profitability, leverage, liquidity, solvency and activity, the Altman's Z-score (Altman, 1968) measures the likelihood of bankruptcy of a firm. We

hypothesize that the bankruptcy risk moderates the impact of the CSR efforts of a firm during the pandemic. Formally, we state our hypothesis as:

H₅: Bankruptcy risk moderates the CSR-stock returns relationship.

Given the fact that the pandemic impacts different industries in diverse ways and consistent with our earlier analyses, we examine the moderating influence of the degree of impact of the pandemic on the CSR-BR relationship. We hypothesize that firms from the more affected industries benefit more from CSR compared to their less affected counterparts and the higher the bankruptcy risk, the higher are the returns. Formally, we state our hypothesis as:

H₆: The severity of the impact of the pandemic has different influence on the stock returns for the firms facing varying degrees of bankruptcy risk.

3.3 Data

3.3.1 Dependent variables

In this study, we investigate the effects of the pandemic relief announcements by the US firms on their short-term stock returns. In other words, we study the investors' reactions to the CSR announcements during the pandemic and attempt to explain the reasons behind such behaviour of the stock returns. This limits our sample only to the listed firms, which have made explicit announcements for donation, both monetary and non-monetary, towards the pandemic relief efforts. We collect data from various sources and ensure their authenticity by verifying them with other databases and press releases by the companies. The primary dependent variable of our study is the short-term stock returns of the companies, which announce pandemic relief efforts and we collect the daily stock price data from the Bloomberg database. We procure the closing prices and the trading volumes of the securities of each day and treat the S&P500 index as the market benchmark. In the US, it is common for the companies to have both class-A and class-B stocks in the same market, and we consider only the class-A stocks in our study. This is because class-A stocks are less sensitive than the class-B stocks to stock market volatility (He and Casey, 2011). This results in reduction of event-induced volatility and enhances the robustness of the results and therefore, expands their applicability (Savickas, 2003; Corrado, 2011; Kolari and Pynnonen, 2011).

3.3.2 Explanatory variables

We explain the behaviour of the stock returns using a wide range of explanatory variables and control variables. We argue that the stock returns behave in the manner due to the relief efforts of the companies. Hence, the main explanatory variables are the multiple relief channels that the companies adopt to alleviate the situation. We collect the relevant data from the U.S. Chamber of Commerce Foundation on corporate aid tracker, which tracks the contributions from firms of all sizes and sectors that assist to combat the coronavirus. In addition, we also obtain data from the records of corporate citizenship responses to covid-19 maintained by the Boston College Carroll School of Management Center for Corporate Citizenship. We collect the announcement details from both the databases and proceed to verify them with the Bloomberg database. As the final step of verification, we match the contribution details against the press releases from the websites of the companies regarding the exact date of announcement, the nature of the contribution, including the amount donated or pledged, any

other non-monetary support like community support and employee benefits, distribution of PPEs, etc. In addition, we find that many companies donate multiple times towards the pandemic relief and therefore, make multiple announcements. Consistent with prior event studies done in relation to company announcements [see for example, Grinblatt, Masulis and Titman (1984), Martin Curran and Moran (2007), Rani, Yadav and Jain (2015), Adnan and Hossain (2016)], we consider the date of the first announcement as the event date. A detailed study of the press releases enables us to classify the relief efforts of the companies into four categories, which are providing medical support, financing R&D, supporting the local community and finally, supporting the employees. Therefore, these four variables are our primary explanatory variables.

3.3.3 Control variables

In addition, we also incorporate a wide range of control variables, which are coherent with prior studies on analysing stock return behaviour in response to corporate actions [see for example, Bash (2020), Singh *et al.*, (2020), Kim and Ji (2021)]. We collect the data for the infection and death rates of the states, where the headquarter of the donating firm is located, from the Centre for Disease Control website¹⁴ and obtain the data for the state political affiliation from the National Archives on the electoral college¹⁵. This variable indicates the political affiliation of the winning candidate from the state during the latest presidential elections prior to the pandemic. In addition, we also incorporate the political affiliation of the donating the data from the opensecrets¹⁶ database and verify it using the zippia¹⁷ database. We find that most of the companies donate to both the dominant political parties and therefore, as the political affiliation of the firm, we take the political affiliation of the candidate who receives the majority of the donations.

During the pandemic, the industries are affected in different degrees. For example, some industries like aviation and hospitality are affected severely due to the fact that the people are

¹⁴ www.cdc.gov

¹⁵ https://www.archives.gov/electoral-college

¹⁶ www.opensecrets.org

¹⁷ www.zippia.com

confined within the boundaries of their residences. On the other hand, companies which provide specific services, especially which are provided through the internet, are less affected and in fact, report substantial gains during the pandemic. Therefore, it becomes imperative that a distinction be made between the firms from the severely and less affected industries and we obtain the data from the S&P Global's report on the probability of default of different industries due to the pandemic. We create a binary variable, which takes the value of unity (1) for the severely affected firms and zero (0) otherwise. In addition, we also control for the technological intensity of firms, since we observe that the degree of impact of the pandemic also differs amongst the firms on the basis of the extent the firms are dependent on technology. We obtain the data for the technological intensity of firms from the Organization for Economic Cooperation and Development (OECD) report on the same and award a score to each firm¹⁸.

While analysing the nature of the firms, the data reveals that firms, which are consumer-facing are more affected due to the pandemic in comparison to the ones which are more business-facing. A huge concern in CSR literature is that a company may engage in CSR in order to 'window dress' its financial statements rather than actually benefitting the society (Lin, 2010; Connors, Anderson-MacDonald and Thomson, 2017; Hu, Dou and Wang, 2019). In particular, since a company's CSR activities become more highlighted during the pandemic (Bae *et al.*, 2021; Kim and Ji, 2021; Zhang, 2021) when no economic activity takes place, it is more important to control for it in order to eliminate the variability in in the stock returns caused by the differences in publicity activities of the firms (Eisingerich *et al.*, 2011). Hence, we incorporate the advertising intensity as a control variable. Finally, we control for the variation in the stock returns when the pandemic is announced on 11 March 2020¹⁹. This is because it is important to control for the unexpected movement in the stock returns due to the uncertainties ensuing from a major announcement (Neuhierl, Scherbina and Schlusche, 2013). Hence, we calculate the cumulative average abnormal returns (CAAR) for each firm over the event window (0,2) and incorporate it as a control variable in our models.

In the second part of the research, we aim to explain the behaviour of the stock returns using a wide range of variables, which we derive from the financial statements of the firms. We collect

¹⁸ https://www.oecd.org/sti/ind/48350231.pdf

¹⁹ Source: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

the data for these variables from CompuStat, which is available through the WRDS services. We use these financial variables to calculate the financial constraints risk and bankruptcy risk of the companies and categorise the firms to be either high or low risk. For the financial constraints risk, we start with the Kaplan-Zingales index, proposed by Kaplan and Zingales (1997) and proceed to Whited-Wu index, proposed by Whited and Wu (2006). In both the indices, a low score indicates that the firm has a lower financial constraints risk. We calculate the median score of the firms in our sample and firms with scores less than the median score, are awarded a score of zero, while the others are awarded a score of unity (1).

We also categorize the firms according to their bankruptcy risk and follow Altman (1968) to calculate the Altman z-score for each firm. We classify the firms to be in the red zone if the score is below 1.80 and infer that the firm is likely to go bankrupt in the near future and award them a score of zero (0). Firms with scores between 1.80 and 3.00 are in the grey zone and are less likely to go bankrupt in the foreseeable future and we award them a score of unity (1). Finally, firms with scores of more than 3.00 are classified as safe companies (green zone) since it is highly unlikely that they would go bankrupt in the immediate future, and we award them a score of two (2). We provide the detailed description of all the variables in appendix 3.1.

This study aims to analyse the short-term impact of the corporate CSR announcements on their stock returns, and therefore, all the unlisted companies are naturally eliminated from our sample. We apply the same argument for the various non-profit organizations and charities and do not consider their contributions as well. We also eliminate companies, which do not make exclusive CSR announcements and only declare their contributions as a part of their regular earnings announcements. We exercise such caution in order to eliminate the possibility of tacit and imperceptible intrusion by factors, other than CSR announcements, in influencing stock return movements since such stringent measures are important to establish the authenticity and legitimacy of the data. Our final sample consists of 313 firms, representing thirty-two industries. Table 3.1 presents the tabulated data regarding the firms from each industry.

[Insert table 3.1 here]

3.4 Research Methodology

In this study, we examine the short-term impact of corporate CSR announcements on their stock returns. In order to analyse the effect of such events, Dolley (1933a) suggests the use of the event study methodology, which reveals the "price-effect" of different corporate announcements, such as splitting of common stock, mergers and acquisitions, dividends, etc. Myers and Bakay (1948), and Fama *et al.* (1969) support application of the event study approach to study the impact of such corporate incidents on the stock returns. We consider the announcements made by the companies based in the United States and follow the event study approach [see for example, Armitage (1995), MacKinlay (MacKinlay, 1997) Binder (1998)] to explore the short-term reactions of the capital markets to the CSR announcements made during the pandemic. Neuhierl, Scherbina and Schlusche (2013) provide further refinements to the event study methodology to study the impact of the corporate press releases on the market prices of stocks and we follow this approach, since we are investigating the impact of the corporate press releases on the stock returns. In addition, we also attempt to explain the behaviour of the stock returns using various firm characteristics, including financial constraints risk and bankruptcy risk.

3.4.1 Background and definition

An event study analysis utilizes the fluctuations in asset prices within short windows of time close to the identified announcement dates to determine the influence of the announcements on the financial markets (Fama *et al.*, 1969). The event study methodology is one of the most appropriate methods for the quantitative assessment of the impact of a scheduled event on a specific indicator (Cuthbertson and Nitzsche, 2004). The history of event studies can be traced back to the early 1930s (Dolley, 1933b) and is applied to a wide variety of studies like the impacts of declaration of income (Ball and Brown, 1968), stock splits (Fama *et al.*, 1969), dividend payments (Grinblatt, Masulis and Titman, 1984), mergers and acquisition announcements (Bhaumik and Selarka, 2012), etc., to name a few. The short-term impacts of announcements regarding major macroeconomic factors like inflation (Schwert, 1981) and regulatory environment (McQueen and Roley, 1993) are also studied using the event study technique.

The event study technique can be broadly classified into four categories, viz., one company and one type of event, one company and multiple events (time-series aggregation), multiple companies and one type

of event (cross-sectional aggregation) and finally, multiple companies and multiple events (Cowan, 1992; Kothari and Warner, 2007; Kolari and Pynnonen, 2011). In this study, we apply the third alternative (i.e., cross-sectional aggregation), since we aim to analyse the impact of the CSR announcements made by multiple companies towards the same shared vision of alleviating the situation caused by the outbreak of the pandemic. In recent times, this methodology has gained popularity and is used to address various research questions regarding the stock market reaction to the Covid-19 pandemic (Ali, Alam and Rizvi, 2020; Baek, Mohanty and Glambosky, 2020; Bash, 2020; H. Liu *et al.*, 2020; H. Y. Liu *et al.*, 2020; Qiu *et al.*, 2021) and concentrate both on the international-level and country-level data.

The conventional means used to examine the impact of events within the structure of the event study methodology is very wide-ranging and average abnormal return (AAR), cumulative average abnormal return (CAAR) and buy-and-hold abnormal return (BHAR) are some of the most popular approaches. The most appropriate and prevalent method for cross-sectional aggregation is CAAR (Kothari and Warner, 2007; Brooks, 2008), since its main objective is to isolate the excessive or abnormal reaction of the specific stocks to the declaration of a particular type of news, in relation to the entire market (Dombrow, Rodriguez and Sirmans, 2000). McWilliams and Siegel (1997) suggest performing seven steps in a standard event study method which are stating the event, deciding the selection criteria, estimating the normal and abnormal returns, selecting the prediction technique, testing the technique, obtaining the results and finally, interpreting the results. We perform the seven steps consecutively in the following sections.

3.4.2 The event dates

The first step in an event study is to define the event date. In his opening remarks at the media briefing on Covid-19 on 11 March 2020, the Director-General of the World Health Organization (WHO) declared the worldwide outbreak of the coronavirus as a pandemic²⁰. The companies are quick to assess the gravity of the situation and the majority of the announcements are made within a fortnight of the declaration by the WHO. Therefore, in this study, there are multiple event dates, since the companies make their announcements regarding covid-19 contribution on different dates and we consider the individual announcement dates as

 $^{^{20} \} Source: \ https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020$

day 0, with the preceding days designated as -1, -2, etc. and the ensuing days as 1, 2, and so on.

3.4.3 The event window

Defining the event window is an important phase in analysing a cumulative average abnormal return (CAAR) model. The event window is the length of time during which the impact of the event on the stock return movements is estimated (Kothari and Warner, 2007; Brooks, 2008). Depending on the nature of the study, the event window may be symmetric or asymmetric. Changes in the corporate structure due to an M&A activity may have a deeper impact on the stock returns and may last for a long time period and hence, longer event windows such as [-10,10] may be required (Teplova, 2008). It needs to be borne in mind that if the event window is too short, then the study may fail to capture the total impact of the event, while on the other hand, if it is too long, then the significance of the tests may be less reliable (MacKinlay, 1997; Kothari and Warner, 2007; Brooks, 2008; Kolari and Pynnonen, 2011). In general, the event window needs to consider a few days after the event under study as the reaction from the capital markets to new information is quick but not immediate (Fama *et al.*, 1969). Furthermore, it is imperative to consider the days prior to the event under study because an event can be the result of intensified uncertainty in the market, or the event itself can generate such uncertainty, which is the case in our sample.

Recent event studies on the various aspects of the covid-19 pandemic suggest that it is appropriate to consider short event windows. This is primarily due to the fact that the announcement of the pandemic makes the capital markets subject to unprecedented uncertainty, which is akin to the one which we witness during a financial crisis. In such circumstances, considering a long event window is more likely to cause the stock returns to be influenced by factors other than the corporate announcements and is bound to reduce the reliability of the study (H. Liu *et al.*, 2020; de Lima Galarza, 2021; Heyden and Heyden, 2021). Therefore, we consider the shortest event windows possible around the announcement dates, and study their (i.e., the corporate announcements) impacts on the following two days. We follow the conventional notation to express the event windows and use (0,1) and (0,2) to indicate the following one (1) and two (0) days from the day of announcement, which is considered as day zero (0). At later stages, we collectively refer to them as the post-event period.

3.4.4 The estimation window

In addition to defining the event window, it is essential to define an estimation window. This is the time interval before the event date and is applied to identify the usual performance of the stocks and ascertain the expected return for each one of them. Despite the fact that determining the estimation period is an integral part of the event study, there is a serious lack of agreement amongst the scholars regarding its length. The central idea behind estimation window is that it needs to be long enough to appropriately estimate the parameters of the model. The estimation window may range from 100 days (Cox and Peterson, 1994) to 500 days (Litvak, 2007). Other estimation windows like 250 trading days (MacKinlay, 1997) and one trading year (Benninga, 2008) are popular as well. In this study, we use an estimation window of 250 days, starting from 271 days and ending at 21 days prior to the event date. This is adequate to measure the short-term influence of the CSR announcements and is coherent with the general practice of conducting comparable event studies.

A study of the dates of the CSR announcement reveals that the companies make them (i.e., the CSR announcements) at different times after the declaration of the pandemic. Needless to say, the stock markets experience high levels of volatility in the immediate period following the announcement of the pandemic. We also find that since the companies make their announcements on different days following the declaration of the pandemic, the estimation window varies from one firm to another. Incorporating different time periods as estimation windows does not pose any threat to the reliability of the results in case of event studies on dividend announcements or stock splits, because except for the affected firms, the rest of the market remains relatively calm (Neuhierl, Scherbina and Schlusche, 2013; Heyden and Heyden, 2021). A pandemic differs from other situations in the sense that it affects the entire market, and in case of the covid-19 pandemic, the entire planet is affected in varying degrees. Hence, the consideration of the estimation period for the different companies becomes challenging. Therefore, in order to maintain consistency in our analyses and results, we define the estimation window to be starting from 271 days and stopping at 21 days before 11 March (i.e., the date of declaration of the pandemic). We apply this estimation window for all the companies in our sample and figure 3.1 represents the estimation and event windows of the current event study, which equals to 273 days.

[Insert figure 3.1 here]

3.4.5 The actual and normal returns

The current study, which aims at investigating the influence of the CSR announcements made during the pandemic, is based on the stock returns rather than on stock prices. The rationale behind this approach is that stock prices, more often than not, represent a non-stationary time series, which can neither be predicted nor modelled (Priestley, 1965; Priestley and Rao, 1969). As a consequence, in order to obtain robust results and draw accurate conclusions, a non-stationary series needs to be transformed into a stationary series (Sapate, 2017). At this point, the distinction between weak and strict stationarity needs to be affirmed. When a time series is strictly stationary, its joint probability distribution remains constant even when it is moved in time. It implies that at each moment in time, the probability distribution of the time series data remains constant (Marquering and Verbeek, 2004; Gagniuc, 2017). Unfortunately, strict stationarity is rarely witnessed in any data and as a result, weak stationarity is applied. Weak stationarity maintains that it is adequate that the mean, variance and covariance of the series do not fluctuate over time, rather than the entire distribution (Marquering and Verbeek, 2004) and the move to the stock returns makes our series stationary in the weak form (Fielitz, 1975; Hadri, 2000).

The daily returns of a stock is calculated as the ratio between the closing price on a particular trading day to that of the previous day, minus one (Brealey, Myers and Marcus, 2014; Brealey *et al.*, 2018). However, we use an alternate approach to calculate the daily returns which is given by the natural logarithm of the ratio of the closing price of a trading day to that of the previous day (Brealey, Myers and Marcus, 2014; Brealey *et al.*, 2018).

$$R_{i,t} = ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right)\dots\dots\dots(1)$$

where, P_t and P_{t-1} are the closing prices of the stock *i* on the trading day *t*, and on the previous day (t - 1), respectively. Similarly, we calculate the daily market returns using the S&P500 index. The two major benefits of using the logarithmic values are the mathematical convenience and its time additive characteristic (Ruppert, 2004). Moreover, the return calculated using the logarithmic values are marginally lower than the simple return (Alzahranai *et al.*, 2010). Since we conduct our analysis based on the daily returns, the calculation of the returns using equation (1) does not result in overestimation of the influence of the

announcements (or the events). Utilising the cumulative abnormal return model also entails defining the normal stock returns since the underpinnings of this model is deeply rooted in the comparison between the actual stock returns and the normal, the latter being the return that the stock would generate had the event not occurred (MacKinlay, 1997). While there are several models to assess the normal returns, the most common ones are the market model (MA), the capital asset pricing model (CAPM), the market-adjusted model (MAM) and the mean adjusted returns model (MRM).

The constant mean model is a relatively simple model and is easy to comprehend. This model assumes that the average daily return is unchanged in time and in reality, provides more reliable and robust results (Brown and Warner, 1980). The normal return is, therefore, defined as the average observed return for the selected length of time of the company prior to the start of the event phase (Teplova, 2008). However, in presence of the constraints on the data and in comparison to the significance and performance of the other models, regression-based models like the market model, which supposes that the returns of the assets are normally distributed, provides superior estimation of the abnormal returns (Cable and Holland, 1999). The market model has been extremely popular in event studies based on stock return data (Groening and Kanuri, 2018; Capelle-Blancard and Petit, 2019; H. Liu *et al.*, 2020; Heyden and Heyden, 2021) leading us to adopt it in our study.

where $R_{m,t}$ is the expected market return on day *t* and $\varepsilon_{i,t}$ is the error term, with a mean of zero and is presumed to be non-correlated across the firms. All other symbols are consistent with the ones described in equation (1). The parameters α_i and β_i are assessed using the data within the estimation window and applying the ordinary least squares (OLS) regression model (MacKinlay, 1997) and we present them in equations (3) to (7).

$$\beta_{i} = \frac{\sum_{t=T_{1}+1}^{T_{2}} (R_{i,t} - \hat{\mu}_{i}) (R_{m,t} - \hat{\mu}_{m})}{\sum_{t=T_{1}+1}^{T_{2}} (R_{m,t} - \hat{\mu}_{m})^{2}} \dots \dots (3)$$

$$\widehat{\alpha}_{l} = \widehat{\mu}_{l} - \widehat{\beta}_{l} \widehat{\mu}_{m} \dots (4)$$

$$\widehat{\sigma_{\varepsilon_{l}}^{2}} = \frac{1}{L_{2}-2} \sum_{t=T_{1}+1}^{T_{2}} \left(R_{i,t} - \widehat{\alpha_{l}} - \widehat{\beta_{l}} R_{m,t} \right)^{2} \dots \dots (5)$$

$$\widehat{\mu_{i}} = \frac{1}{L_{1}} \sum_{t=T_{1}+1}^{T_{2}} R_{i,t} \dots \dots (6)$$

$$\widehat{\mu_m} = \frac{1}{L_1} \sum_{t=T_1+1}^{T_2} R_{m,t} \dots \dots (7)$$

where, $\hat{\mu}_{l}$ and $\hat{\mu}_{m}$ are the means of the $R_{i,t}$ and $R_{m,t}$ respectively for the estimation window.

3.4.6 The abnormal returns

The abnormal returns are defined as the deviation from the observed stock returns during the event window from the expected (or normal) returns, which are estimated using the market model (Fama *et al.*, 1969). We infer, therefore, that the abnormal return is generated as a consequence of the event of interest. Following MacKinlay (MacKinlay, 1997), we calculate the abnormal returns as:

$$AR_{i,t} = R_{i,t} - (\widehat{\alpha}_{i} + \widehat{\beta}_{i}R_{m,t}) \dots \dots \dots (8)$$

where, $(\widehat{\alpha}_{l} + \widehat{\beta}_{l}R_{m,t})$ represents the expected (or normal) return

We now proceed to the aggregation of the abnormal returns. The two most common methods of aggregation are across securities and across time, within the event window (MacKinlay, 1997; Kothari and Warner, 2007). The cumulative abnormal return (CAR) is the time-series aggregation of all the abnormal returns across time in the event window. Since an event is

unprecedented, there may be an apparent consequence of certain disturbance across returns around the event day and consequently, some of the abnormal performance can be manifested before the event day. Moreover, the speed of adjustment of the stock returns to the new information is a matter of market efficiency, as prices need to adjust immediately to new information. Therefore, the CAR null hypothesis tests whether the CAR is zero and is calculated as:

$$CAR_{i} = \sum_{t=T_{1}}^{T_{2}} AR_{i,t} \dots \dots (9)$$

where, $AR_{i,t}$ is calculated as mentioned in equation (8)

3.4.7 The average abnormal returns

In an event study, the focal point of interest is the average abnormal return since it seeks to test whether the cross-sectional aggregation of an event is abnormal or not. Even though stocks, in general, react identically to a particular type of event, some securities may exhibit diverse reactions. Since the average abnormal returns discards the measurement idiosyncrasies which may be caused by a few particular securities, we average the abnormal returns across securities to calculate the average abnormal return. The null hypothesis, which is also referred to as the cross-sectional aggregation, is that the average abnormal returns is zero (MacKinlay, 1997; Kothari and Warner, 2007).

We calculate the average of the abnormal returns for all the stocks in the sample for each of the days within the event window and calculate the average abnormal return applying the following formula:

$$AAR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t} \dots \dots \dots (10)$$

where, $AR_{i,t}$ is calculated as mentioned in equation (8), while N represents the number of companies in the sample.

It becomes challenging to identify several abnormal patterns since the returns in the event window can vary substantially and therefore, calculating the aggregate returns across time is beneficial (Brooks, 2008). The cumulative average abnormal return (CAAR) takes into account both the aggregations of abnormal returns across securities and time. Akin to the cumulative abnormal returns (CAR), we calculate the summation of the average abnormal returns (AAR) across time. As a result, the cumulative average abnormal return (CAAR) is the aggregation of the average abnormal returns (AAR) for the previous days of the event window. CAAR is ascertained from τ_2 to τ_3 , where τ_2 and τ_3 are the lower and upper boundaries of the event window (MacKinlay, 1997; Brooks, 2008). In this case, the null hypothesis is that the value of CAAR is to equal zero and is calculated as:

$$CAAR_{(\tau_2,\tau_3)} = \sum_{t=\tau_2}^{\tau_3} AAR_t \dots \dots \dots (11)$$

3.4.8 The regression models

In the next step of our analysis, we attempt to explain the stock return movements caused by the various components of CSR implemented by the companies and use various models of firm characteristics to provide further explanations to the stock return movements. As mentioned earlier, in this study, we study the impacts of the CSR announcements (i.e., one type of event) of multiple companies during the pandemic and therefore, cross-sectional aggregation model of event study methodology is most appropriate. In addition, we attempt to explain the CAARs of the stocks that the donating companies generate during the post-announcement period. The data pertains to only one period and is therefore, cross-sectional in nature, which leads us to apply cross-sectional regression model in order to explain the reasons behind the investors' reaction to the CSR announcements of companies. In particular, we assess the impacts of the various channels of CSR that the companies pursue during the pandemic, on their stock returns and hence, we start with conducting an OLS with the CAARs as dependent variables and the CSR avenues as the explanatory ones, along with a host of control variables. We then attempt to explain the difference of stock return behaviours of the different firms by segregating them into highly affected and less affected based on the S&P Global's report on the probability of default of different industries due to the pandemic.

In the next step, we analyse the abnormal returns for the firms, which we categorise on the basis of their financial constraints risk and bankruptcy risk. For the financial constraints risk, we construct the Kaplan-Zingales index and the Whited-Wu index following Kaplan and Zingales (1997) and Whited and Wu (2006) respectively and classify the firms as either highly constrained or less constrained. Eventually, we study the bankruptcy risk of all the firms in our sample and construct the z-score following Altman (1968) and classify them to be in the green, grey and red zones. In both cases, we apply the cross-sectional regression methodology to analyse the impact of the CSR channels on the abnormal returns of stocks for both the highly and less affected firms due to the pandemic.

For all the analyses in this study, we apply the cross-sectional OLS regression methodology. This is because of OLS method's superior ability to capture the effect of common shocks, which are defined as "macroeconomic, technological, legal/institutional, political, environmental, health and sociological shocks" (Andrews, 2005). Even though a common shock may affect almost everyone, (i.e., people and firms alike), the impact is not identical across the different population units. On the other end of the spectrum, some common shock may not have any impact on the units of the population at all. OLS allows to have different impacts on the different population units, depending on the latter's characteristics, which may or may not be directly observed (Andrews, 2005). In our sample, the firms have diverse characteristics like the degree of impact of the pandemic, the varying levels of financial constraints and bankruptcy risks and therefore, the impacts of the distinctive CSR activities may influence their stock returns differently. The OLS regression methodology not only permits such fluctuations in the data, but also captures them adequately to provide reliable and robust conclusions and therefore, we adopt this methodology in this study.

3.5 Results and discussion

3.5.1 Estimating the average abnormal returns (AARs)

This study examines the short-term influence of the exclusive corporate CSR announcements on their stock returns and also attempts to explain the stock return behaviour on the basis of the distinct firm characteristics. We use the event study methodology, and the first step is to estimate the average abnormal returns of the stocks of the firms. Finance scholars suggest that the average abnormal returns (AARs) quantify the impact of the event on the firm's stock and facilitate in eradicating the idiosyncratic values from each stock and therefore, offers a test result that returns almost the market reaction to each event (Kothari and Warner, 2007). Hence, it is expected that the AAR results should be analogous to the abnormal returns of the S&P500 index, though not identical since the index is a free-float capitalisation-weighted index²¹. For example, higher returns from the largest firms with the highest market-capitalizations constituting the index, can deviate the test results from the abnormal returns of the S&P500 index. In this section, we present the key findings of our study and discuss their implications. We start our analysis with estimating the AARs over the event window and also conduct a series of parametric and non-parametric tests and establish the robustness of our results. Table 3.2 reports the AARs of the stocks over the event window [-5, +4] along with the results of the tests of significance.

[Insert table 3.2 here]

²¹ Source: https://www.spglobal.com/spdji/en/indices/equity/sp-500/

The financial markets tumble when the pandemic hit the world. The World Health Organization (WHO) declare the covid-19 pandemic on 11 March 2020²² and following the announcement, the financial markets lose value in every consecutive trading day. The S&P500 is no different and lose 9.51% the very next day of trading and lose as much as 12% on 16 March 2020. The average abnormal returns (AARs) over the event window [-5, +4] indicate that the average abnormal returns are negative on a daily basis till the announcement date, barring only day 2 in the preannouncement period. We also report the results of both the parametric and non-parametric tests of significance, which indicate that the negative returns in the pre-announcement period are indeed significant. The t-test results show that the negative returns are significant at 1% level of confidence for day 3 and day 1 in the pre-announcement period. All the parametric tests (viz., the CDA test, the Patell test, the adjusted Patell test and the BMP test) confirm that the stocks indeed generate significant negative returns till the announcement date, i.e., the event date. The results of the non-parametric tests, viz., the Corrado test, the Zivney-Cowan test and the Generalized Sign test concur with those of their parametric counterparts and provide further support towards the statistical significance of the negative returns generated by the stocks prior to their CSR announcements. The AARs for the other days (i.e., days 5 and 4 prior to the event date) are inconclusive since they are statistically insignificant.

We observe interesting movements around the announcement date, indicated by day 0. The average abnormal return for the event window [-1, 0] is positive and is statistically significant at 1% level. This indicates that the market looks forward to such a benevolent action from the companies and this anticipation results in positive returns. This is a common phenomenon and is often detected in case of positive developments for companies such as M&A announcements (Rani, Yadav and Jain, 2015; Adnan and Hossain, 2016), stock splits announcements (Lamoureux and Poon, 1987) and dividend pay-out announcements (Grinblatt, Masulis and Titman, 1984). The trend for the positive returns persists over the following days and we see that the stocks continue to generate positive returns. The day following the announcement, i.e., for the event window [0, 1], the return is positive and significant based on the parametric and non-parametric tests, on

²² Source: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

conventional levels of significance. For the event window [1, 2], the AAR is positive and significant at 1% level of significance for the t-test and is significant for the other parametric and non-parametric tests at conventional levels of significance. This positive trend sustains over the next couple of days and generate statistically significant positive AARs on a daily basis.

Based on our results, we reject the null hypothesis that the AAR is zero on the day of the announcement. We, therefore, conclude that the market reacts positively to the CSR announcements in the short-term and holds true even when a strong negative sentiment, caused by the pandemic, dominates the market. In other words, the investors perceive the CSR announcements to be beneficial for them.

We now differentiate between the industries, which are highly affected and less affected by the pandemic and explore their price movements over the event window [-5, +4] and show their price movements in figures 3.2A and 3.2B. In figure 3.2A, we consider the individual firm announcement dates as the event date, while for 3.2B, we consider the pandemic announcement date, i.e., 11 March 2020, as the event date. The prices of the stocks of the highly affected industries (indicated by the dotted line) exhibit significantly higher levels of volatility over the event window compared to the less affected industries (indicated by the solid line), which remain comparatively stable over the same time period. The difference in volatility is more prominent in the post-announcement period and the highly affected industries gain significantly higher than their less affected counterparts. In panel 3.2B, we consider the pandemic announcement date as the event date, and we plot the relative volatilities of the stock returns of the highly and less affected industries. The graph indicates very high levels of volatility in the stock returns of both categories of industries over the event window.

[Insert figures 3.2A & 3.2B here]

3.5.2 Estimating the cumulative average abnormal returns (CAARs)

We continue our analysis by cumulating the average abnormal returns over the event window to evaluate the net magnitude of the total returns and estimate the CAARs of the multi-day event windows. To estimate the CAARs, we consider three categories of short event windows, with the first starting from different days before the announcement and ending on the day following the announcement day denoted by 1, the second starting from a day before the announcement day denoted by -1 and ending on different days after the announcement and finally, from the announcement date denoted by 0 and ending on different days after the announcement. We adapt the first two sets of event windows to study the CAARs generated from a day before and after the announcement till a few days after it. Market efficiency assumption suggests that the market does not reveal the donation information beforehand. In addition, a smaller event window eliminates the possible perplexing influence of other events to the maximum extent and is also congruent with the characteristics of evolving events. Some of the best event windows to study this impact are [-1,1] and [0,1] (Crampton and Patten, 2008; Huo and Qiu, 2020). Therefore, we estimate the CAAR over these event windows along with a host other short-term event windows outlined above.

We estimate the CAARs over 10 different event windows and present the results in table 3.3. We estimate the CAARs for all three categories of event windows and report that the CAARs over several event windows are negative. The longest over which we estimate the CAAR is [-5, 1] and we estimate the same over other smaller event windows as well. The results indicate that over the entire length of the event window [-5, 1], the CAAR is -0.6%, which is statistically significant at 5% level in t-test. We witness this trend of negative CAAR for several other event windows, viz., [-3,1] and [-4,1], which are shorter and generate CAARs of -0.61% and -0.63% respectively and are statistically significant at traditional levels of confidence based on the parametric and non-parametric tests used in this study. The event window of [-2,1] presents an interesting result and the CAAR over this event window is 0% and is significant at the standard levels of confidence. When we consider a very short event window of [-1,1], the return is -0.06% and is statistically significant at 5%. This indicates that the share prices decrease in value during the pandemic prior to the announcement of the CSR activities.

We then consider the second category of event windows, which start one day before the announcement and end on various days after it is made. We report that the CAARs over all the event windows are positive and statistically significant at various levels of confidence. The CAARs for the event windows [-1,2], [-1,3] and [-1,4] are 0.33%, 0.57% and 0.90% respectively and are significant at either 1% or 5% levels of confidence. This indicates that the share prices increase in value in the post-announcement period, creating positive returns for the shareholders. This phenomenon is further supported by the results of the third category of event windows, which start on the day of the announcement and end on the next one day and two. The results indicate that the stocks generate positive returns over the event windows [0,1] and [0,2] in the tune of 0.36% and 0.75% respectively and both are statistically significant at 1% level of confidence. This suggests that post-announcement date, the companies' stocks appreciate and are able to generate positive returns for the shareholders. The results also suggest that the market does not disclose the information regarding the CSR announcements beforehand and appreciates the philanthropic actions by the companies during the pandemic and positive CAARs result from the CSR announcements that the companies make on different days after the declaration of the pandemic.

To summarize, we report that in the post-announcement period, all short event windows generate statistically significant positive CAARs and therefore, we conclude that the market reacts positively to the corporate CSR announcements in the short-term. This is evident from our estimates of both AAR and CAAR over short event windows around the announcement date. The probability of other developments for the companies positively influencing stock returns during the pandemic is extremely low, since the companies abruptly cease all their commercial activities following the announcement by the WHO classifying covid-19 as a pandemic on 11 March 2020. Therefore, we conclude that investors appreciate the philanthropic activities by the companies and the short-term reaction by the capital markets is positive to such announcements.

[Insert table 3.3 here]

Consistent with our AAR estimation, we separate the firms into from the highly affected and less affected industries and explore their relative price movements over the event window [-5, +4] and show their CAARs in figures 3.3A and 3.3B. In figure 3.3A, we consider the individual firm

announcement dates as the event date, while for 3.3B, we consider the pandemic announcement date, i.e., 11 March 2020, as the event date.

Figure 3.3A shows that the stocks of the highly affected firms (indicated by the dotted line) gain significantly higher compared to the less affected ones (indicated by the solid line). The only two exceptions are for the event windows [-1, 1] and [-2, 1] and this may be caused by a plethora of factors. For all other event windows, we report that the stocks of the highly affected firms show a significantly higher cumulative return than the ones of the less affected firms. This indicates that the investors appreciate the CSR initiatives by the highly affected firms more than the less affected ones. This is because the investors appreciate their (i.e., the highly affected firms) benevolent efforts that despite being severely affected by the pandemic, they are taking positive steps to alleviate the situation. In other words, the highly affected firms' earnings decline significantly during the pandemic and yet they undertake benevolent actions like providing support to the local community, or employees, or funding research for the vaccine, among other acts of compassion. Hence, they allocate a higher proportion of their earnings towards CSR positively affects the stock returns and consequently, the stock returns (Utz, 2018; Qiu et al., 2021).

From figure 3.3B, we observe that when 11 March 2020 is considered as the event date, the stocks of the highly affected firms (indicated by the dotted line) exhibit significantly lower returns over the majority of the event windows compared to the less affected ones (indicated by the solid line). From the graph it is also evident that both the highly affected and less affected firms generate negative returns with the pandemic announcement date as the event date. This shows that irrespective of the degree of impact of the pandemic on the firm, stocks generate negative cumulative returns when the pandemic is declared. However, the CAARs of the less affected ones are less volatile compared to the ones of the highly affected ones. In addition, we observe that the CAARs of the highly affected firms are lower than those of the less affected ones, which shows the stocks of the highly affected firms decline more in comparison to the less affected firms, resulting in lower CAARs.

[Insert figures 3.3A & 3.3B here]

3.5.3 Sample description

At this juncture, we ensue to explain the reasons behind the behaviour of the stock returns around the announcement dates of the CSR initiatives of the firms during the pandemic. Out of the 313 firms in our sample, 141 firms are from the highly affected industries, while the rest 172 are from the less impacted ones. As mentioned earlier, we do this segregation on the basis of the report by the S&P Global on the Probability of Default, dated 30 April 2020. The companies conduct their CSR activities through multiple actions, which we classify into four broad categories, viz., medical support, R&D support, supporting the local community and finally, employee support. We also notice that the firms undertake one or more of the CSR activities during the pandemic and we aim to analyse the impact of each activity both in isolation and in conjunction with the others.

The data suggests that there are 164 companies, representing 52.40% of our sample, which provide medical support during the pandemic. Medical support includes but is not limited to converting their own manufacturing facilities into temporary manufacturing facilities to produce ventilators and PPEs and donating those products, etc. We also find that 53.04% of the firms, i.e., 166 firms provide financial aid towards research and development of the covid-19 vaccine. Distributing food, providing treatment, supplying groceries, getting the infected members of the local community admitted to hospitals, etc., are some of the ways in which the companies support them (i.e., the local community) and the data suggests that 157 companies, indicating 50.16% of our sample, engage in CSR through this channel. The companies also extend their support towards the employees who are affected by the virus by providing financial aid to the families of the infected or deceased employees, creating a pool of funds wherein the employees donate, and the company match the employee donations, etc. and there are 153 firms, i.e., 48.88% of our sample, which engage with such activities during the pandemic. Table 3.4 reports the details of the number of companies which provide various kinds of support during the pandemic.

[Insert table 3.4 here]

3.5.3.1 Descriptive statistics

There are 313 firms in our sample which undertake CSR activities during the pandemic and the descriptive statistics reflects that. For each of the regression variables, we have 313 observations, save for the binary variable representing the political affiliation of the company. Our data suggests that there are six (6) firms, which do not provide any financial donation to any political party and hence, the number of observations for that variable is 307. Table 3.5 summarizes the descriptive statistics of our regression variables.

[Insert table 3.5 here]

3.5.3.2 Pairwise correlations

We report the pairwise correlations of our regression variables in table 3.6. We calculate the correlations at 1% level of significance and report it along with the standard errors. The correlation coefficients are statistically insignificant, which suggests that the probability of the mutual associations between the variables leading us to erroneous results is extremely low.

[Insert table 3.6 here]

3.5.4 Impact of the CSR activities on market performance

In this study, we analyse the impact of the benevolent actions of the firms on their market performance. In order to examine the relationship between corporate philanthropic initiatives and firms' market performance during the pandemic, we conduct the OLS regression analysis and use the following model.

Market_performance_i =
$$\beta_0 + \beta_i Corporate_support_i + \beta_j Controls_i + \varepsilon_i.....(12)$$

In this model, *Market_performance*_i represents the performance of the firm and is measured by both CAR[0,1] and CAR[0,2]. *Corporate_support*_i indicates all the four channels (i.e., medical support, R&D support, local community support, and employee support) by which the companies extend their support to improve the grave situation caused by the pandemic and *Controls*_i represents the control variables presented in table 3.5.

[Insert table 3.7 here]

In table 3.7, we report the influence of the medical support that the companies extend during the pandemic on the short-term market performance in columns (1) and (2). In columns (3) and (4) we do the same for the R&D support, in columns (5) and (6) for the local community support and finally, in columns (7) and (8) for the employee support respectively. Analysing our results presented in table 3.7, we report that all forms of corporate philanthropic actions during the pandemic have positive and statistically significant impact on their short-term market performance. The results indicate that irrespective of the manner in which the companies extend their support during the pandemic, the short-term reaction of the market is positive and significant. The results indicate that when a firm announces support for the medical requirements, its stock return increases by 6.30% and 7.90% on the first and second days following the announcement. We witness a similar phenomenon for the R&D support and the positive impacts are 4.40% and 4.80% over the same time period. Many firms support their local community, and this step positively impacts their stock returns and increases them by 5.40% and 5.90% over one and two days following the announcement. Finally, a company supporting its employees witnesses its stock return increase by 8.30% and 9.90% over the same time period. The regression coefficient for the impact on the industry is positive, which indicates that the firms from the industries which are highly impacted by the pandemic, gain more in comparison to the ones from the less affected industries. We explore this singularity in greater detail in the forthcoming sub-sections.

In addition to the primary explanatory variables, we control for a number of variables in this study and their coefficients reveal interesting characteristics. The regression coefficients of state infection and death rates are positive and statistically significant, implying that the firms which are headquartered in more affected states gain more in comparison to the firms from the states where the pandemic cause less infections and deaths. This is intuitive because the states where the virus infected more people causing more deaths, need more support from the corporate sector and the companies that respond to that call of the hour, gain significantly more than the ones who prefer to ignore it. The regression coefficients of the political affiliations of the company and the state are both negative, conveying that the Democratic firms and states gain more compared to their Republican counterparts. This is explained by the fact that the Republican party take an extremely sceptical outlook of the virus and blatantly refuse to acknowledge its potential impact and therefore, respond much later than their political opponents. The positive and statistically significant regression coefficient of the technological intensity signifies that the stocks of the high-tech firms gain more in comparison to the low-tech firms. This is because, a large proportion of the high-tech firms register significantly higher gains during the pandemic and can be attributed to the structure of their business. The high-tech firms do not involve close interaction with a lot of people and therefore, the possibility of them spreading the virus is low. For example, the technological firms involved in providing streaming services over the internet, or those providing online communications services like classrooms, meetings, etc., register abnormal high profits during the pandemic.

Firms with higher advertising intensity are the ones which face the consumers and therefore, spend a higher proportion of their revenues towards advertising. Our results suggest that advertising intensity positively influences the short-term investor reaction. The consumer facing firms are more affected by the pandemic, due to the restrictions on social distancing and mobility and the philanthropic actions of such firms are greatly appreciated by the market, at least in the short-term (Borghesi, Houston and Naranjo, 2014; Purnamasari, Hastuti and Chrismastuti, 2015; H. Liu *et al.*, 2020). While the popularity of CSR soaring amongst the firms all over the globe, there are many companies, which resort to window-dressing their financial statements and do not pursue any genuine long-term commitment to CSR (Lin, 2010; Taylor, Vithayathil and Yim, 2018). We control for this tendency and introduce the MSCI score of the previous year. The regression coefficient is positive and significant and hence, indicates that the companies with high MSCI score in the previous year exhibit higher gains than the ones with low MSCI scores. Therefore, firms with long-term commitment to CSR and pursue and sustain CSR objectives over long periods of time, generate higher CARs for their shareholders.

The WHO declares the pandemic on 11 March 2020 and the stock markets take a hit and send the prices of stocks into a downward spiral (Pandey and Kumari, 2021). Therefore, it is important to control for any anomaly in the share prices around this date caused by this declaration. We incorporate a control variable in all our models to eliminate the possibility of any price anomaly caused by the pandemic declaration on 11 March 2020. This control variable is the cumulative average abnormal returns over the two days following the pandemic announcement. In other words, it is the CAR[0,2] with 11 March 2020 as day 0. The regression coefficient though positive,

is statistically insignificant and is therefore, inconclusive, which is the same for the constant term as well. Finally, we argue that it is important to account for the industry effects in this study. This is because, the majority of empirical studies on CSR draw attention to the fact that CSR is industry specific. For example, firms belonging to a particular industry may have both high CSR engagement and high stock returns, while those in other industries may have both low CSR engagement and low stock returns. This makes controlling for such industry effects imperative to eliminate the possibility of a false positive association between CSR and stock returns, which may otherwise appear in our model and unduly influence the results. On the other hand, any of the CSR concerns that may have different impacts across industries would obfuscate their overall impact (Mănescu, 2011). Belu (2009) uses an original CSR aggregation approach and shows that CSR performance varies significantly between various economic sectors, with the industrial sector faring better than the financial sector. Consequently, we control for the industry effect to eliminate the possibility of any confounding impact. Finally, the number of observations in all our models is 307, since 6 companies in our study do not subscribe to any political ideology.

Our results lead us to suggest that there is no strong evidence to reject our first hypothesis and we infer that a strong CSR performance during the pandemic indeed causes a positive cumulative abnormal return in the stock market. We now proceed to further explore the reasons behind the differences in the gains of stocks during the pandemic and start by segregating the companies into industries, which are highly affected and less affected by the pandemic.

3.5.5 Impact of the CSR activities by firms from the less and highly affected industries - segregated

The pandemic affects all stocks in the world since all economic activity come to an abrupt grinding halt all over the world. However, some industries are more affected than the others due to their inherent characteristics and the way they are conducted. During the pandemic, strict laws regarding maintenance of social distancing is enforced and personal mobility is severely restricted. These measures have an immense negative impact on certain industries like retail, entertainment, hotels, etc., which are characterised by close interactions amongst large number of people outside the family circle. At the same time, companies which provide utility services and online entertainment or professional services (like classrooms, meetings, etc.) gain substantially since people are forced to stay at home in order to avoid crowded spaces. We study the impact of the
pandemic on the different companies and begin by segregating into industries which are highly and less affected by the pandemic. The segregation is done based on the S&P Global's report on the Probability of Default of the different industries caused by the pandemic, dated 30 April 2020. We apply the OLS regression model and present the results in table 3.8.

[Insert table 3.8 here]

In table 3.8, we report the effects of the CSR announcements separately for the firms belonging to the highly affected and less affected industries by the pandemic. Consistent with table 3.7 reported earlier, we report the influence of the medical support in columns (1) and (2). In columns (3) and (4) we report the same for the R&D support, in columns (5) and (6) for the local community support and finally, in columns (7) and (8) for the employee support respectively. The impacts of the CSR initiatives implemented by the less and highly affected industries differ, and our results indicate that the highly affected industries gain more compared to their less affected industry, it gains by 1.70% over the next trading day following the announcement, while a firm from a highly impacted industry gains by 4.70% over the same time frame. This positive gain is witnessed over a two-day event window starting from the event date as well and we report that a less impacted firm registers a gain of 2.40%, while its highly affected counterpart does that in the tune of 5.60%.

We observe an identical trend for the R&D support and the gains are 1.80% and 2.50% for the less and highly impacted firms over the one-day event window respectively. For the two-day event window, the gains for the less and highly affected industries are 2.70% and 3.10% respectively. The local community support that a less affected firm extends, translates into an appreciation of 2.20% in its stocks while a highly affected firm benefits by 3.10% over the event window of one day following the announcement. The cumulative gains over the two-day period are 2.50% for the less affected firms and 3.20% for the highly affected ones. We detect a similar difference between the less affected and the highly affected firms in case of employee support as well and they gain 4.10% and 4.40% over one day after the announcement and 4.80% and 5.10% over two days following the announcement, respectively. All the control variables retain their signs from our earlier estimations and the number of observations in all our models is 307. The phenomenon behind the highly impacted firms gaining more from CSR announcements or initiatives compared to the less affected firms can be explained from several aspects. At the first instance, extant literature on firm behaviour and reactions to the pandemic establish that there exists a direct relationship between the degree of impact and investment in R&D, knowledge-sharing, etc. In other words, it is the highly impacted firms which invest more in R&D (towards vaccine development) or extend more employee and/or local community support, etc., compared to their less affected counterparts (Krammer, 2022). Hence, the highly affected firms implement fast innovation changes through dynamic capabilities and orchestrate both their internal and external resources to ensure a quicker recovery than others (Puliga and Ponta, 2022). It is normal that the investors in those (i.e., the firms which are highly affected by the pandemic) firms appreciate such measures and therefore, generate higher returns than the less affected firms.

Secondly, research in labour and employment suggests that the firms, which are highly affected by the pandemic, engage members from the most economically vulnerable groups, such as ethnic minorities and women. In other words, workers from industries which offer limited to no work-from-home facilities and have high physical proximity work requirements, are most affected by the pandemic. Such workers are less educated, come from the low income strata, have limited access to healthcare and have fewer liquid assets relative to their incomes (Mongey, Pilossoph and Weinberg, 2021). Therefore, when a firm takes affirmative actions to benefit its employees, it promotes alleviation of income inequality and also women empowerment and directly and positively impacts the lives of the people who need the most and the investors appreciate such an action (Agócs and Burr, 1996). It is no surprise, therefore, that such firms show extraordinary returns around their CSR announcement dates.

Thirdly, when a firm announces pandemic relief, it is the members of the local community and its employees, who benefit the most from such an action (Kim and Ji, 2021). For example, when a firm provides medical support by converting its manufacturing facilities into making ventilators, hand sanitizers or distributes medical equipment including PPEs amongst the frontline workers, it is the members of the local community who are benefited the most, closely followed by its employees (Bae *et al.*, 2021; Zhang, 2021). In a way, a firm addresses income inequality, which is broadened by the pandemic, by supporting and uplifting the economically deprived classes (Mongey, Pilossoph and Weinberg, 2021) and the market reaction to such affirmative actions has

always been positive. This is especially true for the socially sensitive industries which are more affected by the pandemic (Kartseva and Kuznetsova, 2020; Koren and Pető, 2020) and a sustained policy of CSR engagement helps in ameliorating shocks to the capital markets due to industry events that are beyond the control of the management (Richardson, Welker and Hutchinson, 1999).

Fourthly, an increase in the expenses in research and development has always been appreciated by the capital markets [see for example, Woolridge and Snow (1990); Clem, Cowan and Jeffrey (2004)]. The reaction of the investors during the covid-19 is no different and the market reaction to the R&D expenses by the firms from the highly affected industries is very positive. This may be attributed to the fact that such firms need an early resolution to the current crisis and do their part to contribute towards the development of the vaccine and every news regarding vaccine development is met with a significant positive response from the market [see for example, Ngwakwe (2021); Chan *et al.* (2022); Ho *et al.*, (2022) ; Martins and Cró (2022)]. Since the highly affected firms make more investments towards the R&D of vaccine development (Lurie *et al.*, 2020), they are rewarded by the capital markets by a significant gain in their share prices.

Finally, the firms investing in R&D activities generate lower negative cumulative abnormal returns in comparison to those that avoid investing in R&D in the pre-pandemic time period. This implies that during a severe crisis period, investments in R&D can reduce the erosion of value for the shareholders. Further, the manufacturing firms involved with R&D in the pre-pandemic period generate higher return on sales and growth in total income during the pandemic quarter in comparison to the non-R&D firms. This can be explained by the fact that the R&D investments have the potential to signal the firm's capacity to better adapt to the rapidly altering business environment caused by the pandemic. Such capabilities include launching newer products and modifying business processes like implementing contactless delivery, etc. at a pace that is quicker than the ones that did not invest in R&D in the pre-pandemic period (Biswas, 2022). Our results are consistent with prior studies in the domain which find R&D investment in critical for firms (Lome, Heggeseth and Moen, 2016), particularly in a crisis (Jung, Hwang and Kim, 2018) and organizational innovation is crucial for firm performance during a financial crisis (Makkonen *et al.*, 2014). To sum up our results presented in table 3.8, we do not find strong enough evidence to reject our second hypothesis and suggest that the firms from the industries which are highly affected by the pandemic, benefit more from their CSR activities compared to the less affected ones.

3.5.6 Impact of the CSR activities by highly affected firms - interacted

We provide additional evidence regarding the abnormal stock returns of the firms, which are highly impacted by the pandemic. In this model, we interact the binary variable representing the highly impacted industries with the CSR channels and apply the OLS regression model and present the results in table 3.9.

[Insert table 3.9 here]

The results confirm our earlier findings and provides further support to the results that we obtained from our previous model. In other words, we find further evidence that the firms belonging to industries, which are highly affected by the pandemic, gain substantially more than the ones from the less affected ones. The results indicate that irrespective of the CSR channel, a company's stock experiences a higher-than-normal returns if a company undertakes benevolent actions during the pandemic. Considering the results of the CSR actions, we report that when a firm announces that it would extend medical support, its stock generates cumulative abnormal returns of 3.80% and 4.30% over one day and two days after the announcement is made. The same for the R&D support are 4.20% and 4.90%, 3.30% and 4.60% for the local community support and finally, 3.20% and 3.60% for the employee support respectively over the same time frame. All the regression coefficients are positive and significant at conventional levels, which confirm that the affirmative actions of a firm indeed result in appreciation by the investors. These results are consistent with previous studies in the same domain [see for example, Manuel and Herron (2020); Bae et al. (2021); Kim and Ji (2021); Qiu et al.(Qiu *et al.*, 2021); Zhou, Qiu and Zhang (2021)].

The results also suggest that the firms from the highly affected industries generate higher returns for their shareholders around the CSR announcement date, which supports the results of our previous model. Evidence suggests that firms from the highly impacted industries invest more in R&D, local community support and employee support and create more returns for their shareholders. All the control variables retain their earlier symbols, implying that when the

companies headquartered in the states with higher infection and death rates benefit more than the companies based in states where those rates are lower. This is because most of the benevolent initiatives of the firms are targeted to benefit the local inhabitants who are more affected by the pandemic. Hence, the humanitarian actions of the firms are appreciated by the capital markets. The states and companies with the same political ideology as the Democratic party, also gain significantly more since they are more labour-oriented and concentrate on the human resources more than their political rivals. The more high-tech firms and firms which are consumer-facing with high advertising intensities continue to benefit more than their opposites. As before, window-dressing of the financial statements is not appreciated, and is evident from the positive and significant regression coefficient for the MSCI score of 2019. The coefficients of the control for the pandemic announcement and the constant are insignificant and are therefore, inconclusive.

We now consider the results in columns (3) and (4), where we report the results of the interaction terms, along with the main explanatory and control variables. We continue to distinguish between firms from the industries that are highly affected and less affected by the pandemic and attempt to explain the abnormal returns. In this model also, we observe that the regression coefficients of the CSR activities individually are positive and significant as are those for the binary variable representing the highly affected firms at the conventional levels of confidence. The interaction term for the medical support signifies that the highly affected firms benefit 3.10% and 3.90% more over the one day and two-day event windows around the announcement date than the less affected firms. Similarly, the additional gains by the highly affected firms are 0.09% and 1.20% in case of the R&D support. In a similar vein, the surplus gains by extending the support towards the local community are 1% and 1.90% over the same time frame. Finally, the additional gains for the highly affected firms are 0.20% and 0.40% in case the firm announces schemes to support its employees. The control variables retain their original symbols and therefore, do not need any further explanation.

The results of the regression analysis using the interaction terms provide further support towards our hypothesis that the firms from the industries which are highly affected by the pandemic, are likely to register higher abnormal returns in comparison to their counterparts, which are less affected by the pandemic. This may be further explained by the fact that the highly impacted firms take more remedial measures both internally (i.e., supporting the employees) and externally (i.e., funding R&D towards developing the vaccine, supporting the local community, etc.). Such measures are adopted in the hope of bringing a quick end to the pandemic so that businesses could resume their usual commercial activities. Our results are congruent with existing literature to the extent that the highly affected firms engage with CSR to a greater degree than their less affected colleagues, resulting in generation of higher returns for their shareholders. It is evident that the CSR measures during the pandemic garner a lot of attention, both from the public and the investors, as the announcements are made in isolation and therefore, do not get diluted in the earnings figures as used to be case in the pre-pandemic period.

To sum up our findings presented in table 3.9, we provide further evidence to suggest that the firms from the industries which are highly affected by the pandemic, benefit more from their CSR initiatives in comparison to their less affected counterparts. Evidently, the firms which are highly affected by the pandemic are likely to face financial challenges due to shortage or even cessation of regular positive cash flows. This may result in increased likelihood of financial distress or even bankruptcy. In the following sub-sections, we explore the impact of the CSR measures by the highly affected firms with respect to their financial constraints risk and bankruptcy risk.

3.5.7 Impact of the CSR activities by highly affected firms and their financial constraints risk (FCR)

Following the declaration of the pandemic by WHO on 11 March 2020, firms belonging to the industries, which are more sensitive to the effects of the pandemic, suffer from significantly greater financial difficulties and reduced financial returns (Xiong *et al.*, 2020). Consequently, the covid-19 pandemic results in a severe negative impact on firm financial intermediation. In addition, firms are subject to reduced financial flexibility and increased financial costs, which results in tighter financial constraints (Goodell, 2020). Moreover, external financing decisions like bank debts are highly impacted due to the economic uncertainty (Hu and Gong, 2019). Since the beginning of 2020, the covid-19 has spread quickly across the world and consequently, firms face challenges posed by heightened uncertainty (Hassan *et al.*, 2020). Therefore, external lenders place more importance on lending risk, increasing the financial constraints risk (FCR) of firms (Zhang, Wang and Dong, 2023).

CSR provides an insurance-type protection to the firms and is likely to safeguard firms from any negative business event (Godfrey, 2005; Campbell, 2007; Story and Price, 2014). This notion leads us to the testing of our next hypothesis that the firms which belong to the highly impacted industries and face higher financial constraints risk, gain more from doing CSR than the firms which possess the opposite characteristics (i.e., less financially constrained and/or belonging to less affected industries). In order to estimate the financial constraints risk of the individual firms, we construct both the K-Z and W-W indices and apply OLS to estimate the difference of the impact of the CSR and present the results in table 3.10.

We follow Kaplan and Zingales (1997) to assign a score to each firm to measure the financial constraints risk and apply the following formula:

where, K represents the plant, property, and equipment of the previous year, and Q is calculated as (Market capitalization + Total shareholders' equity – Book value of common equity – Deferred tax assets) / Total shareholders' equity

We also follow Whited and Wu (2006) to estimate the financial constraints risk for every firm in our sample and apply the following formula:

$$WW = -0.091CF - 0.062DIVPOS + 0.021TLTD - 0.044LNTA + 0.101ISG - 0.035SGGR,$$

where CF are the annual cash flows; DIVPOS is a binary variable, which takes the value of unity (1) in case the firm pays cash dividends, zero (0) otherwise; TLTD is the ratio of long-term debt to total assets; LNTA is the natural logarithm of the total assets; ISG is the average 3-digit SIC industry sales growth rate; SGGR is the growth rate in sales of the firm.

For both K-Z and W-W indices, a higher value indicates a higher financial constraints risk (Kaplan and Zingales, 1997; Whited and Wu, 2006). However, there is no universally accepted benchmark scores of classifying firms into having high or low financial constraints risk on the basis of the K-Z and W-W indices. We address this problem by calculating the sample median scores for both

the indices and compare the scores of the individual firms. We then proceed to identify the firms with scores that are higher than the sample median score and classify them as having high financial constraints risk. Similarly, we identify the firms with scores that are lower than the sample median score and classify them as having low financial constraints risk. We report the regression results for financially constrained firms based on the K-Z index in columns (1) to (4) and do the same using the W-W index in columns (5) to (8) in table 3.10. We use columns (1) and (2) to report the results over the event window (0,1) for the firms with less and high financial constraints risk respectively. Columns (3) and (4) report the results for the firms with less and high financial constraints risk respectively for the event window [0,2]. Similarly, columns (5) and (6) report the results over the event window [0,1] for the firms with less and high financial constraints risk respectively, while columns (7) and (8) do the same for the firms with less and high financial constraints risk respectively for the event window [0,2].

[Insert table 3.10 here]

We first consider the impacts of the CSR measures and the other variables on the stock returns and in the following stride, we proceed to analyse the results of the interaction terms between the CSR measures and the binary variable representing the firms from industries which are highly affected by the pandemic. Overall, the results suggest that the CSR initiatives undertaken by the firms have positive impacts on their short-term stock returns and the returns are statistically significant at conventional levels of confidence. In addition, the results suggest that the firms which have high financial constraints risk (FCR), benefit more than their counterparts with less financial constraints risk.

The medical support provided by a firm with less financial constraints risk increases the cumulative average abnormal returns by 4.40%, whereas for a firm with high financial constraints risk benefits by 4.90% over the event window of one day following the pandemic relief announcement date. Similarly, the gains for the firms with less and high financial constraints risk over the event window [0,2] are 5.60% and 6.50% respectively. Firms belonging to the industries which are highly affected by the pandemic continue to gain significantly more than their counterparts from the less affected industries, which is evident from the fact that the regression coefficients are positive and statistically significant at conventional levels of confidence. R&D

increases the cumulative average abnormal return for the firms with low and high financial constraints risk by 1.80% and 2.90% respectively for the one-day event window following the announcement and the same for the two-day event window are 2.80% and 3.40% respectively.

A lot of firms extend support towards the local community during the pandemic and that accounts for an increase of 2.20% and 2.60% in the cumulative returns over the one-day event window in the post-announcement period for firms with less and high financial constraints risk and the gains over the two-day period are 2.90% and 3.10% respectively. In a similar vein, a company's stock creates cumulative excess returns of 1.30% and 1.40% over the one-day post-announcement period and 1.60% and 2.10% over the same two-day period for firms, which are less and highly financially constrained respectively. The control variables retain their symbols from our earlier models and the number of firms, which are less financially constrained is 158, while the other 149 have high financial constraints risk (FCR) and congruent with our earlier models, we account for the industry effects as well.

In this study, we document the difference between the impacts of the CSR efforts of the firms belonging to the industries which are less affected and the ones which are highly affected due to the pandemic on their stock returns over small event windows in the post-announcement period. Therefore, we proceed to analyse the interaction terms between the CSR measures and the binary variable representing the industries that are highly affected by the pandemic. The regression coefficients of the interaction terms suggest the effect of the CSR measures by the firms which belong to the industries which are highly affected by the pandemic. Analysing the regression coefficients of the interaction terms, we report that the regression coefficients of the interaction terms between the CSR channels (i.e., medical, R&D, local community, and employee support) and the firms from highly impacted industries by the pandemic are positive and statistically significant and this holds true for both the less and highly financially constrained firms. Therefore, we infer that irrespective of the fact that whether a firm has low or high financial constraints risk, CSR results in higher stock returns around the announcement date. Combining the results of the interaction terms depicting the impact of the CSR channels on the stocks of the highly impacted firms, our analyses show that the coefficient of the firms with high FCR is higher than the ones with low FCR. This leads us to infer that the CSR measures implemented by firms which are highly

affected by the pandemic and also have high FCR, gain significantly more than their counterparts with low financial constraints risk and the ones which has less impacted by the pandemic.

We provide further evidence of our analyses by estimating the financial constraints risk for the firms using the Whited-Wu model (2006) and report that the results are consistent with the estimations from the Kaplan-Zingales (1997) index. The results suggest that the firms with high financial constraints risk generate more gains for their shareholders in comparison to their counterparts with low financial constraints risk. For example, a firm with low financial constraints risk providing medical support positively impacts the cumulative gains by 4.20%, while a firm with high financial constraints risk does the same by 5.20% over a time window of one-day in the post-announcement period. Similarly, over the two-day event window, the cumulative gains are 4.80% and 5.80% for the firms with low and high financial constraints risk respectively. The similar cumulative gains from R&D support are 1.10% and 1.80% for the firms with low and high financial constraints risk over the event window of [0,1] and 1.40% and 2.20% over the window [0,2] respectively. Local community support accounts for 1.30% and 1.40% for the firms with low- and high FCR over the one-day period, and 1.70% and 1.90% over the two-day timeframe after the company makes the announcement. Employee support positively impacts the cumulative gains by 3.30% and 5.30% for the firms with low and high FCR respectively over the one-day period after the corporate CSR announcement, while the same over the two-day period are 4.40% and 6.50% respectively. Overall, the results suggest that all the cumulative gains from the CSR channels are positive and statistically significant at conventional levels of confidence.

The firms which are affected more by the pandemic, continue to gain more from doing CSR compared to the ones which are less affected. This is evident from the regression coefficients of the industry affected by the pandemic dummy, which are positive and significant. In addition, all the regression coefficients of the interaction terms between CSR channels and the industry highly affected by the pandemic dummy, are positive and significant at conventional levels of confidence. The medical support that a firm belonging to a highly affected industry due to the pandemic results in a cumulative abnormal gain of 1% and 1.10% over the one-day time frame and 1.20% and 1.40% for the financially less and highly affected industry with less and high financial constraint risk are 0.09% and 1.10% over the one-day period and 1.60% and 1.90% over the two-day time

frame respectively. Similarly, the local community support from a firm from an industry that is highly affected by the pandemic causes cumulative abnormal returns of 1.20% and 1.60% over the one-day and 1.80% and 2.10% over the two-day time frames in the post-announcement period for the firms with low and high financial constraints risk respectively. Supporting the employees generates cumulative abnormal returns of 1% and 1.30% over the one-day event window [0,1] and 1.50% and 1.70% over the two-day event window [0,2] for the firms from highly affected industries by the pandemic and which are less and highly financially constrained respectively. The control variables retain the signs from our baseline model and the number of firms with low levels of financial constraints risk are 278, while 29 firms have high financial constraints risk.

In a nutshell, our results indicate that the firms which are highly affected by the pandemic and have high financial constraints risk, generate more cumulative gains than their counterparts which are less affected and have low financial constraints risk. Our results are consistent with earlier studies done in the area of CSR during the pandemic and its effects on the companies [see for example, Boubaker *et al.* (2020); Manuel and Herron (2020); Martins (2021)]. As mentioned earlier, the firms belonging to the industries that are highly affected by the pandemic, are more likely to be highly financially constrained compared to the ones which are less affected by the pandemic (Zhang, Wang and Dong, 2023). Consequently, those firms have more urgency with regards to resuming normal business activities at the earliest and improve their financial situation, which has deteriorated immensely because of the pandemic (Ding *et al.*, 2021; Kim and Ji, 2021). This heightened sense of urgency compel those firms to invest in CSR activities during the pandemic, since there exists a negative relationship between CSR and financial constraints risk (Farooq, Noor and Qureshi, 2022). In addition, firms with high CSR engagement, can boost their internal and external financial intermediation, as well as liquidity and both short- and long-term debt, which in turn, alleviate their financial constraints risk (Zhang, Wang and Dong, 2023).

Moreover, firms which are financially constrained, depend on the risk management capabilities of CSR and need to create a safety net more than the ones which are less affected. Protection of firm value during the pandemic is a tough challenge and the firms endeavour to achieve that objective by increasing their CSR engagement (Qiu *et al.*, 2021). As a matter of fact, the financially distressed firms benefit more from the risk management and insurance capabilities of CSR than the financially stronger firms, including the firms with stronger financial performance, thereby

reducing the market perception of their future risk. The financially weaker firms need to reduce their future risk and they do it by increasing their engagement with CSR, since high CSR reduces future risk, which consequently reduces the likelihood of default in the future. In other words, the more volatile the situation becomes, the more the markets dread uncertainty. CSR has the capacity to allay this concern in the market. Hence, the insurance benefit of CSR becomes more significant when the financial markets experience uncertainties, implying that CSR in turbulent times becomes a particularly valuable insurance contract (Kim, Lee and Kang, 2021). As a result, the financially constrained firms invest more in CSR and create higher than expected returns for their shareholders, since CSR creates moral and exchange capital, which are important for the firms with high financial constraints risk.

Therefore, based on the results presented in table 3.10, we argue that there is strong evidence to accept our third hypothesis and suggest that high CSR performance helps improve the financial constraints risk during the covid-19. In addition, we also furnish adequate evidence to substantiate our fourth hypothesis and suggest that the firms from the highly impacted industries benefit more from their CSR initiatives during the pandemic compared to their less affected colleagues.

In case a firm is financially constrained over a long time, the probability of it going bankrupt increases and such firms engage in CSR in order to reduce the probability of future financial insolvency (Gupta and Krishnamurti, 2018; Cooper and Uzun, 2019). This causal relationship between CSR and bankruptcy risk compels us to further explore the effects of CSR on the short-term stock returns in the light of bankruptcy risk of firms, which we investigate in the following sub-section.

3.5.8 Impact of the CSR activities by highly affected firms and their bankruptcy risk (BR)

We now analyse the short-term effects of CSR in the light of the bankruptcy risk of firms. Consistent with our previous analyses, we begin with studying the impact of the CSR measures individually and then proceed to analyse their interaction terms with the binary variable representing the industries highly affected by the pandemic. We follow Altman (1968) and construct the z-score for each firm and then categorise the companies based on their z-score, which is a measure of their bankruptcy risk. We estimate the z-score of each firm using the formula:

$$Z-Score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$$

where, A is the ratio between working capital and total assets; B is the ratio between retained earnings and total assets; C represents the ratio between earnings before interest and tax and total assets; D is the ratio of market value of equity to the total liabilities of a firm & E is the ratio between sales and total assets.

Altman (1968) suggests that companies with z-scores less than 1.80 have high bankruptcy risk and are hence classified to be in the red zone. Firms with z-scores between 1.80 and 3.00 are relatively safer and are not likely to be bankrupt in the near future and are classified to be in the grey zone. Finally, firms with z-scores higher than 3.00 are safe firms and are not likely to face bankruptcy and are classified to be in the green zone. We award scores of zero (0), one (1) and (2) for the companies in the red, grey, and green zones respectively, regress the CSR measures and their interaction terms on the cumulative abnormal returns over the short event windows of [0,1] and [0,2] and represent the results in table 3.11.

[Insert table 3.11 here]

We use the columns (1), (2) and (3) to report the regression results of the firms in the red zone (i.e., firms with high bankruptcy risk), grey zone (i.e., firms with less likelihood of going bankrupt) and green zone (i.e., firms with almost no likelihood of bankruptcy) respectively for the event window [0,1]. Similarly, we use the columns (4), (5) and (6) to report the results of the firms in the same order over the event window [0,2]. The results indicate that the CSR measures for all the three categories of firms positively influence the cumulative abnormal returns, and the influence is statistically significant as well. In addition, the firms belonging to the industries which are highly affected by the pandemic, benefit more in comparison to the ones from the less affected industries. The control variables retain their signs from our earlier analyses and the number of firms in the red zone, grey zone and green zone are 151, 65 and 91 respectively.

The results suggest that the medical support impacts the short-term cumulative returns by 3.20%, 2.10% and 1.90% for the firms in the red, grey, and green zones respectively over the time frame of one day in the post-announcement period. R&D support does the same in the tune of 4.60%, 2.80% and 1.70% for the companies in the same order as before over the same time frame of one

day in the post announcement period. Supporting the local community enhances the cumulative one-day returns in the post announcement period by 3.60%, 2.10% and 1.80% for the firms in the order of red, grey, and green zones respectively. Finally, employee support causes the cumulative returns to increase by 5.20%, 4.90% and 3.40% respectively over the one-day time frame after the company makes the CSR announcement.

When we consider a marginally larger event window and include one more day in the event window and estimate the regression coefficients, we have further evidence in support of our initial notion. The results suggest that the medical support influences the short-term cumulative returns by 3.70%, 2.90% and 2.50% for the firms in the red, grey, and green zones respectively over the time frame of two days in the post-announcement period. R&D support causes the returns to improve by 5.50%, 3.10% and 2.30% for the companies in the same order as before over the identical time frame of two days in the post announcement period. Supporting the local community boosts the cumulative two-day returns in the post announcement period by 4.10%, 2.80% and 2.10% for the firms in the red, grey, and green zones respectively. Finally, employee support causes the cumulative returns to rise by 5.70%, 5% and 3.90% respectively over the two-day time frame after the company makes the CSR announcement.

The interaction terms between the CSR channels and the dummy representing the industries which are highly affected by the pandemic, indicate the influence of the CSR methods undertaken by the highly affected firms on the short-term stock returns. Consistent with the results of the financial constraints risk and CSR, we find that the CSR done by the firms belonging to the industries which are highly affected by the pandemic, impel their stocks to generate higher cumulative abnormal gains compared to the ones from the less affected industries. The medical support provided by a firm from a highly affected industry generates an additional return of 1.70%, 1.30% and 1.10% for a firm in red, grey, and green zones over the one-day time frame, while the same for the two-day time frame are 2.10%, 1.70% and 1.50% respectively. Similarly, R&D support results in additional gains of 1.60%, 0.90% and 0.70% for firms in the red, grey, and green zones respectively over the day following the day of announcement and 2.10%, 1.20% and 1% over the next two days following the announcement. Likewise, the local community support provided by the firms from the highly impacted industries cause the stocks to generate additional returns in the tune of 1%, 0.80% and 0.60% for the firms in the red, grey, and green zones respectively over an event window

of [0,1] and the same for the [0,2] event window are 1.40%, 1% and 0.90%. By the same token, the employee support extended by the firms from the highly impacted industries accounts for excess returns of 1.20%, 0.80% and 0.50% for the firms in the red, grey, and green zones respectively over the one-day time frame in the post announcement period and the same for the two-day time frame are 1.40%, 1% and 0.80%.

In a nutshell, our results suggest that the firms from the industries which are highly affected by the pandemic benefit more from CSR engagement compared to their less impacted counterparts. The results also indicate that the firms with high bankruptcy risk stand to gain more from CSR in comparison to the ones with lower bankruptcy risk and the gains are higher as the probability of bankruptcy becomes higher. As we move from the green zone firms to the ones in the grey zone, the gain from CSR engagement increases and the gains are maximised for the firms, which have the highest probability of default, i.e., have the highest bankruptcy risk and are in the red zone with the lowest z-scores. We now combine the influence of CSR on the short-term additional gains with the results of the probabilities of bankruptcy and the industries that are highly affected by the pandemic. We observe that the firms which belong to the industries that are highly affected by the pandemic and also have the highest probability of going bankrupt, stand to gain the maximum from the CSR channels and we witness this phenomenon across all the four CSR channels that we consider in this study.

Our findings are congruent with earlier studies which have been done in the areas relating to bankruptcy risk and CSR. The corporations, which seek to maximise firm value, rationally procure risk management mechanisms when they anticipate financial distress in the near future. This is because the risk management instruments become most valuable to the companies when the cost of the forecasted financial distress becomes so burdensome that bankruptcy becomes impending and inevitable (Smith and Stulz, 1985). Since CSR engagement can be implemented as a risk management strategy, prior CSR commitment can mitigate the expected distress cost and consequently, lower the likelihood of bankruptcy (Lin and Dong, 2018). Therefore, such firms resort to CSR to improve their prospects of avoiding bankruptcy. In other words, firms with high probabilities of bankruptcy increase their CSR engagement and this results in higher-than-normal returns, at least in the short term. The extent to which CSR has the capacity to reduce the likelihood of bankruptcy, varies with the types of social capitals that are generated through prior CSR

engagement and finance theory suggests that the risk reduction property of CSR engagement can be ascribed to two types of social capital that prior CSR engagement creates, viz., exchange capital and moral capital (Gupta and Krishnamurti, 2018).

Exchange capital encompasses the intangible assets, which are based on relations (for example, brand name and loyalty, etc.) that evolve from the prevalence of trust between a company with its primary stakeholders, which consists of employees, customers, investors, suppliers, and shareholders. On the other hand, moral capital refers to another kind of relation-based intangible assets (for example, legitimacy, leniency, and social consent, etc.) that flourish from the interactions between a firm with its secondary stakeholders, which includes the general public, media, activists, non-governmental organizations (NGOs) and other interest groups (Gupta and Krishnamurti, 2018; Lin and Dong, 2018). In case of a negative event, the risk reducing property of CSR involvement primarily operates through moral capital instead of exchange capital (Mattingly and Berman, 2006; Godfrey, Merrill and Hansen, 2009). The reason behind this occurrence is that unlike exchange capital, moral capital represents the results of the philanthropic activities, rather than the self-serving activities that are aimed at maximizing profitability while at the same time ingratiating the firm with the impacted community. Therefore, there exists a negative association between previous CSR engagement and the likelihood of bankruptcy of firms (Lin and Dong, 2018). Moreover, since the moral capital and exchange capital are complimentary to each other, especially in case of a firm that is either close to or is already into bankruptcy, both these components of CSR play an important role in helping a distressed firm emerge from bankruptcy (Gupta and Krishnamurti, 2018).

This behaviour of firms also originates from the idea that a higher CSR involvement results in creation of an insurance-type protection, which the firms can bank on during times of crisis (Godfrey, 2005; Story and Price, 2014). Firms with strong CSR performance are less likely to face bankruptcy compared to the ones with weak links with CSR. In other words, firms with stronger CSR engagement have a lower probability of bankruptcy relative to the ones with weaker or no involvement with CSR (Daily and Dalton, 1994; Darrat *et al.*, 2016; Gupta and Krishnamurti, 2018; Cooper and Uzun, 2019). Our findings are also consistent with the stakeholder theory, which states that CSR enhances stakeholder engagement and can use their (i.e., the stakeholders) support for financial gain, especially during a financial crisis. On the same vein, firms with weaker CSR

engagement do not have stakeholder support available and therefore, cannot depend on their (i.e., the stakeholders) support in times of need (Fernando and Lawrence, 2014; Omran and Ramdhony, 2015; Ali and Abdelfettah, 2016; Richter and Dow, 2017; Cooper and Uzun, 2019).

In summary, in this chapter, we investigate the impact of CSR done by the companies, especially by those from the industries which are highly affected by the pandemic on their short-term stock returns. We find that the stocks of the firms which declare support towards the pandemic relief, generate higher cumulative abnormal returns over the short event windows. Thereafter, we proceed to investigate the reasons behind such behaviour of those stocks and segregate the firms according to the severity of impact of the pandemic. We find evidence that the firms from the highly affected industries gain significantly more than their less affected counterparts. During the pandemic, many of the firms encounter diminished cash flows, causing their financial constraints risk to aggravate and therefore, we incorporate the financial constraints risk and analyse the results further. We follow Kaplan and Zingales (1997) and Whited and Wu (2006) to measure the financial constraints risk, benefit more from CSR during the pandemic, compared to the less risky ones. In addition, the firms which belong to the highly affected industries and have more financial constraints risk, benefit more from identical levels of CSR in comparison to their counterparts which are less impacted by the pandemic and have lower financial constraints risk.

Since high and uncontrollable levels of financial constraints encountered over a long period of time may result in bankruptcy, therefore, we further analyse the behaviour of the stocks of our sample firms from the aspect of the likelihood of bankruptcy and their CSR engagement tendencies. We follow Altman (1968) and construct z-scores for our sample firms to measure their likelihood of bankruptcy in the foreseeable future and estimate the impacts of the different channels of CSR that the firms adopt during the pandemic. We find strong evidence that firms, which face higher probability of bankruptcy, gain significantly higher than the firms with lower bankruptcy risk. Consistent with the results involving financial constraints risk, we find that the firms from the highly affected industries create more short-term returns for their shareholders by strong CSR engagement. Combining the two results, we observe that the firms which are closer to bankruptcy and belong to the highly affected industries by the pandemic, benefit significantly more from CSR as they resort to CSR to avoid insolvency. We furnish strong evidence in support of our

fifth hypothesis and infer that the closer a firm is to bankruptcy, the higher are its benefits from CSR. Moreover, we also provide sound testimony to accept our sixth hypothesis and suggest that the firms from highly impacted industries and are closer to bankruptcy, benefit more from CSR initiatives during the pandemic in comparison to their less affected colleagues. The firms, can therefore, use CSR as a sound risk management instrument, and can effectively lower their financial constraints risk as well as bankruptcy risk.

3.6 Conclusion

Inspired by the advent of the covid-19 pandemic and its widespread effect on the corporate world, we attempt to answer the question whether CSR involvement matters when a firm faces financial hardships. The stakeholder theory suggests that CSR can assist a firm by involving its stakeholders and can utilise their support for financial benefits, especially during financial duress. On the other hand, agency theory proposes that CSR is a financial burden on the firm as the funds are being utilized for any objective other than financing profitable business projects, thereby making the firm financially worse off than what it could have been without engaging in CSR. Otherwise, CSR may only be a factor, which is separate from the other business operations and would have no impact on the financial performance of the firm and an integral factor of its internal structure and a genuine altruistic behaviour of the firms that can afford to do it.

In this chapter, we use the event study methodology to examine the impact of the exclusive CSR announcements that the companies make towards the pandemic relief, on the short-term stock returns. We segregate the CSR-announcing firms based on the severity of the impact of the pandemic and attempt to isolate the reasons behind the behaviour of their stocks from the aspects of financial constraints risk and bankruptcy risk. During the pandemic, we witness for the first time that companies announce their CSR initiatives without any reference to the earnings. Therefore, it gives us an excellent opportunity to investigate the immediate market reactions to the exclusive CSR announcements. We make our study exhaustive in nature by considering all the 313 corporate CSR announcements that are made in the USA in 2020 and study investor reactions to them.

Our study makes several important contributes to the existing literature, and CSR literature in particular. In the first place, we reveal investors' reactions to the CSR announcements as well as the theory of the firm that dominates investor behaviour and the positive reaction from the investors is consistent with the stakeholder theory of the firm. Secondly, this study demonstrates the positive moderating influence of the severity of the pandemic on the CSR-stock return relationship, indicating that the risk management benefit of CSR is more pronounced for the firms from the highly affected industries. We further explore the risk management capability of CSR and extend it to financial constraints risk and bankruptcy risk and find positive moderating

influences of both financial constraints risk and bankruptcy risk on the CSR-stock return relationship, suggesting two more important contributions of this study.

Our study has important implications for industry professionals, researchers, and regulators. This study further reinforces the positive influence of a firm's CSR engagement on its financial performance, particularly from the points of view of the financial constraints risk and bankruptcy risk that it may encounter due to unforeseen and unfortunate turn of events. This study is of special interest for the company managers who are entrusted with the decisions regarding CSR budgets and channels, while the company undergoes financial crisis. From an academic perspective, this study fills an important gap in the existing literature regarding CSR and financial duress. This is the first attempt to measure the impact of the exclusive CSR announcements on the stock returns. More specifically, this study establishes an irrefutable link between stock market reaction, financial constraints risk and bankruptcy risk and explains the reasons behind the behaviour of the different stocks. Finally, the regulators may benefit from the results of this study as well. The regulators may motivate firms to increase their CSR engagement by modifying an existing rule or even creating new ones to inspire firms to move towards that direction. Firms with commendable CSR engagement records may be provided with additional financial and non-financial assistance, especially during financial distress. Such a step is envisaged to benefit both the firm and the larger society in the long-term, it is highly likely that the firm would maintain or even increase its CSR engagement, once it successfully manages to turnaround its business.

This study is limited by data availability and our results are only applicable to the firms which are listed and publicly traded on the US stock exchange. Future studies can include smaller and/or privately-owned firms, which are unlisted and are located outside the USA. Moreover, in our study, we consider all firms, irrespective of their nature of business and make exclusive CSR announcements during the pandemic. It may happen that the reactions of the investors in different industries differ significantly to the CSR announcements. Future studies can explore the existence of differences between industries and whether other industry-specific factors influence the impact of CSR on the stock returns. Future studies can also explore whether a firm can manage to stage a revival of its financial performance by increasing its CSR engagement, i.e., if a firm can manage to reduce its financial constraints risk or have been able to avert bankruptcy through application of CSR. We leave these questions for the future research to address.

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List of Tables

Table 3.1: Industrial distribution of firms

Table 3.1 shows the industrial distribution of the firms in the sample. The sample represents 313 firms from thirty-two different industries. Utilities (32) represents the single largest number of firms, while 75 firms involved with the financial industry (includes banks, insurance, capital markets and consumer & diversified finance) had donated towards the pandemic relief.

Sr. No.	Industry Name	Freq.	Percent	Cum.	Covid-19
					impact
1	Utilities	32	10.22	10.2	Low
2	Food, Beverage & Tobacco	28	8.95	19.2	Low
3	Banks	27	8.63	27.8	High
4	Insurance	21	6.71	34.5	Low
5	Capital Markets	16	5.11	39.6	Low
6	Household Goods & Apparel	13	4.15	43.8	High
7	Retail	12	3.83	47.6	High
8	Consumer & Diversified Finance	11	3.51	51.1	Low
9	Software	11	3.51	54.6	Low
10	Chemicals	10	3.19	57.8	Low
11	Oil & Gas	10	3.19	61.0	High
12	Health Care Equipment & Services	9	2.88	63.9	Low
13	Industrial Goods	9	2.88	66.8	High
14	Commercial Vehicles & Machinery	8	2.56	69.3	High
15	Computer Services	8	2.56	71.9	Low
16	Semiconductors & Equipment	8	2.56	74.4	High
17	Commercial Support Services	7	2.24	76.7	High
18	Personal Products	7	2.24	78.9	High
19	Real Estate	7	2.24	81.2	High
20	Technology Hardware	7	2.24	83.4	High
21	Health Care Providers	6	1.92	85.3	Low
22	Restaurants & Leisure	6	1.92	87.2	High
23	Automobiles & Parts	5	1.60	88.8	High
24	Food & Drug Retailers	5	1.60	90.4	High
25	Media	5	1.60	92.0	Low
26	Telecommunications	5	1.60	93.6	Low
27	Transportation	5	1.60	95.2	High
28	Energy Equipment & Services	4	1.28	96.5	Low
29	Internet	4	1.28	97.8	Low
30	Building Materials & Packaging	3	0.96	98.7	High
31	Aerospace & Defense	2	0.64	99.4	High
32	Basic Resources	2	0.64	100	Low
Total		313	100		
Table 3.2: The average abnor	rmal returns ove	er the event window			
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Table 3.2 shows the AARs of the stocks over the event window [-5, +4]. The statistical significance of each daily return is also shown on the basis of both parametric and non-parametric tests. A statistically significant negative trend is witnessed till the announcement date and a positive trend is observed over the post-announcement period. We use the market-model to estimate the cumulative abnormal returns and the sample consists of 313 firms from thirty-two industries.

				Parametric tests				Non-parametric tests	
t	AAR	t-test	CDA	Patell	PatellADJ	BMP	Corrado	Zivney	GenSign
-5	0.0003	0.2576	0.2460	-1.5341	-1.2293	-0.4486	0.8050	0.3117	1.2223
-4	-0.0002	-0.1965	-0.1877	0.9897	0.7931	0.3136	0.0023	0.3475	-0.6071
-3	-0.0061	-6.2715***	-5.9904***	-6.0109**	-4.8169**	-1.7302*	-2.8821***	-2.1226**	-2.2513**
-2	0.0006	0.5688*	0.5433***	1.1723**	0.9394**	0.3436*	1.1375*	0.6503*	0.8793*
-1	-0.0042	-4.3673*	-4.1716	-5.2136***	-4.1779***	-1.5617	-1.1352	-0.7610	-1.0644
0	0.0015	1.5827***	1.5117***	2.2810***	1.8279***	0.6514*	0.7524*	0.3180*	0.8793*
1	0.0021	1.5285***	1.4600**	3.7900**	3.0371**	1.2020**	0.9666*	0.9904**	0.2641*
2	0.0039	0.9729***	0.9293*	1.6498***	1.3221***	0.6522*	1.0942***	0.3357*	1.0644**
3	0.0024	4.4984***	4.2968***	5.4337***	4.3543***	2.0084**	4.2562***	2.8607***	3.2367***
4	0.0033	3.4414***	3.2872***	3.2810*** 2.6293*** 1.1426*			0.5405**	0.7067**	0.6506***
***,	** and * indicat	e statistical significanc	re at 1%, 5% and 109	% respectively.					

Table 3.3: T	he cumulative average	ge abnormal retur	ns (CAAR) over different	event windows
		2		/	

Table 3.3 shows the cumulative average abnormal returns (CAARs) of the stocks over different multi-day event windows. The statistical significance of each daily return is also shown on the basis of both parametric and non-parametric tests. The returns of the companies are both positive and statistically significant over the event windows. In the post-announcement period, the returns show a statistically significant positive movements in all the multi-day event windows. We use the market-model to estimate the cumulative abnormal returns and the sample consists of 313 firms from thirty-two industries.

				Parametr	ic Tests				Non-Parametri	ic Tests	
t	CAAR	t-test	CDA	Patell	PatellADJ	BMP	Kolari	Corrado	Zivney	GenSign	GRANKT
[-1;1]	-0.0006	-0.0014**	-0.0055**	-0.8091***	-0.9012***	-0.0012	-0.0012	-0.0109	-0.3005	0.2001	0.0018***
[-2;1]	0.0000	0.0006**	0.0037*	0.0057***	0.0061***	0.0064	0.0103	0.0014	0.0033	0.0021	0.0024***
[-3;1]	-0.0061	-0.8041**	-0.0045**	-0.0504***	-0.0529***	-0.0451*	-0.0092	-0.1017	-0.0015	-0.0303	-1.0864***
[-4;1]	-0.0063	0.0009**	0.0078**	1.1081***	1.1013***	0.6628	0.6879	0.7725	0.2148	0.9061*	1.4426***
[-5;1]	-0.0060	-0.1171**	-0.4041**	-0.0054***	-0.0044***	0.0804	0.0638	1.3175	0.7217	1.6796*	2.5779***
[-1;2]	0.0033	1.4941**	1.5953**	4.9640***	4.8824***	1.0945	0.8963	1.1147	0.5461	0.5971	0.0046***
[-1;3]	0.0057	0.0091***	1.0424**	0.1490***	0.1614***	1.2112*	1.0007	1.2112***	0.0012**	1.0233	1.0311***
[-1;4]	0.0090	0.0017**	0.0047*	0.0045***	0.0068***	1.0014*	0.0109	0.0031**	0.0014*	0.0003**	0.0078***
[0;1]	0.0036	0.0042***	0.0071***	0.0177***	0.0197***	0.0841*	0.0632**	0.2347*	0.4235**	0.4412**	0.0903***
[0;2]	0.0075	0.0405***	0.6141***	0.3116***	0.1854***	0.4715***	0.2065*	0.6258*	0.3845*	0.7561**	0.2818***
***, ** and * indicate statistical significance at 1%, 5% and 10% respectively.											<u>.</u>

Table 3.4: Companies providing medical, R&D, local community, or employee support

Table 3.4 shows the number of companies providing various kinds of support during the pandemic. Medical support includes but is not limited to manufacturing and donating ventilators or PPEs or hand sanitizers. R&D support indicates whether the firm has made financial contribution towards development of the vaccine for the coronavirus. Local community support includes but is not limited to providing free healthcare towards the affected members of the local community, distributing free food amongst members of the local community. Employee support includes but is not limited to not reducing the employee salaries or making them redundant, extending financial support towards the families of the affected or deceased employees. The last row reports the extent to which the firms are affected by the pandemic, based on S&P Global's Report on the Probability of Default by various industries due to the pandemic. Based on the report, of the 313 companies in the sample, 141 firms were severely affected while the impact on the rest 172 was low.

Type of support	Number of companies
Industry impact of the pendomia	141: highly impacted
industry impact of the pandenne	172: less impacted
Medical support	164
Research & development support	166
Local community support	157
Employee support	153

Table 3.5: Descriptive statistics of the regression variables

Table 3.5 summarizes the descriptive statistics of the regression variables. The data for the cumulative average abnormal returns, infection and death rates, the ratio of advertising expenses to the net sales are continuous. The OECD score of technological intensity, which ranges from 1 to 4 for all the companies, and the MSCI scores are discret in nature. The other variables are binary variables, with values of either zero (0) or one (1). For the detailed description of the variables, please refer to appendix 3.1.

Variable	Observations	Mean	Std. Dev.	Min	Max
CAR[0;1]	313	0.004	0.081	-0.204	.412
CAR[0;2]	313	0.008	0.103	-1.406	.416
Medical support	313	0.524	0.500	0	1
Industries highly affected by the pandemic	313	0.450	0.498	0	1
R&D support	313	0.530	0.500	0	1
Local community support	313	0.502	0.501	0	1
Employee support	313	0.489	0.501	0	1
State infection rate	313	0.279	0.025	0.198	0.390
State death rate	313	0.003	0.001	0.002	0.004
State political affiliation	313	0.498	0.501	0	1
Company political affiliation	307~	0.362	0.481	0	1
Technological intensity	313	2.214	1.102	1	4
Advertising intensity	313	0.018	0.048	0	0.622
MSCI score of 2019	313	2.588	3.999	0	17
Pandemic announcement control	313	0.001	0.073	-0.230	0.341
Altman's Z-score	313	0.783	0.883	0	2
Kaplan-Zingales index	313	0.502	0.501	0	1
Whited-Wu index	313	0.070	0.256	0	1

 \sim 6 companies in our sample did not make any financial donation to any political party.

Table 3.6 reports the pairwise correlations between the regression variables. The results show that some of the variables are correlated, and the majority of the correlations expectedly prevail amongst the CARs. However, the explanatory variables are not significantly correlated and therefore, there is extremely low probability of generating erroneous results from the analyses involving these variables.

riigii State State	1 and chin			
impacted Local State State ny Techno CAR CAR Medical industry R&D Employee logical Advertisin	С	Altman's	K-Z	W-W
Variables community infection death political generation g	announc			
[0;1] [0;2] support by the support support support intensit of affiliati car i v intensity	ement	Z-score	Index	Index
c support rate rate on on 2019	control			
CAR[0;1] 1.000				
CAR[0;2] .794* 1.000				
(.000)				
Medical				
.092* .083* 1.000				
(.106) (.146)				
Industries				
highly affected $.006^{**}$ $.050^{*}$ $.027^{*}$ 1.000				
pandemic (227) (277)				
(.920) $(.378)$ $(.631)$				
.039* .077* .013* .023 1.000				
support				
(.495) (.180) (.817) (.687)				
Local				
community .030* .023* .022 .016* .042** 1.000				
support $(502) = ((01) = ((05) = (772) = (4(1))$				
(.522) $(.691)$ $(.692)$ $(.772)$ $(.461)Employee$				
.105* .087* .113** .050** .075* .067*** 1.000				
support				
(.066) (.129) (.046) (.374) (.186) (.236) State				
040050097*034111*017***050*** 1.000				

infection

rate	(.488)	(.386)	(.087)	(.553)	(.049)	(.764)	(.377)									
State																
death	.030	.025	.038*	.089*	.047**	.002***	.012*	.351*	1.000							
rate	(.596)	(.656)	(.501)	(.118)	(.404)	(.978)	(.828)	(.000)								
State			()													
political	036	012	035*	004**	035*	022	029	132*	.316***	1.000						
affiliation	(532)	(827)	(537)	(950)	(537)	(693)	(611)	(019)	(000)							
Company	(.992)	(.027)	()	(.750)	()	(.079)	(.011)	(.015)	(.000)							
political	052	003	051*	012**	026	018*	034	077**	.055*	.150*	1.000					
affiliation	(.362)	(.952)	(.369)	(.831)	(.646)	(.755)	(.552)	(.181)	(.333)	(.009)						
Technological																
intensity	.067	.010	.036*	.007*	.061**	.015*	.193*	.140	.013**	037	157*	1.000				
Advertising	(.239)	(.867)	(.531)	(.903)	(.283)	(.790)	(.001)	(.013)	(.816)	(.513)	(.006)					
intensity	.066**	.060*	.030**	.042*	.055*	.095*	.084	090	071*	039	169*	067	1.000			
MSCI score	(.245)	(.295)	(.595)	(.461)	(.336)	(.095)	(.136)	(.111)	(.209)	(.493)	(.003)	(.238)				
62010	.014	.008	028*	003*	030*	016***	056	.049*	034	083*	055	.027***	089	1.000		
of 2019	(.806)	(.885)	(.623)	(.957)	(.599)	(.772)	(.324)	(.388)	(.548)	(.144)	(.335)	(.630)	(.116)			
Pandemic																
announcement	.083	.079	021*	035	072	071**	.081**	013	067	027	.030*	041	032**	012	1.000	
control	(.149)	(.174)	(.713)	(.538)	(.208)	(.216)	(.161)	(.824)	(.245)	(.643)	(.605)	(.472)	(.582)	(.839)		
Altman's	002	026	- 039	209*	051**	- 064	023***	- 041	- 064	- 088	- 219*	140**	160*	014**	062***	1.000
Z-score	.002	.020	057	.207	.031	004	.045	071	00+	000	217	.170	.100	.017	.002	1.000

	(.977)	(.654)	(.492)	(.000)	(.366)	(.256)	(.679)	(.475)	(.257)	(.121)	(.000)	(.013)	(.005)	(.811)	(.278)			
Kaplan-																		
Zingales	.030	.046	.009***	086	055	.054***	.016**	.006**	.071*	.150*	.153*	288*	008**	.075*	.001	122	1.000	
Index																		
	(.605)	(.426)	(.868)	(.127)	(.336)	(.338)	(.777)	(.922)	(.213)	(.008)	(.007)	(.000)	(.882)	(.187)	(.985)	(.030)		
Whited-Wu	011	010*	013*	023	092	074*	006	060**	158*	026	006	060*	020*	040	027**	150*	174*	1.000
Index	.011	.010	015	025	072	.074	.000	.007	.150	.020	000	.000	02)	040	.027	157	.1/4	1.000
	(.847)	(.858)	(.816)	(.687)	(.105)	(.191)	(.914)	(.221)	(.005)	(.648)	(.912)	(.289)	(.612)	(.475)	(.636)	(.005)	(.002)	
*** p<.01, **	*** <i>p</i> <.01, ** <i>p</i> <.05, * <i>p</i> <.1																	

Table 3.7 reports the regression results of the individual CSR efforts of the companies during the pandemic. The pandemic relief efforts of the companies are broadly classified into 4 types, viz., medical support, R&D support, local community support and employee support. We start our analyses with assessing the impacts the individual relief efforts on the abnormal returns over the event windows. We also incorporate a number of control variables like the infection and death rates of the state of their headquarters, the technological intensity, the advertising intensity, the MSCI score of the previous year and the control for the pandemic announcement date. The results indicate that the regression variables have positive and statistically significant impacts on the cumulative average abnormal returns over the different event windows. Columns (1) and (2) report the regression coefficients of the medical support carried out by the companies for the event windows (0,1) and (0,2) respectively. Similarly, columns (3) and (4) do the same for the R&D support, columns (5) and (6) for the local community support and columns (7) and (8) for employee support respectively.

	<i>(1)</i> CAR[0.1]	<i>(2)</i> CAR[0.2]	<i>(3)</i> CAR[0.1]	<i>(4)</i> CAR[0.2]	<i>(5)</i> CAR[0.1]	<i>(6)</i> CAR[0.2]	<i>(7)</i> CAR[0.1]	<i>(8)</i> CAR[0.2]
Medical support	.063*	.079**	- [-7]	- [-,]	- [-)]	- [-7]	- [-,]	- [-)]
11	(.011)	(.012)						
R&D support			.044**	.048***				
1 1			(.023)	(.008)				
Local community support					.054***	.059**		
					(.048)	(.034)		
Employee support							.083**	.099**
· · · ·							(.026)	(.042)
Industries highly affected by the pandemic	.041***	.061**	.051*	.053**	.038*	.031***	.032**	.041*
	(.066)	(.012)	(.078)	(.012)	(.081)	(.012)	(.071)	(.012)
State infection rate	.123**	.123*	.183**	.043*	.143**	.092*	.168*	.085**
	(.227)	(.264)	(.221)	(.266)	(.225)	(.265)	(.218)	(.264)
State death rate	2.347*	1.352**	3.546*	1.276*	2.218*	1.315**	2.655**	1.269**
	(1.735)	(1.756)	(1.785)	(1.816)	(1.759)	(1.801)	(1.676)	(1.746)
Company political affiliation dummy	004*	003**	005**	002*	005*	001*	004**	002**
	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)
State political affiliation dummy	003*	002*	002**	001*	002*	001*	002**	001*
	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)
Technological intensity	.005*	.002*	.005**	.004**	.005***	.001***	.007**	.002**
	(.001)	(.004)	(.007)	(.007)	(.008)	(.009)	(.015)	(.016)
Advertising intensity	.127**	.133**	.132**	.139**	.116***	.131*	.149**	.149*
	(.102)	(.123)	(.103)	(.123)	(.103)	(.124)	(.102)	(.124)
MSCI score of 2019	.032**	.034***	.026**	.028**	.033**	.037***	.026**	.028**
	(.017)	(.021)	(.025)	(.017)	(.012)	(.017)	(.022)	(.034)
Pandemic announcement control	.101	.113	.097	.107	.106	.113	.117	.128

	(.068)	(.081)	(.068)	(.081)	(.068)	(.082)	(.067)	(.082)
Constant	016	.055	03	.038	033	.04	026	.042
	(.058)	(.07)	(.057)	(.069)	(.058)	(.069)	(.057)	(.069)
Industry effects	Yes							
Observations	307	307	307	307	307	307	307	307
R-squared	.461	.418	.456	.418	.427	.448	.481	.408
-								

Standard errors are in parentheses *** *p*<.01, ** *p*<.05, * *p*<.1

The lengths of the event windows are mentioned in braces and the number of observations vary depending on the length of the event window considered. The total number of firms in the sample is 313, representing thirty-two industries. The final sample size is 307, since 6 firms do not have any political affiliation. For the detailed description of the variables, please refer to appendix 3.1.

Table 3.8 reports the impact of the CSR efforts done by the firms belonging to the industries, segregated by the degree of impact of the pandemic, i.e., industries which are highly impacted and less impacted by the pandemic. The highly impacted industries are identified based on the S&P Global's report on probability of default of different industries, dated 30 April 2020. The highly impacted industries variable is a binary variable, which takes the value of unity (1) if the firm belongs to a highly impacted industry, and zero (0) otherwise. We estimate the regression models separately for the less and high impacted industries. We report the results of the medical support in columns (1) and (2) for the event windows (0,1) and (0,2) respectively. Similarly, columns (3) and (4) report the results for the R&D support, columns (5) and (6) report the same for local community support and columns (7) and (8) report for the employee support initiatives respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CAR[0,1]	CAR[0,2]	CAR[0,1]	CAR[0,2]	CAR[0,1]	CAR[0,2]	CAR[0,1]	CAR[0,2]
Medical support by firms from less impacted industries	.017**	.024***						
	(.013)	(.016)						
Medical support by firms from highly impacted industries	.047***	.056*						
	(.021)	(.024)						
R&D support by firms from less impacted industries			.018**	.027***				
			(.013)	(.016)				
R&D support by firms from highly impacted industries			.025**	.031**				
			(.027)	(.024)				
Local community support by firms from less impacted industries					.022**	.025*		
					(.013)	(.016)		
Local community support by firms from highly impacted industries					.031***	.032**		
					(.021)	(.024)		
Employee support by firms from less impacted industries							.041***	.048**
							(.013)	(.016)
Employee support by firms from highly impacted industries							.044**	.051*
							(.020)	(.024)
Industries highly affected by the pandemic	.044***	.063**	.046**	.055**	.040**	.045***	.037***	.043**
	(.057)	(.062)	(.064)	(.042)	(.046)	(.052)	(.048)	(.021)
State infection rate	.114**	.112**	.188***	.042**	.147**	.092***	.154**	.092***
	(.221)	(.265)	(.223)	(.268)	(.224)	(.265)	(.217)	(.263)
State death rate	2.175**	1.149*	3.705**	1.293**	2.539***	1.254***	2.852***	1.059**
	(1.748)	(1.772)	(1.823)	(1.806)	(1.786)	(1.839)	(1.623)	(1.705)
Company political affiliation dummy	004***	006***	005**	002**	005**	001**	004*	.002**
	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)
State political affiliation dummy	003**	004**	002***	001**	002**	001**	003*	001*
	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)	(.011)	(.013)

Technological intensity	.005**	.004**	.005**	.002**	.005**	.003*	.008*	.003**
, , , , , , , , , , , , , , , , , , ,	(.004)	(.015)	(.004)	(.001)	(.017)	(.023)	(.018)	(.048)
Advertising intensity	.133*	.127*	.131*	.139*	.117**	.132**	.162**	.161*
	(.103)	(.124)	(.103)	(.123)	(.103)	(.124)	(.102)	(.123)
MSCI score of 2019	.035**	.036***	.028**	.029**	.037**	.039***	.028***	.024***
	(.027)	(.040)	(.034)	(.029)	(.025)	(.026)	(.032)	(.038)
Pandemic announcement control	.101	.114	.097	.107	.107	.114	.113	.123
	(.068)	(.081)	(.068)	(.082)	(.068)	(.082)	(.067)	(.081)
Constant	018	.057	032	.037	034	.044	016	.052
	(.058)	(.071)	(.058)	(.070)	(.058)	(.071)	(.057)	(.069)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	307	307	307	307	307	307	307	307
R-squared	.027	.023	.026	.021	.023	.015	.052	.033

Standard errors are in parentheses

*** *p*<.01, ** *p*<.05, * *p*<.1

The lengths of the event windows are mentioned in braces and the number of observations vary depending on the length of the event window considered. The total number of firms in the sample is 313, representing thirty-two industries. The final sample size is 307, since 6 firms do not have any political affiliation. For the detailed description of the variables, please refer to appendix 3.1.

Table 3.9: The effect of CSR initiatives by the highly impacted firms

Table 3.9 reports the impact of the CSR efforts done by the firms belonging to the industries, segregated by the degree of impact of the pandemic, i.e., industries which are highly impacted and less impacted by the pandemic. The highly impacted industries are identified based on the S&P Global's report on probability of default of different industries, dated 30 April 2020. The highly impacted industries variable is a binary variable, which takes the value of unity (1) if the firm belongs to a highly impacted industry, and zero (0) otherwise. We interact this binary variable with the CSR variables to estimate the impact of the CSR efforts by the firms belonging to the highly impacted industries. Columns (1) and (2) report the impacts of all the CSR initiatives, where we estimate the impacts of the benevolent actions by different companies along with the infection and death rates of the state of their headquarters and the other control variables have positive and statistically significant impacts on the cumulative average abnormal returns over the different event windows. Columns (3) and (4) report the impact of the CSR announcements made by the firms belonging to the industries, which are highly affected by the pandemic. This is our primary interaction model, where we interact the CSR variables with the binary variable representing the industries highly affected by the pandemic.

	(1)	(2)	(3)	(4)
	CAR[0,1]	CAR[0,2]	CAR[0,1]	CAR[0,2]
Medical support	.038**	.043**	.036*	.047*
**	(.018)	(.022)	(.016)	(.026)
Industries highly affected by the pandemic	.044*	.058*	.046*	.054**
	(.027)	(.035)	(.017)	(.034)
Medical support provided by firms from highly affected industries			.031*	.039*
			(.008)	(.017)
R&D support	.042**	.049**	.027*	.043*
	(.022)	(.034)	(.006)	(.024)
R&D support provided by firms from highly affected industries			.009**	.012*
			(.021)	(.024)
Local community support	.033**	.046*	.032**	.052***
	(.029)	(.027)	(.021)	(.034)
Local community support provided by firms from highly affected industries			.010*	.019*
			(.032)	(.011)
Employee support	.032**	.036**	.038***	.046**
	(.018)	(.026)	(.021)	(.024)
Employee support provided by firms from highly affected industries			.002**	.004*
	107**	102**	(.021)	(.019)
State infection rate	.18/**	.183**	.168**	.154**
	(.325)	(.248)	(.216)	(.382)
State death rate	3.254^{*}	1.414^{**}	$3./16^{++}$	1./82**
State litical - CElistic - deserves	(2.219)	(1.038)	(1.511)	(1.664)
State political armitation dummy	023	042^{33}	050*	038
	(.024)	(.01/)	(.028)	(<i>.123)</i> 021***
Company ponucai armadon duminy	033^{++++}	038^{0}	$027^{(10)}$	031
Technological intensity	(.027)	(.027)	(.027)	(.028)
rechnological intensity	(024)	(015)	(023)	(018)
A divertising intensity	(.02 <i>+)</i> 257*	(.07)	(.02)) 232**	(.078)
Advertising intensity	(182)	(224)	.232	(248)
MSCL score of 2019	028**	036***	022**	025**
	(019)	(017)	(012)	(014)
Pandemic announcement control	.121	.106	.224	.328
	(.332)	(.741)	(.178)	(.074)
Constant	068	.348	086	.648
	(.915)	(.489)	(.334)	(.228)

Industry effects	Yes	Yes	Yes	Yes
Observations	307	307	307	307
R-squared	.484	.428	.456	.423

Standard errors are in parentheses

*** *p*<.01, ** *p*<.05, * *p*<.1

The lengths of the event windows are mentioned in braces and the number of observations vary depending on the length of the event window considered. The total number of firms in the sample is 313, representing thirty-two industries. The final sample size is 307, since 6 firms do not have any political affiliation. For the detailed description of the variables, please refer to appendix 3.1.

Table 3.10: Effect of CSR announcements by the highly affected firms and their financial constraint risk

Table 3.10 reports the impact of the CSR announcements made by the firms belonging to highly affected industries, classified based on their financial constraint risk. We interact the CSR variables with the binary variable representing the industries, which are highly affected by the pandemic and use both the Kaplan-Zingales (K-Z) and Whited-Wu (W-W) indices to measure the financial constraint risk of a firm. We follow Kaplan and Zingales (1997) to quantify the financial constraint risk of a firm and use the formula: K-Z Index = -1.001909*(Cash flows/K) + 0.2826389*Q + 3.139193*(Debt/Total capital) - 39.3678*(Dividends/K) - 1.314759*(Cash + short-term investments/K) where, K = plant, property, and equipment of the previous year and Q = (Market capitalization + Total shareholders' equity – Book value of common equity – Deferred tax assets)/Total shareholder's equity. We classify the firms whose K-Z score are less than the median sample K-Z score, as less financially constrained and highly financially constrained otherwise and represent them by zero (0) and unity (1) respectively.

We also use Whited-Wu index to measure the financial constraint risk of a firm. We follow Whited and Wu (2006) and use the formula:

WW = -0.091CF - 0.062DIVPOS + 0.021TLTD - 0.044LNTA + 0.101ISG - 0.035SGGR, where CF = the annual cash flows; DIVPOS is a binary variable, which takes the value of unity (1) in case the firm pays cash dividends, zero (0) otherwise; TLTD = the ratio of long-term debt to total assets; LNTA = the natural logarithm of the total assets; ISG = the average 3-digit SIC industry sales growth rate; SGGR = the growth rate in sales of the firm. For both K-Z and WW indices, a higher value indicates a higher financial constraint risk. We classify the firms whose W-W scores are less than the median sample W-W score, as less financially constrained and highly financially constrained otherwise and represent them by zero (0) and unity (1) respectively.

We first use the K-Z index and report the results for the CAR for the event window (0,1) for the financially less and highly constrained firms in columns (1) and (2), while in columns (3) and (4) we do the same for the event window (0,2). We then proceed to use the W-W index and report the results in columns (5) to (8) in the same order.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Kaplan-Zin	igales Index			Whited-W	Wu Index	
	CAR[0,1]	CAR[0,1] Highly	CAR[0,2]	CAR[0,2] Highly	CAR[0,1]	CAR[0,1] Highly	CAR[0,2]	CAR[0,2] Highly
	Less	Constrained	Less	Constrained	Less	Constrained	Less	Constrained
	Constrained		Constrained		Constrained		Constrained	
Medical support	.044***	.049**	.056***	.065***	.042**	.052**	.048*	.058**
	(.019)	(.038)	(.044)	(.051)	(.024)	(.226)	(.044)	(.034)
Industries highly affected by the pandemic	.038**	.042**	.048**	.046**	.028**	.038*	.034**	.043**
	(.318)	(.418)	(.058)	(.214)	(.358)	(.484)	(.195)	(.165)
Medical support	.008*	.010**	.011**	.013*	.010*	.011**	.012**	.014**

provided by firms from highly	(.039)	(.031)	(.033)	(.012)	(.089)	(.176)	(.004)	(.178)
affected industries								
R&D support	.018**	.029***	.028***	.034**	.011**	.018*	.014**	.022**
	(.206)	(.081)	(.048)	(.106)	(.307)	(.809)	(.014)	(.045)
R&D support	.015**	.018**	.019*	.021*	.009**	.011**	.016**	.019**
provided by firms from highly	(.035)	(.056)	(.003)	(.026)	(.048)	(.153)	(.002)	(.448)
affected industries								
Local community support	.022*	.026**	.029*	.031*	.013*	.014**	.017**	.019*
	(.027)	(.021)	(.022)	(.017)	(.017)	(.206)	(.014)	(.028)
Local community support	.010**	.013*	.016**	.019**	.012*	.016**	.018**	.021**
provided by firms from highly	(.082)	(.064)	(.017)	(.036)	(.068)	(.178)	(.063)	(.074)
affected industries		04.4555		0.01.1			0.4.4.5.5.5	0.454
Employee support	.013**	.014**	.016***	.021*	.033**	.053**	.044***	.065*
D 1	(.026)	(.022)	(.022)	(.018)	(.01/)	(.11/)	(.014)	(.041)
Employee support	.010**	.011*	.012*	.015**	.010**	.013**	.015**	.01/**
from highly	(.039)	(.034)	(.032)	(.028)	(.354)	(.268)	(.049)	(.029)
State infection rate	3/1*	581*	358**	661*	178**	718**	718**	358*
State infection fate	(108)	(741)	(654)	(545)	(1 117)	(3 147)	(743)	$(1 \ 1 \ 8 1)$
State death rate	(.770) 10 581*	(./+1)	(.0)+) 0.482*	(,)+)) 11 71 8*	1 508**	().1+/) 1 0 77**	(·/+)) 3 /18**	7 462*
State death fate	(7.485)	$(3.490)^{12.490}$	(1,358)	(6.448)	(3.497)	$(1 \ 1 \ 0)$	(2.741)	(3.864)
State political	001*	().+07)	018*	(0.448)	().+)/)	(1.77) (1.77)	(2.747)	().004)
affiliation dummy	001	005	010	009	002**	044	003	045
	(.021)	(.01/)	(.011)	(.014)	(.014)	(.091)	(.011)	(.032)
Company political affiliation dummy	027**	017**	015**	005**	002**	005**	002**	036**
	(.021)	(.016)	(.018)	(.013)	(.013)	(.072)	(.011)	(.025)
Technological intensity	.011*	.003*	.014*	.004*	.004*	.001*	.009*	.008*
	(.009)	(.008)	(.008)	(.006)	(.006)	(.038)	(.005)	(.013)
Advertising intensity	.115*	.295**	.072*	.193*	.154**	.834*	.158**	.883**
-	(.253)	(.141)	(.213)	(.116)	(.128)	(.652)	(.106)	(.924)
MSCI score of 2019	.001**	.001*	.003*	.002**	.003*	.017*	.001*	.004*

	(.003)	(.002)	(.002)	(.002)	(.002)	(.071)	(.001)	(.006)
Pandemic	.094	.144	.137	.111	.102	.074	.099	.212
announcement								
control								
	(.129)	(.114)	(.109)	(.094)	(.088)	(.644)	(.073)	(.225)
Constant	.162	051	.054	088	.059	.544	011	159
	(.11)	(.093)	(.093)	(.077)	(.075)	(.94)	(.062)	(.328)
Industry effects	Yes							
Observations	158	149	158	149	278	29	278	29
R-squared	.415	.306	.318	.387	.442	.478	.465	.467

Standard errors are in parentheses *** *p*<.01, ** *p*<.05, * *p*<.1

The lengths of the event windows are mentioned in braces and the number of observations vary depending on the length of the event window considered. The total number of firms in the sample is 313, representing thirty-two industries. The final sample size is 307, since 6 firms do not have any political affiliation. For the detailed description of the variables, please refer to appendix 3.1.

Table 3.11: Effect of CSR by the highly affected firms and their bankruptcy risk

Table 3.11 reports the effect of CSR announcements made by the companies classified according to their proximity to bankruptcy, measured by the Altman Z-score model. We interact the CSR variables with the binary variable representing the industries, which are highly affected by the pandemic and using the Z-score equation, classify them as green, grey, and red zone firms. We follow the Altman's Z-score model (1968) to measure the bankruptcy risk of a firm. We construct the Z-score using the equation below:

Z-Score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E, where A = working capital/total assets; B = retained earnings/total assets; C = earnings before interest and tax/total assets; D = market value of equity/total liabilities & E = sales/total assets. Firms with scores below 1.80 means that they are likely to be headed for bankruptcy, are classified to be in the Red Zone and are awarded a score of zero (0) in our regression models. Firms with scores between 1.80 and 3.00 are less likely to go bankrupt, are classified to be in the Grey Zone and are awarded a score of unity (1). Finally, companies with scores above 3.00 are not likely to go bankrupt in the foreseeable future and are hence classified to be in the Green Zone and are awarded a score of two (2). In columns (1), (2) and (3), we report the regression results for the event window [0,1] for the firms in the red, grey, and green zones respectively. Similarly, we do the same in columns (4), (5) and (6) for the event window [0,2] and report the results for the firms in red, grey, and green zones respectively.

	<i>(1)</i> CAR[0,1]	<i>(2)</i> CAR[0,1]	<i>(3)</i> CAR[0,1]	(4) CAR[0,2]	<i>(5)</i> CAR[0,2]	<i>(6)</i> CAR[0,2]
	Red Zone	Grev Zone	Green Zone	Red Zone	Grev Zone	Green Zone
Medical support	.032*	.021**	.019**	.037**	.029*	.025**
	(.02)	(.035)	(.027)	(.023)	(.047)	(.033)
Industries highly affected by the pandemic	.055*	.038*	.032**	.064***	.045**	.042**
	(.039)	(.043)	(.042)	(.045)	(.059)	(.048)
Medical support provided by firms from	.017**	.013**	.011*	.021**	.017*	.015**
highly affected industries	(.067)	(.033)	(.048)	(.064)	(.065)	(.432)
R&D support	.046**	.028*	.017**	.055**	.031**	.023*
11	(.024)	(.035)	(.029)	(.023)	(.048)	(.035)
R&D support provided by firms from	.016*	.009**	.007*	.021*	.012*	.010**
highly affected industries	(.064)	(.048)	(.034)	(.648)	(.066)	(.041)
Local community support	.036**	.021*	.018**	.041*	.028**	.021*
7 11	(.023)	(.034)	(.025)	(.024)	(.047)	(.032)
Local community support provided by firms	.010**	.008**	.006**	.014*	.010***	.009**
from highly affected industries	(.035)	(.054)	(.032)	(.041)	(.074)	(.039)
Employee support	.052***	.049**	.034**	.057***	.050**	.039**
	(.021)	(.032)	(.027)	(.024)	(.044)	(.032)

Employee support provided by firms from	.012*	.008*	.005*	.014*	.010*	.008**
highly affected industries	(.008)	(.004)	(.374)	(.245)	(.484)	(.504)
State infection rate	.251*	.604**	.141***	.123*	.036**	.138**
	(.367)	(.613)	(.342)	(.431)	(.842)	(.416)
State death rate	8.415**	3.358**	3.996***	9.549***	4.971***	2.071**
	(5.052)	(1.888)	(1.585)	(7.767)	(3.025)	(1.425)
State political affiliation dummy	061**	054*	048**	063***	051**	039*
	(.017)	(.027)	(.019)	(.019)	(.036)	(.023)
Company political affiliation dummy	002**	001**	001***	001**	001**	001***
	(.017)	(.025)	(.019)	(.024)	(.034)	(.023)
Technological intensity	.016*	.006**	.004**	.012**	.014**	.001**
	(.009)	(.012)	(.007)	(.011)	(.017)	(.009)
Advertising intensity	.341*	.212*	.082**	.144*	.305*	.192***
	(.043)	(.126)	(.207)	(.034)	(.173)	(.249)
MSCI score of 2019	.001***	.003***	.001**	.003***	.002**	.001**
	(.002)	(.003)	(.002)	(.002)	(.004)	(.002)
Pandemic announcement control	.232	.074	013	.205	.088	.079
	(.112)	(.132)	(.109)	(.141)	(.182)	(.131)
Constant	031	141	.096	.111	043	.088
	(.144)	(.146)	(.094)	(.117)	(.201)	(.113)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	151	65	91	151	65	91
R-squared	.311	.335	.413	.478	.371	.342

Standard errors are in parentheses

*** *p*<.01, ** *p*<.05, * *p*<.1

The lengths of the event windows are mentioned in braces and the number of observations vary depending on the length of the event window considered. The total number of firms in the sample is 313, representing thirty-two industries. The final sample size is 307, since 6 firms do not have any political affiliation. For the detailed description of the variables, please refer to appendix 3.1.

List of figures

Figure 3.1: The event study timeline



Note: There are no overlapping days between the estimation and event windows.

In the timeline, the event day is represented by $\tau = 0$. Hence, the length of the estimation window, represented by L_1 , by given by: $L_1 = T_2 - T_1$. Similarly, the length of the event window, L_2 , is measured by, $L_2 = T_3 - T_2$.

Figures 3.2A & 3.2B: The average abnormal returns (AAR) over the event window [-5, +4]

Figures 3.2A & 3.2B show the average abnormal returns (AAR) of the companies in our sample over the event window [-5, +4]. Figure 3.2A shows the market reactions of the industries which were less and severely affected by the covid-19 pandemic, represented by the solid and dotted lines respectively. The respective pandemic relief announcement dates of the companies are taken as the event day, i.e., day 0, and the figures show the market reactions over a period of 10 days. Figure 3.2B shows the market reactions of the industries which were less and severely affected by the covid-19 pandemic, represented by the solid and dotted lines respectively, around the pandemic declaration announcement. 11 March 2020 is taken as the event day, i.e., day 0, and the market reactions are estimated over the identical period of 10 days.



Figure 3.2A



Figure 3.2B

On 11th March 2020, in his opening remarks at the media briefing on the coronavirus, the Director-General of the World Health Organization (WHO), Dr Tedros Adhanom Ghebreyesus declared the covid-19 as a pandemic²³.

²³ Source: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

Figures 3.3A & 3.3B: The cumulative average abnormal returns (CAAR) different event windows

Figure 3.3A & 3.3B show the cumulative average abnormal returns (CAAR) of the companies in our sample over the event window [-5, +4]. Figure 3.3A shows the market reactions of the industries which were less and severely affected by the covid-19 pandemic, represented by the solid and dotted lines respectively. The respective pandemic relief announcement dates of the companies are taken as the event day, i.e., day 0, and the figures show the market reactions over a period of 10 days. Figure 3.3B shows the market reactions of the industries which were less and severely affected by the covid-19 pandemic, represented by the solid and dotted lines respectively, around the pandemic declaration announcement date. 11 March 2020 is taken as the event day, i.e., day 0, and the market reactions are estimated over a period of 10 days.



Figure 3.3A



Figure 3.3B

On 11th March 2020, in his opening remarks at the media briefing on the coronavirus, the Director-General of the World Health Organization (WHO), Dr Tedros Adhanom Ghebreyesus declared the covid-19 as a pandemic²⁴.

²⁴ Source: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

Appendices

Appendix 3.1: Description of the regression variables

Dependent Variable	Description & calculation	Source		
Cumulative average abnormal returns (CAAR)	The CAAR calculated over the event windows (0,1) and (0,2)	Our calculation from the stock market data		

Explanatory variables	Description & calculation	Source
Medical support	This is a binary variable, which takes the value of unity (1) if the company sponsors any medical support and zero (0) otherwise. The medical support includes but is not limited to the following:	
	 Free treatment of the affected, including frontline workers Accommodating health workers Donating ventilators Manufacturing & donating masks Manufacturing & donating hand sanitisers Conversion of manufacturing facility to produce hand sanitisers, masks, ventilators, oxygen facilities, etc. 	All data for the variables medical support, R&D support, local community support and employee support are taken from the press releases by the companies, where they had first announced their reactions and
R & D support	 This is a binary variable, which takes the value of unity (1) if the company promoted research and development of the covid-19 vaccine and zero (0) otherwise. This includes but is not limited to the following: Actively did R&D of the vaccine Donated funds towards R&D of the vaccine 	countermeasures to the pandemic.

Local	This is a binary variable, which takes the value of	
community	unity (1) if the company donated funds towards	
support	supporting the local community and zero (0)	
	otherwise. The local community support includes	
	but is not limited to the following:	
	• Feeding the poor, including distributing	
	food packets amongst the members of the	
	local community	
	• Free treatment of the affected members	
	of the local area	
	• Any form of community support	
	including distributing hand sanitisers and	
	masks in the local community	
Employee	This is a binary variable which takes the value of	
support	unity (1) if the company had undertaken	
ouppoin	benevolent activities towards its employees and	
	zero (0) otherwise The employee support	
	includes but is not limited to the following:	
	included and to first minied to the following.	
	 Support towards the families affected 	
	including assistance towards the family of	
	the deceased employee	
	 Not reducing employee 	
	• Not reducing employee salaries during	
	fockdown &/ or increasing satafies	
	• Fund-raising to support the affected or	
	deceased employees	1

Control	Description &	Source
variables	calculation	
Infection	The infection rate of the	
	state, where the HQ of the	
rate	donating company is	
	located, sourced from the	The data for both the variables are taken from the
	official website of the	CDC website (www.cdc.gov) In both cases we
	Centre for Disease	consider the averages of the rates, starting from the
	Control (CDC).	beginning of the pandemic, and ending with 31 st
Death	The death rate of the state,	December 2021. The link is
	where the HQ of the	https://covid.cdc.gov/covid-data-
rate	donating company is	tracker/#trends_totaldeaths_totaldeathsper100k_00
	located, sourced from the	
	official website of the	
	Centre for Disease	
Dolitical	This is a hissary variable	This data is someoid from the mehaits of the setiment
officiation of	This is a billary variable,	This data is sourced from the website of the national
the state	which takes the value of	(https://www.archives.gov/alactoral_collage/2016)
the state	the HO of the dopating	(https://www.archives.gov/electorar-conege/2010).
	company is located had	
	voted for the Republican	
	Party in the 2016 US	
	presidential elections and	
	zero (0) in case of	
	Democrat.	
Political	This is a binary variable,	The data is sourced from www.opensecrets.org and
affiliation of	which takes the value of	is verified with www.zippia.com. In our sample, six
the company	unity (1) if the company	(6) companies did not make any financial
	had provided monetary	contribution to either of the political parties and
	assistance to the	consequently, are dropped from the second stage
	Republican Party	regressions.
	candidate and zero (0) in	
	case the company had	
	done the same for the	
	Democrat Party candidate.	
	In most cases, we find that	
	most of the companies	
	provided financial	
	from both Populities	
	Domocrat partice. In such	
	Democrat parties. In such	
	political party which	
	received higher financial	
	received higher financial	

	donation as the political	
	affiliation of the company	
Inductor	This is a biparty variable	The data is sourced from the Standard & Deor's
highly affected	which takes the value of	The data is sourced from the Standard & Foors
has the	which takes the value of	Default This is an apprice recently of the Probability of
by the	unity (1) if the company	Default. This is an ongoing research project of S&P
pandemic	belongs to an industry	and the data is taken from the April 2020 report.
	which is severely affected	
	by the pandemic and zero	
	(0) if the company belongs	
	to an industry which is less	
	affected.	
Technological	A discreet variable which	Source: https://www.oecd.org/sti/ind/48350231.pdf,
intensity	measures the	accessed on 26 January 2023.
(OECD)	technological intensity of	
	the firms. The	
	Organization for	
	Economic Cooperation	
	and Development	
	(OECD) classifies	
	industries as high	
	medium-high medium-	
	low and low technology	
	industries and we assign	
	scores of 4 3 2 and 1	
	scores of 4, 5, 2 and 1	
	respectively. The scores	
	are awarded based on the	
	ISIC Rev. 3, dated / July	
	2011.	
Advertising	This is a continuous	
intensity	variable, which represents	
	the advertising intensity of	
	firms. It is calculated as the	
	proportion of the annual	
	advertising expenditure to	The data for these variables is sourced from the
	the net sales of the firm.	CompuStat database, available through the Wharton
MSCI score of	A discreet variable, which	Research Data Services (WRDS).
2019	represents the past year's	
	CSR performance of	
	firms. This is represented	
	by the MSCI score of	
	2019.	

²⁵ The other reports are dated March 2020, September 2020, March 2021, October 2021 and January 2022.

Pandemic	The World Health (Our calculation from the data.
announcement	Organization (WHO)	
control	declared the covid-19 as a	
	pandemic on 11th March	
	2020^{-26} . We use the	
	CAR[0,2] around that date	
	and use it as a control	
	variable and is continuous	
	in nature. We do this in	
	order to capture any	
	distinct anomaly in the	
	behaviour of the stock	
	returns of the firms in our	
	study.	

 $^{^{26}} Source: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020$

Categorizing	Description & calculation	Source				
Variables	$W_{12} = f_{-1} _{1} = \frac{1}{2} = \frac{1}{2} - \frac{1}{2} + $	Our coloulation from 1				
Kapian- Zingales index	measure the financial constraint risk of a firm. We construct the K-Z index using the equation below:	data.				
	KZ Index = - 1.001909*(Cash flows / K) + 0.2826389*Q + 3.139193*(Debt / Total capital) - 39.3678*(Dividends / K) - 1.314759*(Cash + short- term investments / K)					
	where, $K = plant$, property, and equipment of the previous year					
	Q = (Market capitalization + Total shareholders' equity – Book value of common equity – Deferred tax assets) / Total shareholder's equity					
	A higher value indicates a higher financial constraint risk.					
Whited-Wu index	We follow the Whited-Wu (2006) index to measure the financial constraint risk of a firm. We construct the W-W index using the equation below:	Our calculation from the data.				
	WW = -0.091CF - 0.062DIVPOS + 0.021TLTD - 0.044LNTA + 0.101ISG - 0.035SGGR,					
	where $CF =$ the annual cash flows					
	DIVPOS is a binary variable, which takes the value of unity (1) in case the firm pays cash dividends, zero (0) otherwise					
	TLTD = the ratio of long-term debt to total assets					
	LNTA = the natural logarithm of the total assets					
	ISG = the average 3-digit SIC industry sales growth rate					
	SGGR = the growth rate in sales of the firm					
	A higher value indicates a higher financial constraint risk.					

Altman's score	Z-	We follow the Altman's Z-score model (1968) to measure the bankruptcy risk of a firm. We construct the Z-score using the equation below:	Our data.	calculation	from	the
		Altman Z-Score = $1.2A + 1.4B + 3.3C + 0.6D + 1.0E$				
		Where:				
		A = working capital / total assets				
		B = retained earnings / total assets				
		C = earnings before interest and tax / total assets				
		D = market value of equity / total liabilities				
		E = sales / total assets				
		Firms with scores below 1.80 means that they are likely to be headed for bankruptcy, are classified to be in the Red Zone and are awarded a score of zero (0) in our regression models. Firms with scores between 1.80 and 3.00 are less likely to go bankrupt, are classified to be in the Grey Zone and are awarded a score of unity (1). Finally, companies with scores above 3.00 are not likely to go bankrupt in the foreseeable future and are hence classified to be in the Safe Zone and are awarded a score of two (2).				

Appendix 3.2: The political affiliation, infection rates and the death rates of the different states

This table shows the US states where the registered headquarters of the donating firms are located. Column 5 reports how the states had voted in the previous presidential election and columns (6) and (7) report the infection and death rates of the states respectively. The sample data consists of 313 firms, of which 157 were registered with Republican states, while the rest 156 firms were registered with Democrat states. Of the 313 companies in the sample, 196 firms provided higher financial support to the Democratic party, while 111 did the same to the Republican party and 6 companies did not provide any financial support to any political party.

State	Freq.	Percent	Cum.	Political	Infection	Death
(1)	(2)	(3)		Affiliation (5)	Kate (6)	Kate (7)
(1) New York	<u> </u>	<u> </u>	<u>(7)</u> 14.70	Democrat	0 303	0.004
California	4 0 36	14.70	26.20	Democrat	0.303	0.004
Towas	31	0.00	26.20	Bopublican	0.275	0.002
Illipois	20	9.90 6.30	12 40	Democrat	0.205	0.003
Depersylvania	20 18	5.75	42.49	Bopublican	0.285	0.003
Obio	10	J.7J 4 70	40.24 53.04	Republican	0.244	0.004
Michigan	13	4.79	57.51	Republican	0.237	0.003
Minnasota	14	4.47	61.66	Demograt	0.271	0.004
Coorneia	15	4.15	61.00	Democrat	0.260	0.002
Georgia North Caroline	11	3.51	03.10	Republican	0.204	0.004
North Carolina	11	3.31	00.09	Domografi	0.291	0.002
	10	3.19	/1.88	Democrat	0.242	0.005
Florida Maaraalaanaatta	9	2.88	74.70	Republican	0.521	0.004
Massachusetts	8	2.56	70.07	Republican	0.288	0.005
New Jersey	8 7	2.56	/9.8/	Democrat	0.296	0.004
I ennessee	/	2.24	82.11	Republican	0.327	0.004
Indiana	5	1.60	83./1	Republican	0.275	0.004
Missouri	5	1.60	85.30	Democrat	0.258	0.003
Oklahoma	5	1.60	86.90	Republican	0.289	0.004
Virginia	5	1.60	88.50	Republican	0.233	0.002
Washington	5	1.60	90.10	Democrat	0.231	0.002
Wisconsin	5	1.60	91.69	Republican	0.309	0.003
Colorado	4	1.28	92.97	Democrat	0.280	0.002
Delaware	3	0.96	93.93	Democrat	0.306	0.003
Kentucky	3	0.96	94.89	Republican	0.335	0.004
Louisiana	3	0.96	95.85	Republican	0.301	0.004
Oregon	3	0.96	96.81	Democrat	0.205	0.002
Arkansas	2	0.64	97.44	Republican	0.303	0.004
District of Columbia	2	0.64	98.08	Democrat	0.233	0.002
Nebraska	2	0.64	98.72	Republican	0.270	0.002
Arizona	1	0.32	99.04	Republican	0.306	0.004
Iowa	1	0.32	99.36	Democrat	0.263	0.003
Maryland	1	0.32	99.68	Republican	0.198	0.002
Rhode Island	1	0.32	100	Democrat	0.390	0.003
Total	313	100				

Chapter Four

Mandatory CSR Engagement and Earnings Management Practices

4.1 Introduction

The primary objective of this study is to investigate the impact of the Companies Act, 2013 on the earnings management practices of the firms in India. In other words, we study whether the firms in India are managing their earnings differently due the introduction of the Companies Act, 2013. We conduct this study using both the Jones (1991) and Roychowdhury (2006) models to assess earnings management and using panel data spanning over two decades encompassing all the listed firms in India. We find that the firms practise more earnings management after the implementation of the Act. In addition, we investigate earnings management practices prevalent among the business groups and find that the business group affiliated firms perform more earnings management compared to their independent standalone counterparts and this trend continues even after the implementation of the Act. Finally, we measure the impact of CSR engagement on earnings management and find that while it reduces an independent standalone firm's tendency to manage its earnings, it has an opposite effect on the business group affiliated firms.

EM is the manipulation of the accounting numbers of a firm to mislead stakeholders about the underlying economies that are dependent on the reported accounting numbers (Healy and Wahlen, 1999) and is primarily done at the expense of the minority shareholders (Kim and Yi, 2006). Jones (1991) suggests that firms manipulate their incomes upward in order to benefit from higher concessions from the government. Roychowdhury (2006) supports the notion and proposes that firms manage their discretionary expenses and report lower incomes to reduce or at best, evade the tax liabilities. Indulgence in the practice of EM may severely affect the reliability and quality of the accounting statements, their efficacy for investment decisions and the confidence of the shareholders in them (Peasnell, Pope and S. Young, 2000; Kalbuana, Suryati and Pertiwi, 2022). Moreover, EM has long-term negative impacts on a firm, such as reduction in stakeholders' support and legal actions initiated by the regulators and the local community can deem its products as illegal and even shun them and it may be exposed by the media and the corporate managers may lose their jobs (Almahrog, Marai and Knezevic, 2015).

On the other hand, corporate social responsibility (CSR) is seen as a firm's obligation to the members of the society other than the stockholders (Carroll, 1979; Jamali and Mirshak, 2007; Omran and Ramdhony, 2015). Firms respond to the societal demands by performing both internal

and external CSR activities and may make internal changes and engage in programs to enhance their CSR performance and also divulge information regarding the same to the external stakeholders (Hawn and Ioannou, 2016). CSR is seen as a vital element of success for the firm since it results in increased sales and enhanced company reputation (Baskentli et al., 2019) and reduces the market's perception about the company risk profile, resulting in a lower cost of equity (El Ghoul et al., 2011; Gregory, Tharyan and Whittaker, 2014; Breuer et al., 2018; Dahiya and Singh, 2021) and a lower cost of debt (Menz, 2010; Izzo and Magnanelli, 2012; Aswani, Chidambaran and Hasan, 2019) and finally, a lower cost of capital (Cajias, Fuerst and Bienert, 2014; Wu, Lin and Wu, 2014; Harjoto and Jo, 2015). CSR also positively affects firm value (Fatemi, Glaum and Kaiser, 2018) due to increased financial performance (Lin, Yang and Liou, 2009; Crisóstomo, De Souza Freire and De Vasconcellos, 2011; Su et al., 2016; Tsai and Wu, 2022). Therefore, while CSR is considered as the culmination of the benevolent actions of a firm with an abundance of positive impacts, earnings management reflects the manipulative contemplations of a firm with serious short-term and long-term effects. The motivations of a firm behind active participation in both CSR and EM are unclear and the confusion has been further aggravated by confounding and often conflicting findings in the domain of CSR-EM. While studies find negative influence of CSR on the EM [see for example, Kim, Park and Wier (2012), Choi, Choi and Byun (2018), Das, Mishra and Rajib (2018)], others find positive influence [see for example, Jian *et al.*(2023)] and the rest find no association between the two [see for example, Selimefendigil and Öner (2022)].

The business groups, especially in the emerging markets, contribute significant amounts of financial, organizational and technological investment in the public good of the communities, countries and the regions where they operate, since they are well equipped to tackle social needs such as poverty, governance insufficiencies, and institutional voids (Ararat, Colpan and Matten, 2018). Granovetter (1994), Ghemawat and Khanna (1998), Guillen (2000), Khanna and Palepu (2000, 2004) and Sarkar (2010), collectively suggest that business groups are likely to fill the institutional voids produced by imperfections in the capital, labour, and product markets. Due to the ties between the affiliate members within a business group, the affiliated members reap noticeable benefits that are generally not possible by similar independent standalone firms (Khanna and Palepu, 2000; Bertrand, Mehta and Mullainathan, 2002; Khanna and Palepu, 2004;

Kali and Sarkar, 2011). India is a suitable example of an economy with inefficient markets and has recently been witnessed to pursue rapid economic growth and development, leaning towards a free-market system (Kedia, Dibrell and Harveston, 1998) and the business groups have played a dominant role in the country's growth trajectory. Naturally, the social and performance models have been largely influenced by the transformations in the national institutional framework (Kedia, Mukherjee and Lahiri, 2006).

This societal role and the efficiency benefits of business groups are still controversial. Business groups are frequently considered to be heavily involved in political rent-seeking entities who primarily invest in political connections, rather than in productive assets (Schneider, 2011). Baumol (1990) claims that large, intrusive, and unscrupulous governments can effectively make political rent-seeking the highest return on investment, and this measure can impede economic development. Such measures include furthering a status quo in which specific rent-seeking business groups may prosper, along with the politicians who favour them. The business groups invest in government connections and reap benefits in the forms of subsidies, trade protection, tax holidays, protective barriers to entry, at the cost of the economy which suffers from a dearth of genuine investment in productivity-enhancing assets and consequently, languishes. This phenomenon is referred to as "economic entrenchment trap" and illustrates predominantly the strategic positioning of several business groups in emerging markets (Morck, Wolfenzon and Yeung, 2005). There are other concerns regarding the responsibilities of the business groups, regarding the corporate governance practices that are often severely debated. The pyramidal structure of the business groups that are fostered by the controlling shareholders through a network of equity holdings, may result in conflicts of interest between them and the minority investors. In addition, the pyramidal structure also provides ample opportunities for direct (La Porta et al., 1997; Almeida, Kim and Kim, 2015) and indirect tunnelling (Kali and Sarkar, 2011). The controlling shareholders in the business groups are often powerful families, who may use various instruments to exert control over the entire business. The controlling shareholders thereby increase their wealth, causing disempowerment and expropriation of the minority shareholders in the affiliated firms (Kali and Sarkar, 2011; Almeida, Kim and Kim, 2015).

4.1.1 Motivation

The Companies Act, 2013 (the Act hereafter) governs the mandatory corporate social responsibility (CSR) activities by the corporate houses in the country and requires that the qualifying companies spend at least 2% of the average of their last three years' operating profits towards CSR initiatives. This Act aims to increase CSR engagement among the companies, both in terms of the number of firms and the monetary spending and also aspires to embed CSR in the long-term strategies of higher number of firms²⁷. However, several studies [see for example, Karnani (2013, 2016), Singh and Verma (2014), Kapoor and Dhamija (2017), Mukherjee, Bird and Duppati (2018), Bhattacharyya and Rahman (2019a, 2020), Bansal and Kumar (2021), Ahamed and Tripathi (2023)] are critical of this approach and argue that the Act transforms an inherently voluntary activity like CSR into a mandatory expenditure at the detriment of the profitability of the firms. At the same time, the Act also incentivises the CSR-avoiding firms to increase their earnings management, which is a manipulation of the accounting numbers to achieve certain purposes like reducing the tax liabilities, obtaining government allowances, etc. (Kothari, Leone and Wasley, 2005; Wang, Cao and Ye, 2018; Costa and Soares, 2022). Such firms are likely to perform more earnings management (EM) in order to reduce or even avoid incurring their mandatory CSR outlays (Patro and Pattanayak, 2017; Hickman, Iyer and Jadiyappa, 2021).

In order to comply with the legislation, a firm is expected to incur the CSR expenses without expecting any benefit, since failure to conform results in a penalty or even litigation by the regulators. Such a regulatory regime suggests that the CSR expenditure is an additional burden that is imposed on the firms (Malegaonkar, Ghosh and Pareek, 2016; Patro and Pattanayak, 2017; Sharma and Aggarwal, 2022). The CSR expenses are, however, contingent on the fact that the firm earns profits in all the previous three years consecutively. Hence, a firm trying to reduce or avoid paying the CSR expenses may manage its earnings and report reduced profits or even a loss in any one or more of the previous years and accomplish the objective (Das, 2021; Hickman, Iyer and Jadiyappa, 2021). Therefore, the introduction of the Act may have inadvertently resulted in an

²⁷ Source: The Companies Act, 2013 by the Ministry of Corporate Affairs, Government of India (https://www.mca.gov.in/mca/html/mcav2_en/home/actsandrules/companies+act++2013/companiesact2013.html)
increase in the earnings management practices by the companies. However, no study exists to measure the impact of the Act on the EM practices of the firms and hence, whether the Act has impacted the EM practices of the firms hitherto remains unknown. In this study, we examine the influence of this legislation on the EM practices of the firms. We compare between the EM practices performed before and after the implementation of the Act and reveal whether the Act impacts the EM traits of the firms.

As in other emerging economies, India is characterized by the presence of several large business groups, which are informal and intricate networks of crossholding affiliate but independently trading firms, which are owned and controlled by single dominant parent firms. The business groups help the affiliate firms circumvent the weak institutional frameworks through their internal capital markets, captive supply chains, etc. (Khanna, 2000; Khanna and Yafeh, 2007; Freeman et al., 2018). The business groups utilise their internal capital markets to transfer and circulate funds between their affiliates with substantial ease compared to the independent standalone firms and this phenomenon is commonly referred to as related party transactions (RPTs), which can take many forms and tunnelling and propping are the two of the most popular methods (Bertrand, Mehta and Mullainathan, 2002; Bhaumik and Gregoriou, 2010; Jian and Wong, 2010; Siegel and Choudhury, 2012). Tunnelling refers to the transfer of resources from a lower-level firm to a higher-level firm in a pyramidical structure, for example between an affiliate and the parent firm, whereas propping involves the transfer in the opposite direction and is aimed at bailing out the receiving firm from financial duress or even bankruptcy (Friedman, Johnson and Mitton, 2003; Rivanto and Toolsema, 2008). Compared to the independent standalone firms, it is substantially easier for the business group affiliated firms to perform EM through related party transactions due to the presence of the internal capital markets (Sarkar, Sarkar and Sen, 2013; Beuselinck and Deloof, 2014; Das, 2021; Zhang and Qu, 2023).

The Act implements mandatory CSR expense on the firms and the business groups are more affected compared to the independent standalone firms due their relative size and revenues, thereby providing them with ample incentives to manage their earnings to reduce the additional compulsory expenses (Naz, 2018). However, no study explores whether there has been any change in the EM of the business groups due to the introduction of the Act. At the same time, the business groups are some of the highest contributors of CSR in the country and in many cases even

supplement the government services in the areas where they operate (Shankar, 2015; Nair and Bhattacharyya, 2019; Gupta and Chakradhar, 2022; Sharma and Aggarwal, 2022). Considering the higher impact of the Act on the business groups, their EM practices, and their CSR engagement, we first examine the moderating effect of business group affiliation on the Act-EM relationship. This reveals whether there has been a change in the EM practices of the business group affiliated firms due the introduction of the Act. We then proceed to examine whether business group affiliation moderates the CSR-EM relationship, especially the motivations of the business groups to simultaneously engage in both CSR and EM. In other words, this study also investigates the CSR-EM relationship prevalent for the business group affiliated firms.

4.1.2 Contribution

In more ways than one, this study makes significant contributions to literature, particularly to the ones related to CSR, earnings management, and business groups. We contribute to the debate of making CSR expenses compulsory for the firms and its impact on the EM practices of the firms and reveal whether the regulators have unintentionally made EM more attractive and profitable proposition for the firms. This study also reveals the differences in the influence of the Act for the business group affiliated and the independent standalone firms concerning their EM practices. We also contribute to the CSR and EM theories and provide strong support to the transparent financial reporting hypothesis. The transparent financial reporting hypothesis maintains that the CSR activities are driven by the managers' motivations to be honest, trustworthy, and ethical and this explains the negative influence of CSR expenses on earnings management. Our results further expand the scopes of the stakeholder and legitimacy theories and suggest that a higher engagement in CSR initiatives has a spillover effect on the ethical reporting conduct of the firms. We also contribute to the understanding of CSR-EM relationship relevant for the corporate managers, who are in charge of CSR expenses or channels and EM, both of which are board level corporate decisions.

Moreover, we establish that the CSR-EM relationship is also dependent on the affiliation of a firm and the business group affiliated firms achieve different levels of EM compared to the independent standalone firms from identical levels of CSR expenses. In addition, the corporate managers may also benefit from our finding that the influence of the CSR expenses on EM has undergone a change in the post-2014 era. This finding contributes to the regulators' viewpoint as well and they can direct more of their resources to monitor the firms who are involved with both high levels of CSR expenses and EM. This study also has important contributions to the academia and the capital markets. We contribute to the academic debate and using the data spanning over a long period, we provide clarity in the CSR-EM relationship and also highlight the differences in the influence for firms depending on their affiliation (i.e., whether they are independent standalone firms or affiliated to any business group). Finally, this study also provides a cautionary note to the investors in identifying the firms, especially the ones which are affiliated to business groups and are more involved in EM.

The remainder of the paper is organized as follows. We provide a review of the relevant literature on earnings management, corporate social responsibility, and business groups in section 2 and develop our hypotheses. In section 3, we describe the data and the research methodology that we use. In section 4, we provide a detailed discussion of our results and section 5 concludes.

4.2 Literature review and hypotheses development

Jones (1991) suggests that companies resort to earnings management to report higher income in order to benefit from regulatory arrangements, which are associated with higher levels of income. Therefore, we hypothesize that prior to 2014, when the Act is implemented, companies practice EM in order to project higher levels of net income, since CSR expenses are a way to signal higher profitability and earnings (Omran and Ramdhony, 2015; Hetze, 2016).

4.2.1 Earnings management

One of the most important aspects of financial reporting is accounting for earnings, since it provides information regarding a company's performance to the various groups of stakeholders who are interested in the activities of the firm. The stakeholders include the investors, the government, the lenders, the employees, the professional bodies, etc. However, the stakeholders do not have the authority to access the financial performance of the firm in comparison to the insiders of the firm, and therefore, financial reporting is considered to be the main source of information for the investors to make investment decisions. The disclosures of colossal accounting scandals involving large corporations like Enron, WorldCom, etc., suggest that the corporate managers have the incentives to apply their own discretion over the firm's reported earnings in order to either mislead the shareholders about the real financial performance or to gain private benefits at the expense of the other stakeholders, generally, the minority shareholders (Healy and Wahlen, 1999). The inherent flexibility of the accounting principles permits the corporate managers to apply some degree of discretion to forecast the reported earnings that may not always reflect the most accurate financial health of the firm (Prior, Surroca and Tribó, 2008). This opportunistic behaviour of using personal discretion by the corporate managers to report the income of the firm is known as earnings management (Almahrog, Marai and Knezevic, 2015).

Schipper (1989) states that earnings management (EM) is a resolute interference in the external financial reporting procedure, with the intention of obtaining some private benefits. Davidson (2004) expands the idea and assert that EM is the collection of the conscious steps taken within the periphery of the accounting principles to create a preferred level of reported income or earnings. While prima facie, the practice of EM does look to be harmful, especially for the minority

shareholders, Parfet (2000) explains that EM is not detrimental in its entirety, if a well-managed firm practices EM within reasonable boundaries and delivers value to its shareholders. In a similar vein, Beneish (2001) proposes that there are two conflicting perspectives of EM, viz., informative and opportunistic. The informative EM aims to provide private information to the investors regarding the future performance of the firm, while opportunistic EM attempts either to mislead investors or to provide security to the jobs of the corporate managers, increase their remunerations and reputations. The corporate managers' intent of using EM is the determining factor to classify EM into opportunistic or informative exercise and there are several attempts to identify the various motivations behind managing earnings. Unfortunately, there are several instances where earnings management has led to financial fraud (Marai and Pavlovic, 2014).

Extant literature identifies three major incentives for the corporate managers to manage the earnings of their firms, viz., capital markets, contractual agreements and regulatory considerations (Healy and Wahlen, 1999). Issuing equities and meeting or even surpassing analysts' forecasts instigate the corporate managers to manage the earnings of their firms (Healy and Wahlen, 1999; Chih, Chih and Chen, 2010). Moreover, managers have incentives to manipulate the firm's reported earnings either to influence borrowing and remuneration contracts to avoid violation of debt covenants (DeFond and Jiambalvo, 1994) or go gain better bonus rewards (Healy, 1985). Finally, to comply with the regulations regarding product prices and market share, the corporate managers may like to convey that their firms are earning less profits than they actually are (Prior, Surroca and Tribó, 2008). In addition, one of the main reasons for the managers practicing earnings management is achieving their own private gains (Prior, Surroca and Tribó, 2008).

The two prevalent types of EM are accrual-based (Jones, 1991) and real activity based (Roychowdhury, 2006). Accrual-based EM takes place when managers apply their own discretion to estimate the accrual of the firm without making any change to real corporate activity, such as valuing provisions for suspect accounts and rescheduling tax assets (McNichols and Wilson, 1988; Guidry, J. Leone and Rock, 1999). On other hand, EM through real activities management entails the managers to manipulate the earnings through modifying corporate transactions such as reducing expenditures on research and development, advertising and marketing, employee trainings, etc. in order to increase the reported earnings (Roychowdhury, 2006; Guillamon-Saorin and García Osma, 2010). Despite the fact that this class of EM is less likely to be discovered by

the auditors and the regulators, it is less popular since it is considered to be more expensive than the EM based on total accruals (Hong and Andersen, 2011). The EM based on total accruals is the more preferred technique by the corporate managers since it is relatively inexpensive and is based on accounting (Beneish, 2001).

Arguably, earnings management has a negative impact on the reliability and quality of the financial reports, resulting in a decrease in their efficacy towards the investment decisions of the shareholders and also a decrease in the latter's confidence in the firm (Chen et al., 2010). In addition, EM may even lead to legal actions initiated by the regulators against the firm and its products and services may even be boycotted, since EM is thought as an illegal activity and a media exposure is also a likelihood (Fombrun, Gardberg and Barnett, 2000). Such actions may prove to be detrimental to the reputation of the firm and can result in termination of the managers (Prior, Surroca and Tribó, 2008). In order to circumvent or mitigate the negative consequences of EM, the corporate managers may resort to heightened engagement in corporate social responsibility to compensate the stakeholders (Hong and Andersen, 2011; Kim, Park and Wier, 2012; Choi, Choi and Byun, 2018).

4.2.2 Corporate social responsibility (CSR)

The classical theory of the firm states that a firm is solely accountable to its shareholders and hence, its role in the society is to maximise its economic value, which results in an increase in the wealth of its shareholders. This implies that the managers are responsible for acting in the interests of the shareholders of the firm and should avoid the social projects, which do not maximise the returns to the shareholders' funds. In general, this theory assumes that the only responsibility that a business has is to apply its scarce resources in activities that enhance the profits of the firm without resorting to deception or fraud (Friedman, 1962). Over the last few decades, however, the role of a firm has undergone a transformation as a result of adoption of CSR practices. Globally, firms have accepted that they are not only accountable for generating more profits for their shareholders, but also have responsibilities towards the society at large in terms of the manner in which they generate those profits. Therefore, the firms are coerced to become more conscious of their ethical and moral behaviour and their affiliations with the societal interest groups as well as their social responsibilities (Heald, 1970).

CSR is related to complex issues such protection of the environment, human resources management, relations with the local community, suppliers and customers and engagement in such activities may prove to be expensive for the firm (Branco and Rodrigues, 2006). However, there are several incentives to motivate a firm to actively participate in CSR initiatives, which are thought of as its obligation to the members of the society other than its shareholders (Carroll, 1979; Jamali and Mirshak, 2007; Omran and Ramdhony, 2015). Firms devise CSR strategies to respond to the demands of the society and perform both internal and external CSR activities and may execute changes to their internal processes and procedures and involve in schemes to increase their CSR performance and also disclose information regarding the same to the external stakeholders (Hawn and Ioannou, 2016). CSR is perceived as a critical element of success for the firm because of the value that it adds to the firm in various ways. CSR increases the revenues of a firm and at the same time, increases its reputation (Baskentli et al., 2019). This results in a reduction in the market's perception of its risk profile, which in turn affects the cost of capital in two ways capital (Cajias, Fuerst and Bienert, 2014; Wu, Lin and Wu, 2014; Harjoto and Jo, 2015). With increased CSR engagement, a firm can reduce its cost of equity (El Ghoul et al., 2011; Gregory, Tharyan and Whittaker, 2014; Breuer et al., 2018; Dahiya and Singh, 2021) as well as the cost of debt (Menz, 2010; Izzo and Magnanelli, 2012; Aswani, Chidambaran and Hasan, 2019). A reduction in the cost of capital combined with increased financial performance (Lin, Yang and Liou, 2009; Crisóstomo, De Souza Freire and De Vasconcellos, 2011; Su et al., 2016; Tsai and Wu, 2022) results in an increase in the value of the firm (Fatemi, Glaum and Kaiser, 2018).

In addition, CSR helps firms to improve their transparency and create a positive impression amongst its stakeholders. Such a positive image helps a firm to garner support from the local community and the society at large (Orlitzky, Schmidt and Rynes, 2003; Branco and Rodrigues, 2006). This positive image of the firm also helps its managers to forge social bonds between the company and its employees and the local community, resulting in creation of reputational gains. The gain in positive reputation improves the firm's capacity to attract scarce resources, improve its financial performance create competitive advantage (Fombrun, Gardberg and Barnett, 2000). Fombrun, Gardberg and Barnett (2000) suggest five motivations, which are complementary to each other, that encourage a firm to pursue CSR activities. CSR helps in creating bonds with the local community and maintains a license to function. CSR boosts employee morale and increases their loyalty. CSR also helps a firm to attract talented potential employees and retains them. CSR creates an environment where a firm can prosper and finally, CSR helps a firm in developing its potential customers. Branco and Rodrigues (2006) provide support to this idea and suggest that by engaging with CSR, a firm can obtain support from its stakeholders and gain from favourable regulatory dealings, approvals from the activist groups, acceptability from the local community and positive media coverage.

Therefore, CSR initiatives may contribute to reduce the potentially damaging impact of regulatory actions and engagement in CSR may positively influence the reputation of a firm within the society as well as improve the managers' positions in the company, especially when they carry out their duties and responsibilities according to the principles of CSR. This is because CSR is deemed to be the culmination of the compassionate achievements of a firm with numerous positive impacts. On the other hand, EM embodies the manipulative deliberations of a firm with significant effects which can be both short- and long-term. It is not clear why a firm would actively pursue contradictory strategies like CSR and EM simultaneously. The ambiguity in the results of the studies involving CSR and EM has further aggravated the confusion. While several studies find that CSR negatively influences EM [see for example, Kim, Park and Wier (2012), Choi, Choi and Byun (2018), Das, Mishra and Rajib (2018)], others suggest a positive influence [see for example, Jian et al.(2023)] and the rest find no association between the two [see for example, Selimefendigil and Öner (2022)].

Despite the advantages of involving with CSR, it is still contested that managers may have incentives to apply CSR as a strategic instrument to influence the shareholders' perception on how the latter perceive to be the actual future prospects of the firm. The corporate managers may use CSR to divert their shareholders' attention away from any activity that may reduce the quality of financial reporting (Hemingway and Maclagan, 2004). Moreover, experienced managers may be able to personally profit from increased CSR engagement by the firm and this may be the reason behind the positive influence of CSR on its financial performance (DeMaCarty, 2009). Therefore, firms may adopt CSR in order to create an impression of transparency amongst the different groups of stakeholders and then legitimize their activities to gain the latter's support (Dechow *et al.*, 2012; Kim, Park and Wier, 2012). It is evident that from this point of view, engagement in CSR activities

is motivated by opportunistic behaviour rather than moral obligations (Almahrog, Marai and Knezevic, 2015).

4.2.3 The theoretical foundations of the relationship between corporate social responsibility and earnings management (CSR-EM)

The Companies Act, 2013 governs the mandatory CSR expenditures and the related activities in India. In this study, we examine the influence of the Companies Act, 2013 on the EM practices of the firms and therefore, it is imperative to provide the theoretical foundations of the association between CSR and EM, along with the findings of some of the most pertinent empirical studies examining the CSR-EM relationship. The relationship between CSR and EM can be traced to the stakeholder, legitimacy, agency, and the signalling theories of the firm.

4.2.3.1 The stakeholder theory

The stakeholder theory offers a sound foundation for research exploring the relationship between CSR and EM. The stakeholder theory suggests that CSR is thought to be an obligation for the firm to emancipate wider accountability standards by furnishing information to the relevant stakeholders (Guay, Kothari and Watts, 1996; Buhr, 2001). The stakeholder theory is concerned with the groups and individuals who can either affect or be affected by the activities of the company and how the latter manage those groups and individuals (Freeman, 1984). This theory further suggests that the organizations have a responsibility to a broader range of stakeholders (Guay, Kothari and Watts, 1996; Buhr, 2001) and the corporate decisions need to incorporate the interests of all the stakeholders (Ruwanti, Chandrarin and Assih, 2019). Even though this theory provides a set of instructions for the managers on how to undertake strategies to manage the various stakeholders, it cannot predict the managerial behaviour in practice (Deegan and Rankin, 1996). A firm is recognized as a nexus of contracts between different groups of stakeholders (Copeland and Weston, 1988) and the corporate managers attempt to satisfy the expectations from the multiple groups of stakeholders (Ruwanti, Chandrarin and Assih, 2019). This results in the rise of information asymmetry between the managers and the stakeholders, which presents the managers with opportunities to practice EM (Prior, Surroca and Tribó, 2008). The information that is disclosed to the stakeholders may be regarded as a legitimate social contribution of the firm and

the managers involved with EM tend to realise that the voluntary CSR disclosures can be exercised to preserve organizational legitimacy, especially with the social and political stakeholders. The CSR initiatives provide a channel to inform the stakeholders of the firm's broader interests and of its accountability to conduct itself in a socially responsible manner (Chih, Shen and Kang, 2008). In contrast, legitimacy management can be considered as a channel of communicating and obtaining social support within the organisation-society relationship and managers who control the decision-making process have incentives to utilise those strategies to satisfy the expectations of the other groups of stakeholders. Therefore, the motivation for CSR disclosures is to divert the stakeholders' attention from detection of EM. In other words, companies that involve with CSR to negotiate the diverse stakeholders' interests, are unintentionally expected to practice EM (Sun *et al.*, 2010; Ruwanti, Chandrarin and Assih, 2019). This leads us to infer that there may be a positive relationship between CSR and EM within the framework of the stakeholder theory.

4.2.3.2 The legitimacy theory

The legitimacy theory is considered to be a universal perception that the actions of a firm are desirable within the socially constructed structure of norms, values, beliefs, and descriptions (Suchman, 1995) and engagement with CSR is one of the most important strategies for a firm to gain legitimacy (Stratling, 2007; Frynas and Stephens, 2015; Ali and Abdelfettah, 2016). All the activities of an organization must be legitimate from the societal viewpoint and if a company loses its legitimacy, the society must revoke its contract and prevent it from continuing its operations (Suchman, 1995; Deegan and Rankin, 1996). This makes it important for the firms to maintain legitimacy within the society and the financial statements are the means for the latter to confirm that the firm is meeting the societal expectations (Dowling and Pfeffer, 1975). A firm may choose CSR either to enhance the societal perception of its legitimacy (Patten and Trompeter, 2003) or as a means to anticipate and avoid social pressure and improve its reputation and image (Gray, Owen and Maunders, 1988). Corporate managers involved in EM, are aware of the fact that CSR can be effectively used to maintain and enhance the firm's legitimacy, particularly with the social and political stakeholders (Sun et al., 2010). Therefore, CSR is considered to be an instrument to inform the stakeholders regarding the wider objectives of the firm and of its accountability, which encourages the firm to act in a socially responsible manner (Almahrog, Marai and Knezevic, 2015).

4.2.3.3 The agency theory

The separation of ownership and management of a company, combined with existence of information asymmetry, could initiate grave problems because mangers are more concerned with their own job security, remuneration, ability to stay in power, and to maximize their own fortune (Morris, 1987; Shapiro, 2005). Agency problems take place and conflicts evolve between the owners and the managers when the latter act for their own benefit rather than organizational objectives, since it is entirely possible that the managers be solely involved in activities that can potentially decrease the value of the wealth of the shareholders, but not of the managers (Watts and Zimmerman, 1986). Information asymmetry is prevalent when managers have access to superior information in comparison to the owners and since managers are involved in the daily operations of the firm, they are knowledgeable of all the business transactions, contracts, etc. On the other hand, the stakeholders depend on the periodic sources of information such publications of the annual or interim financial statements to keep them abreast of the affairs of the firm (Fields, Lys and Vincent, 2001). Therefore, information asymmetry is higher in case the quality of information is low and the managers may adopt opportunistic EM to accomplish their objectives, resulting in an increase in the agency cost of the firm (Shapiro, 2005; Beaudoin and Agoglia, 2008). It is imperative that a solution needs to be devised to control the costs arising from agency problems and transparency and accountability system is arguably one of the solutions (Watts and Zimmerman, 1986). In addition, when firms disclose more information regarding their social activities, the information transparency increases (Healy and Palepu, 1993; Healy and Wahlen, 1999), causing a decrease in the information asymmetry between the managers and the owners, thereby reducing the incentives to manage earnings which enables the investors to detect EM (Jo and Kim, 2007). Since efficient information systems inform the principal regarding the actual activities of the agent, the latter is likely to curb the agent opportunism since the agent realizes that the principal cannot be deceived (Eisenhardt, 1989). Manipulation of earnings is less prevalent in companies which have strong commitments towards CSR (Shleifer, 2004) and the inherent strong CSR principles prevent the managers of such firms from applying their opportunistic discretion over earnings (Chih, Shen and Kang, 2008).

4.2.3.4 The signalling theory

The signalling theory states that a company divulges information to reduce information asymmetry and also to signal to the investors that its performance is better than its competitors (Diamond, 1985; Miller and Rock, 1985). The quality of information content of the financial statements of a firm, functions as a signal to the investors and the financial markets regarding the social risk management capacities of its managers. Firms intending to disclose high-quality information, are inclined to use CSR as an substitute for the classical reporting, while the firms with contrasting intentions regarding accounting information disclosure, opt for non-disclosure and such tendencies are consistent with constrained accounting information (Gray, Owen and Maunders, 1988). Therefore, the credibility of the information furnished by the firm is an essential element in ensuring lower asymmetry (Hughes, 1986) and considering the fact that EM is more likely to be present when information asymmetry is high, the signalling theory assumes that the CSR information can be used as a means to reduce information asymmetry between the managers and its owners or investors (Sun et al., 2010). Sun et al. (2010) further add that CSR disclosure acts as a signal to the investors and the other influential stakeholders that the firm is actively participating in CSR and that its market value is high. Overall, based on the idea that CSR information is an effective tool for reduction of information asymmetry, extant literature establishes that there exists a negative relationship between CSR and EM.

4.2.4 Empirical evidence on the relationship between corporate social responsibility and earnings management (CSR-EM)

Based on the theoretical foundations of the CSR-EM relationship, several studies have been conducted to explore its further. The separation of ownership and control in the modern corporations, coupled with the presence of information asymmetries within them, initiates the likelihood of opportunistic behaviour by the corporate managers which differ from those of the shareholders (i.e., the owners). This opportunistic behaviour motivates the managers to pursue self-serving objectives and results in decrease in value of the firm, which is referred to as the agency problem (Prior, Surroca and Tribó, 2008). EM is, therefore, considered an agency cost since the managers practice EM either to gain private benefits at the expense of the other shareholders (usually the minority shareholders) or to misguide the shareholders about the actual

financial performance of the firm (Healy and Wahlen, 1999). The corporate managers only look after their own interest and publish financial statements which do not accurately reflect the financial health of the firm (Prior, Surroca and Tribó, 2008). On the other hand, the published financial statements are considered to be a form of a monitoring mechanism, which is used by the investors and other external users, to reduce the problem of information asymmetry (Huang and Zhang, 2012). Therefore, the information disclosed by the financial statements is considered to be one of the strongest possible resolutions to reduce the agency problem between the managers and the shareholders i.e., the owners (Eng and Mak, 2003).

Notionally, there can be two types of associations between CSR and EM (Almahrog, Marai and Knezevic, 2015). Firstly, firms with substantial CSR commitments are less likely to manage their earnings since they do not conceal disparaging earning attainments and therefore, perform no EM (Chih, Shen and Kang, 2008). Since EM is recognised as an irresponsible deed, firms which have strong CSR commitments, are more likely to act in a responsible manner while reporting their financial statements (Choi, Lee and Park, 2013). Kim, Park and Wier (2012) provide further support to this notion and suggest that companies, which invest substantial amounts of time, money and energy while formulating their CSR strategies, implement those programs to satisfy the ethical interests of the stakeholders. Such firms follow more transparent and dependable financial reporting standards and hence, are less likely to manipulate their earnings (Kim, Park and Wier, 2012). The second perspective presents a contrary view and suggests that the corporate managers who manage the earnings of the firm, may strategically utilise CSR to masquerade their opportunistic behaviour (Prior, Surroca and Tribó, 2008). Prior, Surroca and Tribó (2008) argue that managers who perform EM may fall back on CSR to cope with stakeholder activism and their vigilance. Choi, Lee and Park (2013) support this argument and propose that managers pursuing their own individual benefits, distort the earnings of the firm and succeed in cementing their positions within the firms through increased CSR engagement.

In summary, several empirical studies [see for example, Chih, Shen and Kang (2008), Kim, Park and Wier (2012), Choi, Lee and Park (2013), Choi, Choi and Byun (2018) and Das, Mishra and Rajib (2018)] suggest that firms with high CSR engagement, do not manage their earnings. On the other hand, there are studies [see for example, Patten and Trompeter (2003), Prior, Surroca and Tribó (2008), Gargouri, Shabou and Francoeur (2010), Jian et al.(2023)], which suggest that firms

with high levels of EM turn to CSR initiatives in order to masquerade the opportunistic behaviour of the managers. Finally, Selimefendigil and Öner (2022) suggest that CSR engagement of a firm does not influence its EM practices.

4.2.5 Institutional background of the Companies Act, 2013

On 29 August 2013, the Government of India (GoI), introduces the Companies Act, 2013 and Section 135 stipulates that all companies incorporated in the country and meet specific qualifying criteria, must spend at least two percent (2%) of the average of their previous three years' profits, towards CSR pursuits. This decree is applicable for all the companies which meet at least one of the qualifying criteria, as under:

- a. Net worth of INR 500 crores (\$ 61 billion²⁸, approx.) or more
- b. Annual turnover of INR 1,000 crores (\$ 122 billion, approx.) or more
- c. Net profit of INR 5 crores (\$ 610,000, approx.) or more

This directive means that from the following year, i.e., 2014, all the qualifying companies need to comply (or explain) with the recently implemented law. The Schedule VII of the Act defines the priority areas for CSR resource distribution and the Act also highlights the activities that are included in or excluded from the domain of corporate CSR. To ensure that firms maintain integrity and transparency at all steps of implementing CSR, the Act also recommends formation of a CSR committee within each firm, consisting of three or more directors, with at least one independent director, to steer the CSR strategies of the firm and to supervise the associated expenses ('The Companies Act', 2013). The law requires the recalcitrant firms to explain in their annual reports, the reasons behind their failure and the responsibility to manage the CSR expenses lies with the board and not with the management (Rajgopal and Tantri, 2023). However, the law does not specify guidelines regarding the validity of an explanation, as a result of which, there is plenty of room for regulatory discretion concerning the interpretation of the explanations (Manchiraju and Rajgopal, 2017). The Ministry of Corporate Affairs (MCA) issues show-cause notices in case of violations and does so even when firms explain the reasons behind their failure rather than to

²⁸ As of 26 October 2022, quote obtained from www.xe.com for all the three INR amounts

comply with the regulation, on the pretext of unsatisfactory and inadequate explanations. This suggests that even though in theory the mandatory CSR expenses are implemented on a "comply or explain" model, in reality, it is advisable for the Indian firms to comply rather than explain (Rajgopal and Tantri, 2023).

4.2.6 Voluntary vs mandatory CSR

Different normative theories provide justification for adoption of CSR practices by a firm. The stakeholder theory suggests that CSR is a strategic investment instrument that increases the value of the firm by aligning the shareholders' interests with those of the other stakeholders (Russo and Perrini, 2010; Freeman and Dmytriyev, 2017). The resource-based view of the firm provides support to this idea and posits that CSR increases the value of a firm by increasing its competitive advantage (Branco and Rodrigues, 2006). This is further supported by the signalling theory, which implies that the firms signal their capabilities and unobserved attributes to its stakeholders by involving with social activities (Hetze, 2016). Several empirical studies support these theories and find that CSR adds value to the firm in multiple ways. CSR has a positive impact on the firm value (Gregory, Tharyan and Whittaker, 2014; Fatemi, Glaum and Kaiser, 2018; Harjoto and Laksmana, 2018; Nirino *et al.*, 2022), enhances corporate reputation (Wang and Gao, 2016; Vlastelica *et al.*, 2018) and is also rewarded by the customers with increased sales (Allen, 2014) and brand loyalty (Werther and Chandler, 2005; Cha, Yi and Bagozzi, 2016; Khan and Fatma, 2019). These studies establish that firms which voluntarily engage in CSR, build a competitive advantage, and distinguish themselves from the competition.

The introduction of the mandatory CSR spending is threatening the relevance of the studies mentioned above. Since all the eligible firms are now required to spend a certain percentage of their operating profits towards the CSR initiatives, CSR no longer remains an instrument for the firms to distinguish themselves from the competition, nor they can build a competitive advantage by increasing CSR engagement (Bansal and Kumar, 2021). A number of studies investigate the impact of the legislation on the financial performance of the firms and their findings are ambiguous and inconclusive. Such studies can be grouped into three categories based on their finding regarding the influence of mandatory CSR on firm performance, i.e., positive, no influence and negative. Studies which find a positive influence of mandatory CSR on firm performance, are

consistent with the stakeholder value maximisation view, which suggests that the focus on stakeholders' interests expressed by the CSR engagement of a firm, increases their (i.e., the stakeholders) willingness to support the operations of a firm, resulting in an increase in the shareholders' wealth [see for example, Bhagawan and Mukhopadhyay (2019), Bhattacharyya and Rahman (2019b)]. At the same time, several studies argue that the mandatory CSR cannot influence firm performance as CSR does not provide any additional benefits, since all the firms need to incur identical percentage of their operating profits towards CSR activities [see for example, Nair and Bhattacharyya (2019), Garg, Gupta and Bhullar (2021)]. Finally, we have studies which are consistent with the agency theory and the "shareholder expense" view and demonstrate that mandatory CSR negatively influences firm performance. They assert that the law imposes a significant additional cost to the firms (Bird, Duppati and Mukherjee, 2016) which is detrimental to the profitability of the firms (Manchiraju and Rajgopal, 2017; Mukherjee, Bird and Duppati, 2018; Aswani, Chidambaran and Hasan, 2020; Bhattacharyya and Rahman, 2020).

To summarize, some studies find that mandatory CSR does not improve the financial performance of the firm. Therefore, firms may be interested in avoiding this expenditure and firms, which used to spend more than 2% of their operating profits towards CSR prior to legislation, have reduced their social expenditures once the legislation is enforced (Desai, Pingali and Tripathy, 2015; Nair and Bhattacharyya, 2019). Moreover, the companies which voluntarily spent on CSR activities, reduced their CSR spending in post-2014, while the companies which are mandated to spend on CSR, increase their CSR spending close to the legally mandated threshold (Dharmapala and Khanna, 2018). A report on the CSR spends by the corporate houses in the year following the legislation states that the mandated firms which undertook CSR expenses before the legislation, reduce their CSR expenses and the firms which never incur any CSR expense before, are reluctant to do so (Singh, 2016). Dharmapala and Khanna (2018) and Aswani, Chidambaran and Hasan (2020) also document the value destroying characteristic of the mandatory CSR. The findings of these studies suggest that firms recognize mandatory CSR as a value-destroying endeavour since it does not add any value to the firm. The findings further lead us to surmise that the firms attempt to meet the minimum threshold of 2% of their operating profits, which can be due to two reasons. First, the strategic significance of CSR has reduced drastically under the mandatory regime and secondly, the firm's management may find it difficult to convince the shareholders of any CSR

expenses in excess of 2% of the operating profits (Bansal and Kumar, 2021). Other studies argue that the legislation is an indirect attempt by the government to increase the corporate taxes by 2% (Karnani, 2013, 2016) and the firms view the CSR compliance as equivalent to an additional tax of 2% on their profits (Afsharipour and Rana, 2014).

The above discussion demonstrates that firms have an incentive to avoid the mandatory expense on the CSR activities. In other words, the Act incentivizes the companies to actively pursue earnings management and therefore, we hypothesize that the implementation of the Act has resulted in an increase in the EM practices of the firms. We formally state our hypothesis as under:

 H_1^1 : Ceteris paribus, the introduction of the Companies Act, 2013 has resulted in an increase in the EM practices of the firms

4.2.6 Business groups and earnings management

The extant literature on earnings management discusses the several accrual components through which companies may engage in EM and such activities include estimations of bad debts, valuations of the inventory, changing the depreciation method and revenue recognition. At the same time, firms may also resort to EM by real activities, such as offering price discounts or by reducing the R&D, along with advertising and marketing expenses to achieve the earnings targets (Roychowdhury, 2006). Arguably, the business group affiliated firms have additional flexibility in comparison to the independent standalone firms to manage their earnings, especially through related party transactions (RPTs). For example, Gordon and Henry (2005) find that there exists a positive relationship between RPTs and EM amongst the US firms. Jian and Wong (2010) report a similar trend amongst the Chinese listed firms, who realize their earnings targets through cashbased and accruals-based related party sales, which they coin as "propping". The EM facilitated by the business groups may include group-orchestrated takeovers and sales, credit procurements and sales and discounts in receivables and payables accounts (Jian and Wong, 2010). Examples include bill-and-hold sales coordinated at the group level or artificial structuring of sale-and-lease back transactions across multiple group affiliated firms (Beuselinck and Deloof, 2014). In addition, several studies document that business groups, the profitable affiliates provide cross-subsidies to the poorly performing affiliates through multiple related party transactions like cash infusions,

equity investments, or loan guarantees (Bertrand, Mehta and Mullainathan, 2002; Chang and Hong, 2002). The existence of these related party structures suggest that the business group affiliated firms not only have more opportunities but also more instruments at their disposal in comparison to the independent standalone firms to manage their earnings.

In our second hypothesis, we test for the existence of such a relationship as follows:

 H_1^2 : Ceteris paribus, business group affiliation positively moderates the relationship between the Act and earnings management, i.e., the Act-EM relationship

4.3 Data and research methodology

4.3.1 Aims

This study aims to study the impact of the Companies Act, 2013 on earnings management practices. All corporate CSR activities in India are governed by the Section 135 of this Act and the qualifying companies are legally required to spend at least 2% of the average of their last three years profits towards CSR. In addition to the primary aim, this study has two ancillary objectives as well. This study aims to examine the EM practices of the business group affiliated firms, i.e., we analyse the moderating impact of business group affiliation on the CSR-EM relationship. Finally, we investigate the impact of the CSR done by the business group affiliated firms on their EM practices in comparison to the independent standalone firms.

4.3.2 Data

In this study, in order to examine the impact of the Companies Act, 2013 on earnings management, we collect data from various sources and analyse them. We collect the firm–level data on the variables of earnings management and the financial accounting data of the listed Indian firms from the Prowessdx database²⁹. We calculate the values of the majority of the variables and consider some of the variables as reported in the Prowessdx. For example, we follow Attig *et al.* (2013) to calculate the proportion of shares held by the institutional shareholders by subtracting the proportion of shares held by non–institutional investors from unity. We provide the explanation and relevance of the regression variables later in the section and for the detailed discussion on the variables, the calculations, and sources, please refer to appendix 4.1.

We collect firm–level data spanning over two decades, i.e., from the year 2000 till 2022, and report the details in table 4.1. Our sample consists of 22,668 firm–year observations with 6,117 unique firms, representing 153 different industries. Out of these 6,117 firms, 1,741 firms are affiliated to any business group and account for 28.46% of our sample. The rest 4,376 firms are independent standalone ones and account for 71.54% of our observations. We further report that the business

²⁹ It is the foremost database on Indian companies and is created and managed by the Centre for Monitoring Indian Economy (CMIE) Pvt. Ltd.

group affiliated firms represent 7,972 firm–year observations, accounting for 35.17% of our sample. The independent standalone firms account for the remaining 14,696 firm–year observations, constituting 64.83% of our observations.

[Insert table 4.1 here]

4.3.3 Regression model and description of variables

In this study, we attempt to answer several questions relating to the practice of earnings management (EM). The primary objective of this study is to examine the influence of the Companies Act, 2013 on the earnings management (EM) practices of firms over a long period of time spanning more than two decades, from 2000 till 2022. As mentioned earlier, this Act mandates the qualifying firms to spend at least 2% of the average of the last three years' operating profits towards CSR initiatives. This Act, therefore, transforms CSR from an inherently voluntary benevolent activity to a compliance requirement. Hence, we argue that the Act incentivises firms to resort to EM in order to reduce or even avoid the mandatory CSR expenses. To measure earnings management, we use both the Jones (1991) and Roychowdhury (2006) models and consider the introduction of the Act as the primary explanatory variable and represent it by the variable *time*. The variable *time* is a binary variable, which takes the value zero (0) in the pre-legislation period and unity (1) in the post-legislation time. We measure CSR engagement by expressing the CSR expenses as a proportion of the operating profits. Business group affiliation is a binary variable which takes the value unity (1) if the firm is affiliated to any business group and zero (0) otherwise, i.e., in case it is an independent standalone firm. In addition, we incorporate a wide range of variables as controls, which are congruent with similar studies in the area. Gao and Zhang (2015), Choi and Moon (2016), Moratis and van Egmond (2018) and Ehsan et al. (2020) amongst others, suggest that CSR has a negative influence on EM. Since a firm typically spends funds on CSR activities out of its net income, therefore we hypothesize that a higher proportion of the net income spent towards CSR activities reduces earnings management. Formally, we express the baseline model in our study as under:

$$y_i^* = \beta_0 + \beta_1 time + \beta_2 busgrp + \beta_3 cosize + \beta_4 age + \beta_5 aud_score + \beta_6 dscr + \beta_7 std + \beta_8 roa + \beta_9 deg + \beta_{10} psii + \beta_{11} div_pc + \beta_{12} nsepb + \beta_{13} nsepe + \beta_{14} noa + \varepsilon_i \dots \dots (1)$$

where, y_i^* is the earnings management of a firm measured using both the Jones (1991) and Roychowdhury (2006) models, while *time* represents the introduction of the Companies Act, 2013 and is a binary variable, which takes the value of zero (0) or unity (1) for pre- and post-legislation periods respectively. The rest of the variables are used as controls and is consistent with extant studies in the area [see for example, (Gavana, Gottardo and Moisello, 2017; Patro and Pattanayak, 2017; Das, Mishra and Rajib, 2018; Ruwanti, Chandrarin and Assih, 2019; Jian *et al.*, 2023)]. We provide the detailed discussion of the regression variables in appendix 4.1.

We conduct our study over two decades, spanning from 2000 till 2022 and the new Companies Act (the Act hereafter) is implemented in 2013, which governs the corporate CSR activities in the subcontinent. Therefore, it is worth examining whether there has been a change on the earnings management due to the introduction of the Act, which makes CSR expenses mandatory for the firms subject to the fulfilment of any one of the three conditions regarding annual turnover, net worth, and net profits. We provide a brief discussion on the Companies Act, 2013 and its implications for the earnings management by the companies later in the section. The Act encourages profitable firms to spend at least 2% of the average of their last three years of profits on CSR activities and therefore, a firm, which is unwilling to incur any CSR expense, may resort to earnings management to inappropriately report its income and other expenses and thereby may manage to avoid incurring CSR expenses. Hence, it is important to study whether the Act has inadvertently resulted in an increase in such tendencies amongst the companies and we compare the influence of the CSR expenses on earnings management before and after the Act. In other words, this study reveals whether there has been a change in the earnings management practices of companies due to the introduction of the Act.

We then proceed to include another dimension to this study, which is the case of the business groups. India is an emerging market, which is characterized by weak institutional frameworks and the business groups act as capable substitutes for those fragile mechanisms. The business group affiliated (bga) firms have access to the internal capital markets, which enable those firms (i.e., the bga-firms) to circumvent the inefficiencies of the external capital markets (Khanna and Palepu, 2000) and access cheaper finance and raw materials (Fisman and Khanna, 2004; Claessens, Fan and Lang, 2006). Therefore, channelizing funds between the affiliated firms within the same business group through the internal capital markets is substantially easier in comparison to their

standalone independent counterparts (Kali and Sarkar, 2011). In this study, we examine the change in the EM practices of the bga-firms over time and compare them with the independent standalone firms. In other words, our study reveals the change in the EM practices of the business group affiliated firms due to the introduction of the Act. To accomplish this, we create a new variable by interacting the business group affiliation and the time variables and perform the regression analysis over the entire time period and also during pre- and post-legislation regimes. Formally, we express the interaction model in our study as under:

$$y_i^* = \beta_0 + \beta_1 time + \beta_2 busgrp + \beta_3 time^* busgrp + \beta_4 cosize + \beta_5 age + \beta_6 aud_score + \beta_7 dscr + \beta_8 std + \beta_9 roa + \beta_{10} deq + \beta_{11} psii + \beta_{12} div_pc + \beta_{13} nsepb + \beta_{14} nsepe + \beta_{15} noa + \varepsilon_i \dots \dots (2)$$

where, y_i^* is the earnings management of a firm measured using both the Jones (1991) and Roychowdhury (2006) models and the other variables are as defined earlier. We provide the detailed discussion of the regression variables in appendix 4.1.

Finally, we examine the combined influence of the mandatory CSR expenses, business group affiliation and the introduction of the Act on the earnings management practices. This analysis compares the change in the influence of CSR expenses on the earnings management between the business group affiliated and the standalone independent firms over time. As mentioned earlier, a firm may increase its CSR engagement in order to divert the stakeholders' attention away from its earnings management practices (Hemingway and Maclagan, 2004) and business groups are better equipped (compared to the independent standalone firms) to transfer and circulate monetary resources within the affiliates through related party transactions (Bertrand, Mehta and Mullainathan, 2002; Kali and Sarkar, 2011) in the garb of CSR expenses (Freeman et al., 2018). Since the business groups spend large amounts of money in CSR initiatives (Naz, 2018), we examine whether they are doing so to disguise their earnings management from their stakeholders. In other words, we explore whether the business groups exploit their CSR expenses for earnings management. To accomplish this, we create another variable titled csr, which is a continuous variable and is the proportion of net income that a firm spends towards its CSR initiatives. We interact the CSR engagement (csr) variable with the business group affiliation (busgrp), the time (time) and finally, the interaction term between time and business group affiliation variables Consistent with our earlier approach, we perform the regression analysis (time*busgrp).

considering the entire time period and then proceed to do the same for both pre- and postlegislation regimes. Formally, we express the interaction model in our study as under:

 $y_{i}^{*} = \beta_{0} + \beta_{1} time + \beta_{2} busgrp + \beta_{3} csr + \beta_{4} time^{*} busgrp + \beta_{5} time^{*} csr + \beta_{6} busgrp^{*} csr + \beta_{7} time^{*} busgrp^{*} csr + \beta_{8} cosize + \beta_{9} age + \beta_{10} aud_score + \beta_{11} dscr + \beta_{12} std + \beta_{13} roa + \beta_{14} deq + \beta_{15} psii + \beta_{16} div_pc + \beta_{17} nsepb + \beta_{18} nsepe + \beta_{19} noa + \varepsilon_{i} (3)$

where, y_i^* is the earnings management of a firm measured using both the Jones (1991) and Roychowdhury (2006) models and the other variables are as defined earlier. We provide the detailed discussion of the regression variables in appendix 4.1.

In a nutshell, the primary objective of this study is to examine the influence of the introduction of the Companies Act, 2013 on the earnings management practices of the firms. In addition, we also study the moderating impact of business group affiliation on the influence the Act on earnings management, i.e., on the Act-EM relationship. Finally, we investigate both the individual and combined moderating effects of business group affiliation, CSR engagement and the introduction of the Act on the EM practices of firms. In the following subsections, we proceed to discuss the research methodology and the empirical models that we apply in this study.

4.3.4 Research methodology and empirical models

The most stylised method to measure the influence of one or more independent variable(s) on the dependent variable is to apply regression and we follow suit and seek refuge in the OLS methodology. The OLS regression model is arguably the most popular method predominantly because of its simplicity and wide applicability and its assumption that the dependent variable is continuous. Hence, application of this method is advantageous to our study since the dependent variable is continuous in nature. In addition, the Gauss–Markov theorem states that the estimates from the OLS are superior to those from all other linear model estimation methods when the assumptions of OLS hold true (Hansen, 2022). Hence, we adopt the OLS regression for our study and construct the baseline model as mentioned in equation (1).

The primary objective of this study is to examine the influence of the Companies Act, 2013 on the earnings management practices of firms, and therefore, the latter is the dependent variable. As

mentioned earlier, we use both the Jones (1991) and Roychowdhury (2006) models to measure the earnings management by firms. Since the dependent variable in this study is continuous, it makes sound econometric logic to adopt the ordinary least squares (OLS) regression model (Greene, 2002; Gujarati, 2004; Wooldridge, 2005b, 2010; Brooks, 2008). We, therefore, adopt the OLS regression model and also carry out additional robustness checks to furnish evidence of consistency and applicability of the results regarding the influence of CSR expenses on the earnings management practices of firms. In addition to our primary objective, this study also has two secondary purposes, which are to study the moderating impact of business group affiliation on the CSR–EM relationship and finally, we also study impact of the CSR expenses done by the business group affiliated firms on their EM practices. To study the impact of the Act on the EM practices, we measure the extent of EM both in the pre- and post- implementation of the Act and compare the results. We subsequently extend the analysis to study the difference in EM for the business group affiliated firms and their independent standalone counterparts. In other words, we explore whether the EM strategies implemented by the business group affiliated firms are dissimilar in comparison to the standalone independent firms. We hypothesize that business group affiliation does moderate the practice of EM and we apply the OLS regression model to provide empirical evidence to our hypothesis.

4.3.5 Description of Variables

The variables in this study are divided into three categories, viz., dependent, independent and control variables. The earnings management of the firms is the dependent variable, while the introduction of the Companies Act, 2013 (represented by the variable *time*) is the primary independent variable. In addition, we incorporate a number of control variables to study the effect of the Act on earnings management in isolation. Finally, since we also examine the moderating effects of business group affiliation as well as CSR engagement on EM, we incorporate them as moderating variables.

4.3.5.1 Dependent variable

The dependent variable for this study is the earnings management practised by the Indian companies. The two foremost approaches to measure earnings management are proposed by Jones

(1991) and Roychowdhury (2006). In the following subsection, we provide the detailed description of the methods that we adopt to measure earnings management practices.

4.3.5.1.1 Measuring earnings management using the modified Jones Model

The original Jones model (1991) is used to detect whether corporate managers manipulate earnings to smooth out accounting numbers to gain benefits from important relief regulation. Discretionary accrual is the difference between the actual and predicted accruals of a firm (Jones, 1991; Dechow, Sloan and Sweeney, 1995; Dechow *et al.*, 2012). Dechow *et al.* (1995) modify it to improve the measurement of discretionary accruals and the difference between the original Jones and modified Jones models depends on how earnings management occurs via the revenue or debt accounts (Peasnell, Pope and Steven Young, 2000). Kothari et al. (2005) further improve it by incorporating return on assets an independent variable in the original model that encapsulates the past performance of a firm in order to control for its influence on the estimated discretionary accruals. In this study, we consider the modified Jones model considering the cash flows and reversals and present it in equation (2) below.

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \beta_4 \frac{CFO_{i,t}}{A_{i,t-1}} + \beta_5 \frac{CFO_{i,t-1}}{A_{i,t-1}} + \beta_6 \frac{TA_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}.....(2)$$

Where $TA_{i,t}$ are the total accruals of the firm *i* in year *t*

- $TA_{i,t-1}$ are the total accruals of the firm *i* in year (t-1)
- $A_{i,t-1}$ are the total assets of the firm *i* in year (t-1)

 $\Delta Rev_{i,t}$ represents the change in the revenues of the firm *i* in year *t*

 $PPE_{i,t}$ are the total property, plant, and equipment of the firm *i* in year *t*

 $CFO_{i,t}$ are the cash flows from operations of the firm *i* in year *t*

 $CFO_{i,t-1}$ are the cash flows from operations of the firm *i* in year (t-1)

4.3.5.1.2 Measuring earnings management using the Roychowdhury Model

This model draws heavily on the model that Dechow *et al.* (1995) and following Roychowdhury (2006), we estimate the normal cash flow from the operations as a linear function of sales and change in sales in the current period. We use the following equation (3) to estimate the cross–sectional version of this model.

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{Rev_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \dots (3)$$

Where $CFO_{i,t}$ are the cash flows from operations of the firm *i* in year *t*

 $A_{i,t-1}$ are the total assets of the firm *i* in year (t-1)

 $Rev_{i,t}$ represents the total revenues of the firm *i* in year *t*

 $\Delta Rev_{i,t}$ represents the change in the revenues of the firm *i* in year *t*

For every firm–year observation, abnormal cash flow from operations is the actual CFO minus the "normal" or expected CFO, which is determined using the estimated coefficients from the analogous industry–year model and the firm–year's sales and lagged assets (Roychowdhury, 2006). Since the expenses are a linear function of concurrent sales and the cost of goods sold (COGS) (Dechow, Kothari and Watts, 1998), we estimate the COGS using equation (4).

$$\frac{COGS_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{Rev_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}.....(4)$$

Where, $COGS_{i,t}$ is the cost of goods sold of the firm *i* in year *t*

In a similar vein, we follow Dechow, Kothari and Watts (1998) to estimate the 'normal' inventory growth using equation (5).

$$\frac{\Delta INV_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta Rev_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t} \dots \dots (5)$$

Where, $\Delta INV_{i,t}$ is the change in inventory of the firm *i* in year *t*

We follow Roychowdhury (2006) to define production costs as in equation (6).

where, $PROD_{i,t}$ is the production cost of the firm *i* in year *t*

We use equations (5) and (6) to estimate the normal production costs from the industry-year regression using equation (7).

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{Rev_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \beta_4 \frac{\Delta Rev_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t} \dots \dots (7)$$

The discretionary expenses also need to be expressed as linear function of concurrent sales (Dechow, Kothari and Watts, 1998) and we estimate it using the regression model as in equation (8).

$$\frac{DISEXP_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{Rev_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \dots \dots (8)$$

where, $DISEXP_{i,t}$ are the discretionary expenses of the firm *i* in year *t*

The discretionary expenses are the summation of the advertising expenses, the research and development expenses (R&D) and the selling, general and administrative expenses

(Roychowdhury, 2006). Roychowdhury (2006) argues that estimating the discretionary expenses using equation (7) gives rise to another problem, which is that if a firm manages its sales upward to increase its reported earnings in any particular year, it can exhibit unusually low residuals for that year. In order to address this issue, Roychowdhury (2006) suggests expressing discretionary expenses as a function of lagged sales, which we follow and state our model in equation (9).

$$\frac{DISEXP_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{Rev_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t} \dots \dots (9)$$

4.3.5.2 Explanatory variable

In this study, we explore the impact of the introduction of the Companies Act, 2013 on the earnings management practices of the firms in India and hence, the primary variable is the introduction of the Act, which is represented by the variable *time* in our regression models. This variable is a binary variable, which takes the value zero (0) for the years before the introduction of the Act and unity (1) denoting the post-implementation years. This approach is consistent with extant studies on the Companies Act, 2013 and CSR in India [see for example, Verma (2011), Chauhan and Amit (2014), Bird, Duppati and Mukherjee (2016), Malik, Al Mamun and Amin (2019), Mitra, Mukherjee and Gaur (2020)].

4.3.5.3 Control variables

To study the effects of the Companies Act, 2013 on the earnings management in isolation, we introduce a wide range of control variables. For selecting the control variables, we refer to studies on the Act, CSR and earnings management [see for example, Patro and Pattanayak (2017), Das, Mishra and Rajib (2018), Moratis and van Egmond (2018), Buertey *et al.* (2020), (Patro and Pattanayak, 2017; Das, Mishra and Rajib, 2018; Moratis and van Egmond, 2018; Buertey *et al.*, 2020; Ahmad *et al.* (2023)], and consider the following variables as controls in our study. We provide the detailed discussion on the source and derivation of the variables in appendix 4.1.

busgrp: A binary variable, which assumes the value 1 if the firm is affiliated to any business group, 0 otherwise

cosize: The size of the firm, measured by the natural logarithm of the total assets

age: The age group of the firm

aud_score: A binary variable, which assumes the value 1 if it is audited by one of the Big4 auditing firms or their associates, 0 otherwise

dscr: The debt-service coverage ratio

std: The current portion of the long-term debt

roa: The return on assets ratio

deq: The debt-equity ratio

psii: The proportion of equity shares owned by institutional investors

div_pc: The total dividend pay–out as a proportion of the net income

nsepb: The price-to-book value ratio

nsepe: The price to earnings per share ratio

noa: The accounting flexibility

The models that we use in this study are, therefore, as under:

 $TA = \beta_0 + \beta_1 time + \beta_2 busgrp + \beta_3 cosize + \beta_4 age + \beta_5 aud_score + \beta_6 dscr + \beta_7 std + \beta_8 roa + \beta_9 deq + \beta_{10} psii + \beta_{11} div_pc + \beta_{12} nsepb + \beta_{13} nsepe + \beta_{14} noa + \varepsilon.....(10)$

 $Disexp = \beta_0 + \beta_1 time + \beta_2 busgrp + \beta_3 cosize + \beta_4 age + \beta_5 aud_score + \beta_6 dscr + \beta_7 std + \beta_8 roa + \beta_9 deq + \beta_{10} psii + \beta_{11} div_pc + \beta_{12} nsepb + \beta_{13} nsepe + \beta_{14} noa + \varepsilon \dots \dots (11)$

where, TA is the total accruals following Jones (1991)

And Disexp is the discretionary expenses following Roychowdhury (2006)

4.3.5.4 Moderating variables

In our study, we explore the impacts of the Companies Act, 2013 and business group affiliation on the EM practices of the Indian firms. In the following subsections, we provide brief discussions on the Act and its possible implications on EM and the role of business groups, particularly in the emerging markets.

4.3.5.4.1 The Companies Act, 2013

In 2013, the Government of India (GoI), introduces the Companies Act and its Section 135 stipulates that all the companies incorporated in the country and meet certain qualifying criteria, must spend at least two percent (2%) of the average of the previous three years' profits, towards CSR activities. This mandate is applicable for all the companies which meet at least one of the qualifying criteria, mentioned below:

- d. Net worth of INR 500 crores (\$ 61 billion³⁰, approx.) or more
- e. Annual turnover of INR 1,000 crores (\$ 122 billion, approx.) or more
- f. Net profit of INR 5 crores (\$ 610,000, approx.) or more

This action insinuates that from the following year, i.e., 2014, all the qualifying companies either need to comply with the recently implemented regulation or explain their inability to do so. The Schedule VII of the Act outlines the priority areas for CSR resource allocation and the Act also highlights the activities that are included in or excluded from the domain of corporate CSR. To ensure that the firms maintain integrity and transparency at all steps of implementing CSR, the Act also recommends formation of a CSR committee within each firm, consisting of three or more

³⁰ Quote obtained from <u>www.xe.com</u> for all the three INR amounts as of October 26, 2022.

directors, with at least one independent director, to propel the CSR strategies of the firm and to supervise the associated expenses ('The Companies Act', 2013).

The strong critics of this approach of transforming CSR from a voluntary activity into a compliance requirement, argue that such a measure provides incentives to the managers to practice more earnings management in order to reduce or even avoid CSR expenses (Patro and Pattanayak, 2017; Hickman, Iyer and Jadiyappa, 2021). The mandatory spending of 2% of profits towards CSR acts as an additional corporate tax burden and the companies do everything in their powers to circumvent such an expense (Sharma, 2013; Singh and Verma, 2018; Garg, Gupta and Bhullar, 2021; Samanta, Guha and Mukherjee, 2022). As a matter of fact, the total CSR spending by the companies in India has seen a decline in the post-Act era (Mukherjee, Bird and Duppati, 2018; Samanta, Guha and Mukherjee, 2022). The introduction of a law causes a structural break in the panel data and consequently, it is advisable to drop the observations pertaining to the year (Wooldridge, 2010; Antoch et al., 2019; Brooks, 2019). Inclusion of the data in which the structural break occurs in the panel data analysis is riddled with numerous problems including designing inaccurate model specifications, which may lead to erroneous conclusions (Greene, 2000; Antoch et al., 2019). Consequently, we do not consider the data for the year 2014 and hence, our panel data is divided into two time periods, i.e., from 2000 to 2013 and from 2015 till 2022. Based on equation (1), which is our baseline model, we start our panel regression analysis considering the entire time period, i.e., from 2000 till 2022. We then segregate the time period into before and after legislation and proceed to conduct the panel regression analysis for the period 2000 to 2013 and then repeat it for the period 2015 till 2022.

Separating the data into before and after implementation of the legislation, therefore, presents us with several advantages. First and foremost, the results from our analyses are unambiguous and robust and have wide applicability. Secondly, given the fact that the data in our study is spread over two decades, which is a substantial period of time to arrive at stable results with wide applicability (Gujarati, 2004; Gujarati and Porter, 2010), the segregation of the time period into before and after legislation, enables us to comment on the change in the impact of the legislation on the EM practices. In addition, this study investigates the moderating effect of business group affiliation on the prevalence of EM and therefore, the separation of the time period along these lines also concedes us the opportunity, albeit superficially, to examine the variation in the EM

practices for the business group affiliated firms and also compare the same with the standalone independent firms. In general, we hypothesize that the introduction of the Act may have inadvertently increased the propensity of the firms to practice earnings management. In addition, we also conjecture that due to the ease in transferring funds within the affiliated firms, business group affiliation may have a positive moderating influence on EM. However, it is interesting to assess the extent of the change in this influence post legislation, since it is expected that the majority, if not all, of the listed companies need to engage with CSR once the Act is put into effect.

4.3.5.4.2 Business group affiliation

India is an emerging economy, which is characterized by weak institutional frameworks and unpredictable socio–political and business environment (Khanna and Palepu, 2000; Kali and Sarkar, 2011; Mukherjee, 2012; Freeman *et al.*, 2018). It becomes imperative for the firms, therefore, to adopt both active and passive risk management strategies to impart stability to their earnings in such volatile situations (Power, 2004; Jain, Yadav and Rastogi, 2009; Jones, 2017). Affiliation to a business group acts as a risk management strategy since the affiliated firms can benefit from numerous advantages like the presence of an internal capital market (Gopalan, Nanda and Seru, 2007), easy access to cheaper raw materials (Holmstrom *et al.*, 2006) and finance (Manos, Murinde and Green, 2007), etc. In addition, the business group affiliated firms encounter reduced levels of risk since they are able to circumvent most of the uncertainties of the inefficient market mechanism (Khanna and Palepu, 2000; Khanna and Yafeh, 2005) and the majority of the business risk is shared by the affiliated firms within the same business group (Poczter, 2018; Li and He, 2019).

However, affiliation to a business group may be associated with higher levels of earnings management, i.e., the business group affiliated firms execute more earnings management in comparison to the independent standalone firms since the controlling shareholders of the business groups are provided with more incentives to do so (Kim and Yi, 2006). In case of the business group affiliated firms, the majority of the owners' capital is not invested in a single firm but is instead distributed over several firms. Opportunistic earnings management and expropriation of minority shareholders are likely to ensue if any portion of the owners' capital is invested in public firms. This is because the owners use the public firms to collect funds from the public and then

transfer the funds to other firms within the business group (Siregar and Utama, 2008) and this transfer is eased by the presence of the internal capital markets, which is controlled by the parent firm (Gopalan, Nanda and Seru, 2007). In addition, the business group affiliated firms engage in earnings management in order to conceal the self–serving transactions of the controlling shareholders and also to minimize the tax liabilities (Beuselinck and Deloof, 2014). Thus, the complexities in the structure of the business groups provide more opportunities to perform higher levels of earnings management compared to the independent standalone firms (Das, Mishra and Rajib, 2018).

In order to answer the question whether business group affiliation has any influence on the EM practices of firms, we introduce a binary variable (*busgrp*), which takes the value unity (1) if the firm is affiliated to any business group and zero (0) otherwise, i.e., an independent standalone firm. We interact it with the primary explanatory variable(s) and examine whether business group affiliated firms practise more EM. We finally proceed to amalgamate our analyses and investigate whether the business group affiliated firms practice more earnings management in comparison to the independent standalone firms, through intentionally and carefully channelizing their CSR expenses.

4.4 Discussion of results

4.4.1 Descriptive statistics

Table 4.2 reports the descriptive statistics of the regression variables that we use in this study. We estimate the average total accruals following modified Jones (1991) model to be at 8.40% and the discretionary expenses based on Roychowdhury (2006) to be at 16.1%. In contrast, prior studies in India report the total accruals following Jones (1991) ranging from 2.90% (Ajit, Malik and Verma, 2013), 5% (Das, Mishra and Rajib, 2018) and 8% (Sarkar, Sarkar and Sen, 2008). Comparing the same scores vis–à–vis the international markets, Zang (2012) and Kim and Sohn (2013) report –2.34% and 5.90% respectively for the USA. It is estimated 2.90% for Malaysia (Ahmad-Zaluki, Campbell and Goodacre, 2011; Mansor *et al.*, 2013), –2.5% for Taiwan (Chen, Huang and Fan, 2012) and –1.01% for the UK (Atieh and Hussain, 2012). On the other hand, the earnings management following Roychowdhury (2006) model estimates 8.50% for the USA (Cohen and Zarowin, 2010), –4.7% for Taiwan (Chen, Huang and Fan, 2012) and 3% for India (Das, Mishra and Rajib, 2018).

[Insert table 4.2 here]

4.4.2 Pairwise correlations

We present the pairwise correlations between the regression variables in table 4.3. Even though some of the variables are positively or negatively correlated, the correlations are not strong enough to lead us to erroneous results and draw inaccurate conclusions. In addition, we also calculate the Durbin–Watson statistic (Durbin and Watson, 1950, 1951) for both the equations (10) and (11), which are 1.8950 and 1.5502 respectively. The D–W statistic ranges between 0 and 4 with an ideal value of 2, which indicates that the errors are not correlated (Wooldridge, 2005b).

[Insert table 4.3 here]

4.4.3 Comparison of means and medians

In this study, we estimate the influence of the Companies Act, 2013 on the earnings management practices of Indian firms. Hence, it is important to compare the means of the earnings management measurements before and after the legislative change. We conduct a t-test, which is a measure of the differences between two means, divided by the geometric mean of the standard errors of the population means. We set up the null hypothesis, which is that there is no difference between the groups before and after the legislation. In other words, our null hypothesis is that there is no difference between earnings management before and after the implementation of the Act. Table 4.4A reports the results of the t-test for the comparison of means and the results lead us to reject the null hypothesis that the EM practices do not change due to the legislation. The number of observations in the pre- and post- legislation are 9,417 and 13,251 respectively with respective means at 0.068 and 0.095 for the total accrual-based EM and the difference in means is positive and statistically significant. Similarly, the discretionary expenses-based EM has the same number of observations both in the pre- and post-legislation period with means at 0.012 and 0.267 respectively. The difference in the means of EM pre- and post-Act is positive and statistically significant, which makes us reject the null hypothesis and infer that there is an increase in EM after the Act is implemented. In other words, the results indicate that the implementation of the Act has indirectly resulted in an increase in the EM of the firms.

In this study, we compare the EM practices between the business group affiliated firms with their independent standalone counterparts and therefore, we compare their means and report the results in table 4.4B. The number of observations for the independent standalone firms and the business group affiliated firms are 14,696 and 7,972 respectively. The null hypothesis is that there is no difference in EM between the two classes of firms and both the business group affiliated and the independent standalone firms practise identical levels of EM. We estimate the means to be 0.066 and 0.118 for the independent standalone firms and their difference is positive and statistically significant. In a similar vein, we estimate the means EM based on the discretionary expenses and report the means to be 0.078 and 0.315 for the independent standalone firms and the business group affiliated ones respectively. Here also we witness the difference to be positive and statistically significant. Hence, we do not have sufficient evidence to accept the null hypothesis and reject it and infer that the

independent standalone firms and their business group affiliated counterparts do not have identical levels of EM. In addition, the positive and statistically significant difference between their calculated means leads us to conclude that the business group affiliated firms practise more EM in comparison to their independent standalone counterparts.

We further investigate the impact of the Act on the EM practices of the firms by comparing the median EM before and after its implementation and report the results in table 4.4C. The results indicate that the number of observations prior and post the implementation of the Act are 9,417 and 13,251 respectively for both the accrual-based and discretionary expenses-based EM. For accrual-based measure of EM, the number of observations which are higher than the median EM prior to the implementation of the Act is 5,229 and the same post the Act is 7,023. At the same time, the number of observations below the median EM before the Act is 4,188 and this number increases to 6,228 once the Act gets implemented in 2013. Considering the entire time period, i.e., both before and after the Act, there are 12,252 firm-year observations which are higher than the median EM, representing 54% of the observations. This indicates that the number of companies practicing EM higher than the median EM is substantially higher than the ones practising EM at levels lower than the median EM. The results for the discretionary expenses-based EM are similar and indicate that the number of observations higher than the median EM prior to and post the Act are 5,390 and 6,862 respectively. The same for the ones lower than the median EM are 4,027 and 6,389 respectively. When we consider the entire time period of both before and after the Act, we report that the number of observations higher than the median EM is the same as the accrual-based EM and is at 12,252, representing 54% of the observations.

Our results also suggest that the number of companies practising EM has increased substantially, from 9,417 to 13,251, after the implementation of the Act and this increase is statistically significant as well. These results lend further support to our hypothesis that the Act has inadvertently resulted in more EM amongst the Indian firms. Our results are consistent with the findings of existing studies conducted in the domain of earnings management and mandatory CSR expenses. We infer that forcing the companies to mandatorily undertake CSR expenses results in higher adoption of earnings management by companies in order to reduce or even avoid the mandatory CSR expenses.
We also compare the median EM practices by the business group affiliated firms with their independent standalone counterparts and report the results in table 4.4D. The number of observations representing the independent standalone firms and the business group affiliated firms are 14,696 and 7,972 respectively for both the models of EM. The results are consistent with our earlier findings, and we report that the number of observations with higher than median EM are higher for both the independent standalone firms and the business group affiliated firms. We witness an opposite trend in case of the lower than median EM and report a significant decrease in the number for both the independent standalone firms and the business group affiliated firms. The increase in the higher than median EM and decrease in lower than median EM is prevalent for both the independent standalone firms and the business group affiliated firms. The increase of EM and this difference is statistically significant as well. When we consider both the independent standalone firms are spreaded counterparts, the number of observations which are higher than the median EM is 12,537, which represents 55.31% of our sample and this insinuates that more firms, irrespective of their affiliation, practise higher than median levels of EM.

Overall, our results suggest that there has been an increase in the EM practices in the post Act regime and more firms are practising higher than median levels of EM. In addition, our results also indicate that the business group affiliated firms practise more EM than their independent standalone counterparts. Our results are consistent with those of the existing studies in the domain of earnings management, mandatory CSR and business groups [see for example, Beuselinck and Deloof (2014), Wang, Cao and Ye (2018), Bansal and Kumar (2021), Das (2021), Hickman, Iyer and Jadiyappa (2021)]. In the following subsections, we further develop our hypotheses and subject them to more rigorous tests and draw conclusions regarding the earnings management practices over time and its prevalence amongst the business groups.

[Insert table 4.4 here]

4.4.4 The baseline model

We use equations (10) and (11) as our baseline models and report the results in table 4.5 and we incorporate the industry effects in all our regression analyses. Our sample consists of 22,668 firm-year observations over the entire time period from 2000 till 2022. The number of observations

prior to 2014 are 9,417 while the rest 13,251 observations are from the post–2014 period. In columns (1), (2) and (3) we report the regression results using the Jones (1991) total accruals model. We first perform the regression analysis considering the entire time period, i.e., from 2000 till 2022 and report the results in column (1). We then segregate the period into before and after the Companies Act, 2013 and report the results in columns (2) and (3) respectively. In addition to the Jones model of earnings management based on the total accruals, we also apply the Roychowdhury (2006) model of earnings management based on the discretionary expenses. As with the Jones model, we first estimate the regression coefficients over the entire time period, i.e., from 2000 – 22 and segregating the time into pre– and post– the Act and report the results in columns (4), (5) and (6) respectively.

[Insert table 4.5 here]

Our baseline model tests whether there is an increase in the EM practices among the firms after the implementation of the Companies Act, 2013 and the results confirm our hypothesis. To examine the Act's overall effect on earnings management, we use the entire sample consisting of all the firms listed on the National Stock Exchange (NSE). Our test variable is time, which is a binary variable which equals unity for observations in the post-Act period, and zero otherwise. The coefficients of the *time* variable are positive and statistically significant at conventional levels for both measures of earnings management, indicating an increase in EM practices in the mandatory CSR regime. In other words, forcing the companies to mandatorily undertake CSR expenses, increases their tendency to manage their earnings in order to reduce or avoid the compulsory CSR expenses. Considering the entire time period of more than two decades and using the Jones (1991) and Roychowdhury (2006) models of earnings management, the coefficients are 0.006 and 12.793 respectively and are both positive and statistically significant at conventional levels. Therefore, we reject the null hypothesis that there has been no change in earnings management among the firms due to the introduction of the Companies Act, 2013, which imposes mandatory CSR expenses in the Indian subcontinent. Our results imply that the Act's provisions to enforce corporate responsibility and enforcing a stricter regulatory environment does not result in a decrease in the earnings management practices.

Our results are consistent with existing research, which criticises the regulator's directive of transforming CSR from a voluntary corporate exercise into a compliance requirement. The critics further argue that such an action provides high incentives to the managers to practise more earnings management so that the company can reduce or even avoid payment of the mandatory CSR expenses (Patro and Pattanayak, 2017; Hickman, Iyer and Jadiyappa, 2021). This is because the mandatory spending of 2% of their operating profits towards CSR presents itself as an additional burden on the financials of the firms and this obligatory expenditure is viewed as a tax penalty that is imposed on the firms for being consistently profitable (Sharma, 2013; Singh and Verma, 2018; Garg, Gupta and Bhullar, 2021; Samanta, Guha and Mukherjee, 2022). Hence, the corporate managers exercise their discretionary powers to manipulate the firm earnings in an attempt to evade the statutory CSR expenses. This practice is so prevalent that the actual CSR spending in monetary terms in the post-Act regime is lower than the previous era of voluntary CSR (Mukherjee, Bird and Duppati, 2018; Samanta, Guha and Mukherjee, 2022).

The regression coefficient for the business group affiliation is positive and statistically significant, implying that the business group affiliation increases a firm's tendency to practise more earnings management. We find that this positive association is prevalent for both the Jones (1991) and Roychowdhury (2006) models of earnings management considering the entire time period from 2000 till 2022 and then in both pre- and post- implementation of the Act in 2014. The commercial scenario in India is besieged by the presence of several large business groups, with most of them being dominant players in the different industries that they operate in (Khanna and Yafeh, 2005; Naz, 2018; Tewari and Bhattacharya, 2022). The positive and significant coefficient suggests that business group affiliated firms practise more earnings management in comparison to their independent standalone counterparts. This result is consistent with previous studies related to business groups and earnings management [see for example, Kim and Yi (2006), Beuselinck and Deloof (2014) and Das, Mishra and Rajib (2018)] and can be explained from various perspectives. Business groups perform more earnings management compared to the independent standalone firms since their managers have more incentives to do so (Kim and Yi, 2006). In addition, in case of business groups, the majority of the owners' capital is usually invested over the multiple affiliated firms and therefore, unscrupulous earnings management and expropriation of minority shareholders is common (Choi and Moon, 2016; Choi et al., 2021). In addition, business groups

are characterized by complex structures and cross-shareholdings between the affiliates and these create a conducive environment to implement earnings management (Das, Mishra and Rajib, 2018). Finally, the business groups are characterized by the presence of internal capital markets (Buchuk, 2019), which eases transfer of funds amongst the affiliated firms by the controlling parent company of a business group (Gopalan, Nanda and Seru, 2007; Gonenc, 2009; Almeida, Kim and Kim, 2015) and this results in higher levels of earnings management among the business groups.

Our results so far suggest that the companies increase their EM practices in the post-Act period and business group affiliated firms practise more EM compared to the independent standalone firms. We combine our previous findings and further investigate whether the business group affiliated firms have increased their EM practices during the post-Act era. In other words, we examine the moderating influence of business group affiliation on EM after the introduction of the mandatory CSR expenses through the Companies Act, 2013. We interact the business group affiliation variable (busgrp) with the introduction of the Act (time) variable and report that the coefficients for both the measures of EM are positive and statistically significant at conventional levels. Our results suggest that the business group affiliated firms increase their EM practices in the post-Act period more than the independent standalone firms. This may be explained by the fact that in the post-Act period, the obligatory monetary amount of CSR expenses has increased higher for the business groups compared to the independent standalone firms (Naz, 2018). The business groups are willing to undertake CSR initiatives at levels which is suitable for them and not according to the mandate of the regulators (Ararat, Colpan and Matten, 2018; Choi et al., 2018a; Naz, 2018) and this approach prompts them to increase their EM practices in the post-Act period. What remains to be explored is whether the business group affiliated firms increase their EM in the post-Act period through their CSR engagement and we test this hypothesis in our next stage of analysis.

The coefficient for the size of the company is positive and statistically significant at the conventional levels of confidence, for both earnings management models. The coefficients are significant when we consider the entire time period and also when we study the pre– and post–legislation eras. This is expected and is consistent with the prior studies done relating the size of the company and earnings management. The firm size is frequently used as a proxy for the level

of information available in the market and the larger firms have more information than the smaller ones due to the higher degree to attention of the stakeholders towards them (i.e., the larger firms). The pressure that the market creates for the larger firms makes them adopt more aggressive accounting practices (Richardson *et al.*, 2002). In addition, the larger firms have more complex business activities and they increase the value of their earnings in order to secure greater financial incentives (Lobo, Zhang and Zhou, 2006).

Our results regarding the impact of the age of the firms on earnings management indicate that it has a negative influence on the latter, implying that the younger firms engage in more earnings management compared to the older ones to portray better financial performance. This negative influence is consistent with both the Jones (1991) and Roychowdhury (2006) models and over all the various time periods that we consider in our study (i.e., over 2000–22, 2000–13 and 2015–22) as well. Our result regarding the negative influence of age on the earnings management is consistent with existing studies in the same domain. Ahmad–Zaluki, Campbell and Goodacre (2011) suggest that the age of a firm negatively impacts its earnings management and the more a firm's age, lesser is the earnings management. Bassiouny (2016) lends support to this idea and proposes that the older firms are established companies with greater reputation in the market and also possess deeper understanding of the rules in comparison to the newer entrants. As a result, the older firms tend to have low levels of earnings management.

Our results regarding the quality of audit confirms that a firm's earnings management reduces if it is audited by any of the big–4 auditing firms. In other words, auditing quality negatively influences earnings management, which is consistent with prior literature in the area. For example, Becker *et al.* (1998) demonstrate that the big–4 auditing firms object to the management's accounting decisions that artificially inflate the earnings since the auditors are more likely to get sued in case any overstatement of earnings comes to light. In a similar vein, Chen, Lin and Zhou (2005) evince that the big auditing firms are negatively related to the earnings management by the Taiwanese IPO firms. Lin and Hwang (2010) and Zang (2012) provide support to this notion and suggest that audit quality results in a lower earnings management, since a high quality audit is expected to constrain opportunistic earnings management as well as to reduce the risk of communicating misinformation regarding the financial health of the company due to material misstatements and omissions.

The debt service coverage ratio increases the earnings management of a firm, since a high ratio is associated with higher levels of income which inadvertently results in an increase in earnings management. In addition, this ratio serves as one of the debt covenant restrictions and there exists a positive relationship between the debt covenant restrictions and earnings management (Atieh and Hussain, 2012; Pittman and Zhao, 2020; Avabruth and Padhi, 2023). The relationship between fabricated statements regarding higher income levels is intuitive since a higher reported income results in a reduction in the probability of violation of the covenants that are dependent on earnings. The misstatements that are not related to income, can also potentially facilitate satisfying the covenant thresholds through income soothing and corporate managers utilize both types of misstatements to alleviate covenant constraints (Pittman and Zhao, 2020). Our results are consistent with the findings of previous research, and we report that a high debt service coverage ratio is associated with a higher level of earnings management.

The current portion of long-term debt results in a reduction of earnings management and our result is consistent with findings of previous studies in the domain. We also report that this negative association is valid for both the Jones (1991) and Roychowdhury (2006) models of earnings management and over all the three time periods under consideration (i.e., from 2000 - 22, 2000 - 13, and 2015 - 22). This is because a higher amount of interest or debt obligation permits a lower monetary amount at the discretion of the managers to overstatement their earnings. In addition, debt, especially long-term debt, serves as a monitoring function for the borrowing firms and reduces the agency costs of equity, which results in a reduction in the earnings management for the firms (Park, 2016).

Our results suggest that superior firm performance, measured by higher return on assets ratio, positively influences earnings management of firms. This positive association is prevalent for both the Jones (1991) and Roychowdhury (2006) models of earnings management and is witnessed across all the time frames that we consider in this study. For the performance–oriented firms, the return on assets is positively related to the earnings management (Kothari, Leone and Wasley, 2005) since the higher performance of a firm gives its managers greater incentives and motivation to overstate its earnings (Lee, Li and Yue, 2006) as it is a challenging task for the managers to keep up with the shareholders' expectations of profits (Das, Mishra and Rajib, 2018).

The debt–equity ratio negatively impacts the earnings management, and our results are consistent for both the earnings management models as well as across the time frames in this study. This is because, high levels of leverage prevents the managers from manipulating their earnings since they have an obligation to pay higher monetary amounts of interest and principal (Jensen, 1986; Zamri, Rahman and Isa, 2013). We report a similar negative impact of the institutional shareholding on the earnings management. This is because when institutional shareholders like FIIs, mutual funds, insurance companies, etc., monitor the internal operations of a firm, its (i.e., the firm under scrutiny) managers find it challenging to undertake real activities to overstate their income (Roychowdhury, 2006; Zang, 2012). In addition, large institutions have more incentives to monitor firms when they have high ownership stakes, and this results in a reduction in the self–serving manipulation by the firms (Hadani, Goranova and Khan, 2011).

Our results regarding the influence of dividend pay–out ratio on the earnings management suggests that a firm that pays higher levels of dividend, practise more earnings management. This is because the managers treat dividend as one of the most important aspects and hence, actively manage their earnings in order to achieve the high threshold of dividends. This practice of meeting the dividend threshold is more prominent amongst the firms with high debt–equity ratio, high dividend pay–outs and whose CEOs receive higher monetary dividends (Daniel, Denis and Naveen, 2008). In case a firm fails to meet the dividend threshold with its actual earnings, managers resort to managing their earnings upwards to meet the threshold and the larger firms are less likely to exaggerate their earnings compared to the smaller firms (Atieh and Hussain, 2012). Finally, firms which pay dividends are more likely to engage in earnings management than the ones which abstain from paying dividends and use both real activities and choice of accruals (Liu and Espahbodi, 2014).

We capture the growth opportunities of firms by considering both price-to-book and priceearnings ratios and the results suggest that they positively influence the earnings management by firms. This positive influence persists for both the total accrual and real activities manipulation models of earnings management and also for all the time frames under consideration. Our results are consistent with findings of previous research which establish that there is a positive relationship between growth and earnings management (Sarkar, Sarkar and Sen, 2008). Needless to say, growth is evitable for any firm and the high-growth firms have a tendency to inflate their earnings in order to increase the price responsiveness (Lee, Li and Yue, 2006). Our results are in stark contrast to the findings of AlNajjar and Riahi–Belkaoui (2001) who evince that high–growth firms make accounting decisions to reduce their declared earnings in comparison to their low–growth counterparts to avoid the high political cost and the associated political risk. Roychowdhury (2006) and Cohen and Zarowin (2010) also suggest a negative impact of growth opportunities on earnings management.

Finally, accounting flexibility has a positive effect on the earnings management, and we witness it using both the models of earnings management as well as across all the time periods that are under study. Our results are consistent with findings of Chen, Huang and Fan (2012) and Das, Mishra and Rajib (2018) who provide evidence of a positive relationship between accounting flexibility and earnings management. However, our results are in contrast to the findings of Sarkar, Sarkar and Sen (2008) who find no significant association between accounting flexibility and earnings management. Our findings are farthest removed from those of Barton and Simko (2002) who suggest that the managers' flexibility towards earnings management in a certain year reduces due to overstated net operating assets in the previous year. Accruals in earnings are indicated in the net assets due to the articulation between the income statement and the balance sheet and in case the managers overstate the earnings in one period using accruals, some portion of the accruals get reflected in the next period as an operating asset (Das, Mishra and Rajib, 2018). Hence, the managers' liberal assumptions regarding the revenues and their measurement in one year diminishes their ability to make equally liberal assumptions in the later years as long as the managers want to stay within the boundaries of the guidelines prescribed by the regulators and the group of accounting professionals (Barton and Simko, 2002).

4.4.5 Relationship between the introduction of the Companies Act, 2013, business group affiliation, CSR engagement and earnings management

The results of our baseline model suggest that the companies increase their earnings management with the introduction of the Companies Act and business group affiliation moderates the Act-EM relationship, which indicates that the business group affiliated firms increase their EM more than the independent standalone firms. However, with the introduction of the Act, all the firms mandatorily incur CSR expenses, and the business groups are required to spend higher than the

independent standalone firms. This incentivises the business groups to manage their earnings so that their CSR expenditure is reduced or brought to a level that they prefer rather than what the legislation requires them to do. Therefore, we extend our analysis and examine whether the business group affiliated firms increase their EM in the post-Act period through their CSR engagement. In addition, we compare the EM practices between the business group affiliated and the independent standalone firms before and after the Act. To achieve this, we perform interactions between the introduction of the Act (*time*), business group affiliation (*busgrp*) and CSR engagement (*csr*) and report the results in table 4.6. We measure a firm's CSR engagement by expressing its CSR expenses as a proportion of the Act are binary variables as defined earlier. Consistent with our earlier approach, we first conduct the regression analysis considering the entire time period from 2000 till 2022 and then segregate it between pre- and post-Act periods.

[Insert table 4.6 here]

We report the results of the Jones (1991) model considering the entire time period from 2000 till 2022 and then segregating it into pre- and post-Act periods in columns (1), (2) and (3) and we do the same following the identical order for the Roychowdhury (2006) model in columns (4), (5) and (6) respectively. The coefficients of the introduction of the Act (time) and business group affiliation (*busgrp*) are positive and significant, while those of CSR engagement (*csr*) are negative. Considering the interaction terms, and we report positive and significant coefficients for the interaction term between the introduction of the Act and business group affiliation (time*busgrp), irrespective of the EM model. Our results suggest similar positive and significant coefficients for the interaction terms between the introduction of the Act and CSR engagement (time*csr), and also that of business group affiliation and CSR engagement (busgrp*csr). Finally, we also find positive and significant coefficients for the three-way interaction term between the introduction of the Act, business group affiliation and CSR engagement (time*busgrp*csr). The control variables retain their signs from our baseline model, indicating consistency in their combined impact. The size of the firm, the debt service coverage ratio, the return on assets ratio, the dividend pay-out ratio, the price-to-book ratio, the price-earnings ratio and the accounting flexibility positively influence the earnings management in both the models. The other control variables like the age group of the firm, the audit quality, the current portion of the long-term debt, the debt-equity ratio

and the institutional shareholding exercise their negative influence on the earnings management of the firms and the influences of the control variables are statistically significant at conventional levels of confidence.

The positive and significant coefficients for the introduction of the Act (*time*) and business group affiliation (*busgrp*) indicate an increase in the earnings management practices with the introduction of the Companies Act, 2013 and that the business group affiliated firms practice more EM compared to their independent standalone counterparts. This phenomenon is further reinforced by the coefficient of the interaction term between business group affiliation and the introduction of the Act (*time*busgrp*), which is positive and significant at conventional levels of confidence for both the models of earnings management. These results are consistent with the results of our earlier analyses where we report that an increase in EM in the post-Act period and the business group affiliated firms practise more EM due to several factors, such as their managers receiving more enticements to manage the firms' earnings, which is facilitated by the presence of the internal capital markets and the complex crossholding between the affiliate firms.

The negative coefficients of CSR engagement (represented by the variable *csr*), on the other hand, suggest that an increase in CSR engagement results in a reduction in EM practices. We observe identical and consistent negative influence in both the total accruals based and real activities manipulation-based models of EM, albeit with differing magnitudes signified by the different coefficients along with varying levels of confidence for the two models. The results indicate that the CSR engagement reduces earnings management of firms since the coefficients are negative and are statistically significant at conventional levels of confidence. In other words, the more a firm spends on CSR activities, the less are its opportunities for earnings management. Looking at the entire time period of more than two decades and using the Jones (1991) model of earnings management based on total accruals, with every additional unit of allocation of funds towards the CSR initiatives, the earnings management reduces by 0.022 units. This negative influence prevails even when we divide the time period into pre- and post- legislation segments, with the effect of CSR being at 0.042 and 0.011 units respectively. We witness an identical negative influence when we adopt the Roychowdhury (2006) earnings management model based on discretionary expenditure. Consistent with our approach with the Jones model, we first estimate the coefficients over the entire time period and then do the same separating the time into pre- and post- 2014. We

report that even though the degree of influence changes, i.e., the coefficients are different, the overall impact of CSR expenses on earnings management is identical to the Jones model. The results indicate that with every additional unit of funds spent on CSR initiatives, the earnings management reduces by 1.393 units over the entire time period. The influence is greater during the time before the Act is enacted and is estimated at 1.717 and is 1.139 units after the enactment. Our results suggest that before the Act, the negative influence of CSR engagement on earnings management is more pronounced compared to the post-Act period. This may be attributed to the fact that once CSR is made a compliance requirement, all the firms mandatorily undertake the CSR expenses (Gupta and Chakradhar, 2022) and therefore, the negative impact of such expenses on earnings management reduces substantially (Hickman, Iyer and Jadiyappa, 2021). However, the regulators can still take solace from the fact that CSR engagement still maintains its negative influence on the earnings management practices of the firms even after the implementation of the Act.

Our results regarding the influence of the CSR engagement on the earnings management are consistent with the existing literature. Kim, Park and Wier (2012) provide evidence that CSR engaging firms have a lower tendency to manage their earnings through accruals. This is also congruent with the ethical theory of the firm, which asserts that the ethical firms conduct themselves ethically towards both its shareholders and its stakeholders, even though the latter do not hold any equity in the company (Kitson and Campbell, 1996). Litt, Sharma and Sharma (2014) support this hypothesis of existence of a negative association between CSR and earnings management. The strong financial performance of the socially–responsible firms may not be a result of earnings management but due to real economic gains and therefore, such firms have a lower incentive to manipulate earnings to report superior financial performance (Litt, Sharma and Sharma, 2014).

Our results regarding the association between CSR engagement and earnings management is consistent with the stewardship theory, suggested by Donaldson (1990), Donaldson & Davis (1991) and Davis, Schoorman & Donaldson (1997). This theory suggests that the corporate managers act collectivistically and as good stewards of the firm and have non-financial interests, like firm reputation, ethical reasons, etc. (Velte, 2010). It is expected, therefore, that the managers subscribing to the stewardship theory disclose more financial and CSR information, which

ultimately results in better financial and CSR performance. Depending on this negative association between CSR engagement and earnings management, the managers of the socially responsible firms choose to foster a long-term relationship with the stakeholders. Therefore, the managers who engage in improved CSR performance and reporting, are less likely to engage in earnings management, since a decreased earnings quality does not reflect the interests of the stakeholders (Stawinoga and Velte, 2015). In addition, since the financial and CSR performance and reporting decisions are conducted simultaneously during the course of a financial year, the managers' reflection on the stakeholder demands, which may lead to decreased earnings management, can also result in an increased responsibility to instigate a CSR reporting which is connected to an increased CSR performance, which in turn helps in decision making by the stakeholders (Stawinoga and Velte, 2015; Velte, 2020). CSR performance and reporting are therefore, used as a positive reputation signal and are also related to a lower degree of earnings management (Krishnamurti, Shams and Velayutham, 2018).

Our results regarding the influence of CSR engagement during the post-Act regime are further supported by the coefficient of the interaction term between them (*time*csr*), which is negative and significant for both models of earnings management. The negative coefficients suggest that once CSR expenses become a compliance requirement from being a voluntary benevolent exercise for the firms, there is a reduction in the influence of CSR engagement on the earnings management by the firms. This is because once CSR becomes a compliance requirement, the auditors include CSR engagement as one of the evaluating parameters and ensure that the firms comply with the regulatory requirements (Houqe, Ahmed and van Zijl, 2017). This is because the auditors are more likely to get sued if they approve any false information regarding the company (Eshleman and Guo, 2014) and the reputation of the auditors is at stake while they put their final seal of approval regarding the performance of a company (Becker *et al.*, 1998; Shu, Chen and Hung, 2015). Consequently, the auditors ensure sufficient CSR engagement by the firms and prevent the firms from practising earnings management (Chen, Lin and Zhou, 2005; Lin and Hwang, 2010; Kalbuana, Suryati and Pertiwi, 2022). It is not surprising, therefore, that CSR engagement in the post-Act period has a negative influence on earnings management by the firms.

The CSR engagement by the business group affiliated firms (busgrp*csr) positively influence the earnings management. We maintain consistency in our approach and as before, estimate the

regression models using both the models of EM for the entire time period from 2000 till 2022 and then proceed to isolate the time period into before and after implementation of the Act. We report the regression results of the Jones model (1991) in columns (1) to (3) and do the same for the Roychowdhury model (2006) in columns (4) to (6). We report that through CSR, the business group affiliated firms increase their earnings management by 0.178 units and 3.958 units respectively for the Jones (1991) and Roychowdhury (2006) models over the entire time period under consideration. Before the introduction of the mandatory CSR engagement, this positive impact is at 0.205 and 4.921 units and after the Act, they are at 0.156 and 4.099 units respectively for the Jones (1991) and Roychowdhury (2006) models and all the coefficients of the interaction term are positive and significant at conventional levels of confidence. We witness a slight reduction in the positive impact of CSR expenses on the earnings management for the bga-firms and hence, we conclude that the Act has been able to reduce the tendency of the business group affiliated firms to use their CSR engagement to enhance their earnings management.

The results from our analyses compel us to seek the reasons behind such phenomena and we refer to extant literature on business groups and their CSR engagement along with the prevalent earnings management practices. The positive influence of CSR engagement done by business group affiliated firms on earnings management is consistent with previous studies related to business groups, CSR and earnings management [see for example, Chih, Shen and Kang (2008) Choi, Lee and Park (2013), Beuselinck and Deloof (2014)]. The bga–firms perform higher levels of earnings management through CSR in order to disguise their self–serving transactions of the shareholders with controlling stakes in the firms and also to minimise their tax obligations (Beuselinck and Deloof, 2014). Our results are consistent with the managerial opportunism theory, which states that the managers act to maximise their own gains instead of maximizing their shareholders' wealth (Fried, 2001) and managerial opportunism is higher in case of the business groups compared to the independent standalone firms (Choi, Lee and Park, 2013). Due to higher incentives that is paid to their managers (Choi, Lee and Park, 2013; Chakraborty, Gao and Sheikh, 2019), the latter approve and authorise higher levels of earnings management in the garb of higher levels of CSR engagement (Holmstrom *et al.*, 2006; Freeman *et al.*, 2018).

Business groups are characterized by related party transactions (RPTs), which are predominantly camouflaged as their CSR engagement (Naz, 2018; Ryu and Chae, 2022) and RPTs enhances firm

value in case of the business group affiliated firms (Khuong et al., 2023). The Section 188 of the Companies Act, 2013 define related party transactions as "Transactions between the company and related party pertaining to sale, purchase or supply of any goods or materials, selling or otherwise disposing of or buying property of any kind, leasing of property of any kind, availing or rendering of any services, appointment of an agent for sale or purchase of goods, materials, services, appointment to any office or place of profit in the company, subsidiary company or associate company and underwriting the subscription of any securities or derivatives thereof of the company are the transactions which are deemed to be related party transactions". In addition, the proviso to the Section 188 also stipulates that "If a company enters into any transactions which are in the ordinary course of business and in such a way that there is no conflict of interest, then this provision will not be applicable." The Act also states that the board of directors need to approve all the RPTs regardless of the values of the transactions and the firms involved and all the details of the transactions need to be disclosed (Thornton, 2013). Therefore, the Act has widened the scope of the RPTs by considering more transactions as RPTs and the necessity of the approval of the board of directors. However, in case of the business groups, the board comprises of none other than the owners of the company themselves and hence, the legislation's attempt to regulate RPTs goes in vain (Naz, 2018).

Due to the convoluted inter-holding structure of ownership, it is easy to perform RPTs with the other affiliate companies in the garb of subsidiaries, associates, key management personnel, beneficiaries, etc. More often than not, even the foreign entities are the related parties whose shares are owned by the business group. Hence, the business group essentially controls the related parties as well through the various mechanisms like subsidiaries, etc. Thus, through the RPTs, a business group helps its affiliate firms manage their assets and liabilities. The higher the volume for RPTs, the larger is the opportunity to reduce the assets and increase the liabilities and thus, reduce the tax obligation. The other offshoot of the RPTs is the creation of information asymmetry, which arises from the separation of ownership and control (Naz, 2018). The listed firms transfer their profits to the unlisted but related entities resulting in distorted financial statements and leads to a general erosion of confidence in the firm (Yeh, Shu and Su, 2012). Though the Companies Act 2013 stipulates strict disclosure norms pertaining to the RPTs, it does not consider the related parties of a business group as a single unit when it comes to the matter of CSR (Choi *et al.*, 2018b).

The related party transactions are an integral part of a business and can be a boon especially during times of financial distress (Kim, Kim and Yang, 2015). However, a lack of strict regulation leads to tunnelling, resulting in an expropriation of wealth of the minority shareholders (Bhaumik and Gregoriou, 2010). Hence, there needs to be a mechanism to enforce an effective and fair management to stem the likelihood of expropriation of wealth, which proves to be detrimental for the minority shareholders. In case of the business groups, it has been witnessed that the corporate managers in charge of the RPTs, are often involved in tunnelling and shift the wealth and profits of the firms to themselves, causing a loss of trust and confidence in the firms (Munir and Gul, 2011). The controlling parent firm of the business groups perform earnings management through sanctioning of loans, sale of assets and writing off debts of the affiliate firms and siphon off the funds at the cost of the minority shareholders' interests (Ghatak and Kali, 2001; Kali and Sarkar, 2011; Freeman et al., 2018). Therefore, through the RPTs, the business groups report low values of their assets and profits upon which the mandatory CSR spending is calculated (Naz, 2018). Moreover, the assets and profits of a business group are organized across multiple affiliate firms, and they perform RPTs amongst themselves and also share several members of the board of directors. The legislation pertaining to the disclosure of corporate governance considers a firm as a single independent unit, thereby ignoring the practical scenario where the assets and profits are managed across the multiple affiliate firms (Singh and Gaur, 2009; Tewari and Bhattacharya, 2022). Even though the business groups spend substantial amounts of money towards CSR as a percentage of their profits (Srivastava, 2012; Naz, 2018), there is a high probability that they spread their actual profit across different companies which do not meet the criteria for the mandatory CSR.

This finding naturally leads us to examine whether this behaviour has undergone any transformation with the implementation of the Act. In other words, we examine the impact of the Act on the influence of the CSR expenses on earnings management, in case of the business group affiliated firms. In order to examine this hypothesis, we create a three-way interaction term between the introduction of the Act, business group affiliation, and CSR engagement (*time*busgrp*csr*) and regress it on both the models of earnings management and report the results in columns (1) and (4) for the Jones (1991) and Roychowdhury (2006) models respectively. The coefficients of the three-way interaction variable are positive and statistically significant for both

Jones (1991) and Roychowdhury (2006) models of earnings management and suggest that the business group affiliated firms increase their earnings management by increasing their CSR engagement in the post-Act era by 0.215 and 8.691 units respectively. This phenomenon can be explained by the fact that by dispersing their profits across multiple affiliate firms, the business groups perform earnings management and overstate their CSR expenses (Ararat, Colpan and Matten, 2018; Freeman et al., 2018; Liakh and Spigarelli, 2020). Since the law governing CSR in India does not consider the structure of the firms within the business groups, the latter exploit this lacuna in two ways. First, they enhance their image as socially responsible corporate houses by allocating generous quantities of money towards CSR activities (Srivastava, 2012) and second, by contributing a much lower proportion of their profits across the multiple affiliate firms as contributions towards CSR initiatives (Choi et al., 2018b; Kim and Oh, 2019). Through earnings management, the business groups use CSR engagement as a tool to reduce or even avoid their tax liabilities (Beuselinck and Deloof, 2014) and take advantage of the legislation to overstate their CSR expenses through the interlocked holding structure between the affiliate firms (Naz, 2018). Naz (2018) provides evidence that based on the classifications stipulated in the Companies Act, 2013, the bga-firms elude their CSR and tax liabilities since they are considered to be single independent entities, whereas in reality, they are intertwined affiliates of different business groups. In fact, if the profits strewn across all the affiliate firms are added to the profits of the controlling parent firm of a business group, the actual amount that it (i.e., the parent firm in a business group) spends in CSR related activities, is considerably lower than the mandatory 2% level (Naz, 2018).

In summary, our results indicate that CSR engagement, on its own, negatively influences earnings management and this negative impact is reduced by a small extent in the post-Act period. The business groups increase their earnings management after the introduction of the Act and the business group affiliated firms utilise CSR engagement as an instrument to increase their earnings management. Finally, we provide evidence that the business group affiliated firms increase their earnings management practices in the post-Act era by increasing their CSR engagement. Our results are consistent with stewardship and managerial opportunism theories of the firms and also with findings of several prior studies done in the domain of business groups, CSR engagement and earnings management. We now proceed to perform the robustness tests to check for inconsistencies in our results in the following subsection.

4.4.6 Robustness checks

We now proceed to perform robustness checks of our results to substantiate our claims regarding the introduction of the Companies Act, 2013, CSR engagement, business group affiliation and earnings management.

4.4.6.1 Selection bias

This bias may occur in case the sample selection is not done randomly and hence, may generate inconsistent and unreliable results. In other words, in order to generate robust and consistent results, we need to ensure that the samples are randomly selected. The reason behind such a requirement is that econometric and social sciences literature cautions against results from statistical analyses based on samples which are not drawn at random, since they have a tendency of directing towards erroneous conclusions (Greene, 2002; Gujarati, 2004; Wooldridge, 2005b; Brooks, 2008). The selection of samples can also be seen as a type of omitted variable bias (Heckman, 1979, 1990). Econometric theory suggests that self-selection inhibits forthright causal effects and the method for correction for selection bias suggested by Heckman is one of the most popular methods to alleviate selection issues in social sciences data and for estimation of the causal effects (Bascle, 2008). The Heckman correction is a two-step statistical approach, which is designed for rectifying for non-randomly selected samples.

Companies formulate their strategies, including the ones affecting CSR engagement, based on their anticipated influences on the value of the firm (Burke and Logsdon, 1996; Manchiraju, 2015). In relation to our study, such strategies relate to a firm's decisions to manage its earnings by exercising its discretions to declare its profits in a manner in which it is able to reduce or even avoid tax (Beuselinck and Deloof, 2014) and CSR expenses liabilities (Naz, 2018). Therefore, we envisage that there can be two sources of fallibility in our results, stated as under:

- The firms which practise earnings management get selected in our sample despite having little or no CSR engagement
- The firms with high CSR engagement and do little or no management of their earnings are not selected in our sample

The Heckman correction for selection bias is capable of amending both these possible errors and in order to perform this test, we introduce a number of variables that are not present in our baseline model. While these variables may affect a firm's judgement to increase or decrease CSR engagement, these are unlikely to influence the earnings management decisions of a firm. A school of statisticians advise to include all the possible variables and then conduct the regression analyses and conduct the selection bias test accordingly. However, Heckman criticises that approach and suggests that by adopting such an approach, the impact estimate may not be identified (Heckman, 1976). The Heckman correction removes from the comparison of participants and non-participants in CSR initiatives and also those firms who do little or no earnings management.

We perform the Heckman two-step selection bias test and include a number of variables which do not form a part of the baseline model. The variables³¹ are:

cfo: The cash flow from operations

cfi: The cash flow from investing activities

cff: The cash flow from financing activities

roa1: The return on assets lagged by one year

roa2: The return on assets lagged by two years

ronw: The return on net worth

[Insert table 4.7 here]

Table 4.7 reports the results of the two-step Heckman selection bias test and in columns (1) and (2) we report the test results for the Jones (1991) model, while we do the same for the Roychowdhury (2006) model in columns (3) and (4) respectively. The Inverse Mills Ratio (IMR), denoted by lambda is reported in the last row of the table. Based on the results of this test, we

³¹ The detailed explanations of the variables, their sources and calculations are provided in Appendix 4.1.

testify that the variables, which we introduce to conduct this test and are not part of the baseline model, get dropped in the second step. This entails that our model is not plagued by the omitted variable bias. In other words, the results of the Heckman test provide confirmation that our baseline and the subsequent models are defined adequately by the variables that we include originally in our analyses.

In addition and more importantly, the Inverse Mills Ratios (IMRs) are insignificant for both the models of earnings management. The IMR times its coefficient is intended to identify the expected value of the error in the earnings management equation condition on CSR engagement. This would reflect the idea that the firms with substantial earnings management abstain from involving with CSR and hence, the expected value of the error of the dependent variable is no longer zero for some of the firms who actually are involved with CSR. Since the IMR represents the covariance between the errors in the estimation of the earnings management and the CSR engagement equation under the assumptions of our model, the coefficient of the IMR can be used to test for selection bias. Since, the variance in the CSR contribution equation is normalized to unity (1), and the denominator is the product of two standard deviations, which are positive numerals, it is sufficient to examine that the numerator is zero to ascertain about selection. In our models, the IMRs are statistically insignificant and therefore, we infer that the data is consistent with no selection bias.

4.4.6.2 Endogeneity

Endogeneity in an econometric model occurs when the independent (explanatory) variables are correlated with the residuals (also referred to as the "error terms," or "disturbance terms") (Wooldridge, 2010; Lu et al., 2018; Brooks, 2019). Researchers need to pay close attention to this issue, since ignoring it results in biased and unreliable estimations causing rejection of academic papers in various stages of evaluation (Guide and Ketokivi, 2015). The use of the instrumental variables (IVs) is one of the most popular techniques for tackling endogeneity concerns (Sargan, 1958; Bascle, 2008). Identifying a strong and relevant instrument is the crucial step, since incorporating a weak instrument can significantly weaken the econometric model (Bettis et al., 2014). In the domain of the social sciences, multiple approaches (IV, GMM, 2SLS, 3SLS) are applied to address various types of endogeneity problems (Lu et al., 2018). The IV-based

estimation method is vastly popular for cross-sectional and panel data, due to its rigorous primary assumptions in its treatment of endogeneity and the clauses related to identifying the accurate ones. The IV method is used to control for different sources of endogeneity, including those arising from reverse causality (or simultaneous equations bias), selection bias, or the existence of innumerable other perplexing effects (Stock, 2015). However, it needs to be borne in mind that the IV-based approach is not the panacea to allay all the endogeneity problems and improper application of the IV may lead to additional drawbacks by producing inconsistent coefficients and incompatible explanations. For example, selecting an instrument, which is in reality endogenous, may produce inconsistent results in LIML and 2SLS (Ullah, Akhtar and Zaefarian, 2018; Ullah, Zaefarian and Ullah, 2020).

4.4.6.3 Simultaneity

The problem of simultaneity rears its head when two variables concurrently influence each other and possess mutual feedback loops (non-recursive models). Even though the problem may sound simple to comprehend, its statistical solution is complex, particularly in cases involving multiple constructs. Thankfully, this problem can be solved by applying instrumental variables (Sargan, 1958). In our study, we compare between the EM practices of before and after the introduction of the Companies Act, 2013. In other words, this study reveals how the EM practices of firms have changed due to the implementation of the Act. we examine the influence of the introduction of the Companies Act, 2013 on the earnings management practices of the firms, i.e., we investigate the causal relationship between the two. Therefore, we need to address the simultaneity bias since there may be a possibility, however remote, of influencing each other. In other words, there may be a possibility that the government introduces the legislation in order to curb the earnings management practices of the firms, since it is primarily the responsibility of the authorities to look after the interests of the minority shareholders (Qian, Pan and Yeung, 2010). For example, the Sarbanes-Oxley Act, 2002 is introduced in the United States to control earnings management by the firms and to improve the quality of financial statement reporting (Li, Pincus and Rego, 2008). Hence, there may exist a case of reverse causality between the introduction of the Companies Act, 2013 and the earnings management practices of the firms. Therefore, it is imperative that we address simultaneity bias in our study and in order to decide the instrumental variable (IV) in our IV-2SLS regression model, we follow previous studies [see for example, Wooldridge (2005a)

Angrist and Pischke (2009), Reed (2015), Bellemare, Masaki and Pepinsky (2017)] in econometrics, social sciences and the allied domains and consider the primary explanatory variable *(time)* lagged by one-year as the instrumental variable. We present the results in table 4.8 and report that our results are robust and are not influenced by endogeneity.

[Insert table 4.8 here]

We report the results of the Jones (1991) model in columns (1) and (2) and those of the Roychowdhury (2006) model in columns (3) and (4) respectively for the first-stage and secondstage regressions. Using the one-year lag in the primary explanatory variable as the instrumental variable, we report that it has a statistically significant positive influence on the earnings management. This implies that the earnings management has increased after the legislation is introduced. In addition, consistent with our findings from our earlier regression analyses, the business group affiliation has a positive influence on the earnings management. Finally, the significant and positive coefficient of the interaction variable between the introduction of the Act and the business group affiliation (time*busgrp) suggests that the business group affiliated firms perform higher levels of earnings management in the post-Act period. The results of the secondstage regressions are of more interest and importance, and we observe that the instrument (i.e., the time variable lagged by one year) has no influence on the earnings management. At the same time, the primary explanatory variable (i.e., the introduction of the Companies Act, 2013, represented by the time variable) positively and significantly influences earnings management and the bgafirms continue to practice higher levels of earnings management in comparison to their independent standalone counterparts.

The control variables retain their original symbols in both stages of the regression analysis for both the models, signifying that their influences on the earnings management remain resolute. Factors like size, debt service coverage ratio, return on assets, dividend pay-out ratio, price-to-book ratio, price-earnings ratio, and accounting flexibility positively influence the earnings management, whereas age, audited by Big4, current proportion of long-term debt, debt-equity ratio and institutional shareholding have negative impacts. While the impacts of the control variables are reported to be identical to our earlier regression models, the results of the IV-2SLS analysis confirm that endogeneity does not manipulate our principal findings.

4.5 Conclusion

In this chapter, we examine the impact that the introduction of the Companies Act, 2013 has on the earnings management practices of firms. In other words, we explore whether the firms are more motivated to manage their earnings when CSR expenses are made mandatory in India. In addition, due to their dominance in the commercial sector, we focus on the business groups and compare changes in their EM practices with the independent standalone firms. The legislation enforcing mandatory CSR expenses is contingent on the fact that the firm needs to be profitable for the previous three consecutive years. Our results indicate that the legislation incentivises a firm to manage both its income and expenditure to control the tax incidence as well as CSR expenses. We use both the Jones (1991) and Roychowdhury (2006) models to measure the earnings management of firms and also control for a number of factors which are likely to affect the earnings management decisions of a firm. Using data from the Prowessdx database spanning a period of more than two decades, we provide evidence that the introduction of the Companies Act, 2013 increases the earnings management of the firms. This implies that the implementation of the mandatory CSR expenses through the legislation motivates a firm to manage its earnings. We also find that there exists a positive impact of business group affiliation on earnings management, which compels us to explore the Act-EM relationship from the aspect of the business groups. We show that the business group affiliation has a positive moderating impact on the Act-EM association and infer that the business groups perform higher levels of earnings management compared to their independent standalone counterparts.

We then proceed to examine the influence of the CSR engagement on the earnings management by the firms and find that an increase in CSR engagement reduces a firm's tendency to manage its earnings and this negative influence is prevalent over the entire time period. However, the negative impact has marginally reduced after the introduction of the Companies Act, 2013. We also demonstrate that the business group affiliated firms practice more earnings management by increasing their CSR engagement. We finally evince that the business group affiliated firms manage their earnings more than their independent standalone counterparts by expanding their CSR engagement in the post-Act regime. Through various mechanisms of related party transactions, the business group affiliated firms manage both their income and expenditure and thereby, at least to some extent, successfully exercise substantial control over their tax liabilities and the mandatory CSR expenditures.

4.5.1 Contributions to the theory

This study contributes to the intense debate amongst the academia, regulators, and the industry about the efficacy of making CSR expenses mandatory for the firms in India by the implementation of the Companies Act, 2013. The policymakers strongly argue about the increased CSR engagement by the corporate houses by way of higher monetary contributions towards CSR as well as by the larger number of firms liable to incurring CSR expenses in the post-legislation period. However, extant research furnishes undeniable evidence towards the contrary and posit that the legislation has achieved little to nothing towards sensitising the firms regarding their social responsibilities and that the fixing the CSR expenses at 2% of the profits, is arbitrary and is devoid of any mathematical reasoning.

This study contributes to the debate and provides strong support towards the transparent financial reporting hypothesis, which states that the CSR activities of a firm are driven by its managers' motivations to be honest, trustworthy, and ethical. Such managerial behaviour explains the negative influence of CSR engagement on earnings management. We further expand the stakeholder and legitimacy theories and suggest that a higher engagement in CSR initiatives has a spillover effect on the ethical reporting conduct of the firms. The ethical assertion of the stakeholder theory advocates that firms, which are seriously dedicated to CSR, have more dependable financial and non-financial information, which implies that the firms with higher levels of CSR engagement are more likely to state their earnings ethically and less unscrupulously, compared to the companies with low levels of CSR involvement. This ethical behaviour can benefit the firms to achieve and maintain a higher degree of legitimacy in the financial markets. We also contribute to the literature on business groups and their propensity to manage earnings, especially through related party transactions, tunnelling, and propping. Finally, we expand the scope of the managerial opportunism theory to explain the higher prevalence of earnings management amongst the business group affiliated firms.

4.5.2 Implications of the study

This study has several serious implications for the corporate managers, the academia, the regulators, and the capital markets, which we briefly discuss in this sub-section.

4.5.2.1 Implications for the corporate managers

This study is relevant for corporate managers, who can benefit from the insights that can be drawn from our findings. In this study, we attempt to unravel the influence of the introduction of the Companies Act, 2013 on the earnings management, which is a corporate decision that is made at the board level. The Companies Act transforms CSR engagement from a voluntary exercise into a mandatory compliance requirement for the firms and we establish an unambiguous causal relationship, albeit a negative one, between a benevolent decision (i.e., the CSR engagement) on the manipulative choice (i.e., the earnings management) of a firm. Hence, the corporate managers can clearly comprehend the causal effects of one of their decisions on the other since both are corporate decisions and not out-of-control states of nature. Moreover, through our analyses, we highlight the impact of the CSR engagement on the earnings management on the basis of affiliation. In other words, we show evidence that the Act-EM relationship is higher for the business group affiliated firms in comparison to the independent standalone firms, and therefore, the corporate management can formulate their CSR engagement strategies according to the status of the affiliation of their firms. In addition, since CSR engagement loses some of its efficacy as an earnings management instrument in the post-2014 period, firms need to consider this fact while formulating both their CSR engagement and earnings management strategies. This finding is particularly relevant for the firms which invest heavily in CSR initiatives and also practice high levels of earnings management.

4.5.2.2 Implications for the academia

The CSR-EM relationship is a matter of intense debate in the world of academia and there are numerous studies with conflicting or even confounding results regarding the association. While some find negative influence of CSR engagement on EM [see for example, Kim, Park and Wier (2012), Choi, Choi and Byun (2018), Das, Mishra and Rajib (2018)], others find positive influence [see for example, Jian *et al.*(2023)] and some find no association between the two [see for example,

Selimefendigil and Öner (2022)]. We believe that the majority of the confusion arises from the time frames considered, as well as the sample selection technique. We are yet to come across a study which explores the CSR-EM relationship spanning over two decades and considers all the listed firms. In addition, most of the studies are conducted in matured markets and the relevance of the conclusions for the EMEs are questionable, since the institutional frameworks are not as strong as that in the former (i.e., developed) markets. On the other hand, studies in the emerging markets are largely limited to the family-owned business groups and hence, do not explore the possible differences in the influence of CSR engagement on EM between the business group affiliated firms and the independent standalone ones.

Till date, no study has explored the impact of the introduction of mandatory CSR expenses on earnings management practices of the firms and that is the exact gap in literature that this research addresses. In addition, we also contribute to the business group literature and draw robust conclusions regarding their earnings management practices, in both pre- and post-Act periods. By doing so, we address some of the major weaknesses of the existing studies. First, we consider firm-level data spanning over two decades and consider all the listed firms, thereby addressing the time frame and sample selection issues, which plague the prior studies. Second, our comparative analysis of the earnings management practices between the business group affiliated firms and their independent standalone counterparts reveals that the Act-EM association is dependent on the affiliation of the firm but is regardless of the sector in which a business operates. Finally, our results hold up against the robustness checks and therefore, are reliable and have wide applicability.

4.5.2.3 Implications for the regulators

This study has irrefutable relevance for the policymakers as well. In this study, we highlight the nature of the firms which are more involved in earnings management, especially after the introduction of the Companies Act, 2013. Therefore, the regulators can direct more attention to the operations of such firms and subject them to heightened public scrutiny. In particular, firms reporting both high volumes of related party transactions and high CSR expenditures, can be classified together followed by stricter examinations of their accounting disclosures. Moreover, such firms can be subjected more intense monitoring to detect any fraudulent activity that might

put the minority shareholders' investments at risk. Such measures are important to boost investor confidence and ensure increased levels of protection for the minority shareholders. Finally, the regulators should take consolation from the fact that the new Companies Act has resulted in a marginal reduction in the earnings management practices of the firms. In other words, the Act has reduced the effectiveness of the CSR engagement as an instrument for earnings management.

4.5.2.4 Implications for the capital markets

There is little doubt regarding the fact that the firms perform earnings management at the cost of the minority shareholders. This study reveals the category of companies which are more involved in such manipulative actions and therefore, can potentially mislead the investors while the latter formulate their investment decisions. The individual or non-institutional investors, who are the minority shareholders in the listed firms, need to exercise caution while investing in stocks of such companies, which we identify as managing their earnings more than their competitors and also invest heavily in CSR in order to divert the investors' attention away from its other misdeeds. The non-institutional investors need to formulate their investment decisions on the basis of all the information that are contained in the annual reports as well as other resources, like the analysts' reports, etc. and not solely depending on the financial statements, since the latter may misrepresent the financial situation of the firms which are profoundly involved in earnings management.

4.5.3 Scope for future research

Hickman, Iyer and Jadiyappa (2021), find that post-2014, companies are involved less in earnings management, and are however, unable to provide evidence that the decrease in earnings management is due to the provision of the Act making CSR spending mandatory. We, on the other hand, find evidence that CSR spending has a reduced negative influence on earnings management in the post-2014 era. Therefore, this research can be studied in conjunction with that of Hickman, Iyer and Jadiyappa (2021) to gain a deeper understanding of the Act-EM relationship in an emerging market like India. Our study has several limitations which future research can address. For example, the firms which are doing excess CSR, i.e., spending higher than 2% of the average of their last three years' profits towards CSR initiatives, can be studied in greater detail to explore whether the excess CSR is solely directed towards earnings management or is an outcome of the

altruistic and benevolent nature of the firm. In addition, comparing the moderating effects of the corporate governance indicators on the Act-EM relationship for both the independent standalone firms and the business group affiliated firms will also have substantial impact. We leave these for the future researchers to explore.

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List of tables

Table 4.1: Number of firms affiliated to business groups

Table 4.1 reports the distribution of firms according to affiliation. The total number of firms in our sample is 6,117 representing 153 industries. The number of firms affiliated to business groups is 1,741 (28.46%) while the rest 4,376 (71.54%) are independent standalone firms. The number of firm–year observations of the business group affiliated firms is 7,942 (35.17%) and the rest 14,696 (64.83%) are from the independent standalone firms.

	Number of	Percent	Number of firm–year	Percent			
	Firms	(%)	observations	$(^{0}/_{0})$			
Business group affiliated	1,741	28.46	7,972	35.17			
Standalone/independent	4,376	71.54	14,696	64.83			
Total	6,117	100.00	22,668	100.00			
Please refer to appendix 4.1 for the detailed description, including sources and derivation of the variables.							

Table 4.2: Summary statistics

Table 4.2 reports the summary statistics of the regression variables. We measure the earnings management (EM) using both the Jones (1991) and Roychowdhury (2006) models. We study the change in earnings management of companies due to the introduction of the Companies Act, 2013 (Act). In addition, we also study the moderating effect of business group affiliation on the Act–EM relationship. We consider data from 2000 - 22 and have 22,668 firm–year observations in our sample. Please refer to appendix 4.1 for the detailed description, including sources and derivation of all the variables.

	Observations	Mean	Minimum	Maximum	Standard Deviation
Total accruals (Modified Jones model)	22,668	.084	-1.884	8.202	3.081
Discretionary expenses (Roychowdhury model)	22,668	.161	-2.976	9.539	4.848
Time variable	22,668	.474	0	1	.499
Business group affiliation	22,668	.355	0	1	.479
CSR engagement	22,668	.018	-0.389	0.667	.062
Size of the firm	22,668	4.697	-4.699	13.465	2.175
Age group of the firm	22,668	2.300	0	5	1.299
Audited by Big4	22,668	.137	0	1	.344
Debt service coverage ratio	22,668	3.046	-5.679	53.333	5.104
Current portion of long-term debt	22,668	2.545	0	56.199	2.056
Return on assets	22,668	.019	-1.124	21.322	.359
Debt equity ratio	22,668	.417	0	.625	3.092
Proportion of shares held by institutional investors	22,668	.571	0	.603	.221
Total dividend payment as a proportion of net income	22,668	.581	0	.641	1.884
Price to book ratio	22,668	1.081	0	6.595	2.867
Price earnings ratio	22,668	2.973	0	7.894	2.816
Accounting flexibility	22,668	2.064	414	5.385	4.257

Table 4.3: Pairwise correlations

Variables	mdfta_ta	disexp	time	busgrp	csr	cosize	age	aud_score	dscr	std	roa	deq	psii	div_pc	nsepb	nsepe	noa
mdfta_ta	1.000																
disexp	002	1.000															
time	.008	.018	1.000														
busgrp	.008*	.032	.083***	1.000													
csr	003	001**	.017*	008	1.000												
cosize	.003	.319	.014**	.323***	012*	1.000											
age	010	.083	091***	.279***	006*	.184***	1.000										
aud_score	006	059	022***	.238***	005	.319***	.147***	1.000									
dscr	.007	004	020***	.014**	001	.026***	.005	.030***	1.000								
std	001	.254	.043***	.063***	003	.214***	.015**	.059***	007	1.000							
roa	.000	.014	016***	.004	.002	.071***	.029***	.052***	.022***	008	1.000						
deq	001	001	.002**	.014**	001	.007*	-0.006	.013**	002	.005	004	1.000					
рsii	.005	.140	.041***	.239***	.008	.465***	.184***	.275***	.041***	.081***	.077***	.002	1.000				
div_pc	.001	.017	014**	.038***	.128*	.050***	.034***	.055***	.007	.007	.015**	002	.049***	1.000			
nsepb	.000	.032	.040***	.056***	001*	.116***	.022***	.128***	.012**	.008	.028***	.012**	.119***	.008	1.000		
nsepe	.000	.002	003	.006	001**	.014**	004	.010***	001	.000	.001*	.000**	001	001	.020***	1.000	
noa	.003	.001	.012*	.021***	.000	.047***	001	003	001	.049***	001	.004	.026***	002	.001	.000	1.000
*** p<0.01,	** p<0.05,	*p<0.1															

Table 4.4A: Two-sample t-test with unequal variances for time

Table 4.4A reports the results of the two-sample t-test with unequal variances, comparing the means of the measures of earnings management, grouped by the time variable. We group the observations into two groups, i.e., prior and post implementation of the Companies Act, 2013. The total number of firm-year observations in our sample is 22,668. The number of observations prior to the introduction of the Act is 9,417, while that in the post-implementation era is 13,251.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Observations		Mean					
	Prior to	Post	Prior to	Post	Difference	St Err	t–value	p–value
	2013	2013	2013	2013				-
Total accruals (Modified Jones model) by time variable	9,417	13,251	.068	.095	.027	.042	.055	.021
Discretionary expenses (Roychowdhury model) by time variable	9,417	13,251	.012	.267	.255	.188	.025	.016

Table 4.4B: Two-sample t-test with unequal variances for business group affiliated firms

Table 4.4B reports the results of the two-sample t-test with unequal variances, comparing the means of the measures of earnings management, grouped by business group affiliation. We group the observations into two groups, i.e., independent standalone firms and business group affiliated firms. The total number of firm-year observations in our sample is 22,668. The number of firm-year observations of the independent standalone firms and the business group affiliated firms are 14,696 and 7,972 respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Observations		Mean					
	Non-BGA	BGA-	Non-BGA	BGA-	Difference	St Err	t–value	p–value
	Firms	Firms	Firms	Firms				
Total accruals (Modified Jones model) by business	14,696	7,972	.066	.118	.052	.269	1.105	.025
group affiliation								
Discretionary expenses (Roychowdhury model) by	14,696	7,972	.078	.315	.237	.816	1.031	.000
business group affiliation								

Table 4.4C: Two-sample t-test with unequal variances for time

Table 4.4C reports the results of the two-sample t-test with unequal variances, comparing the medians of the measures of earnings management, grouped by the time variable. We group the observations into two groups, i.e., prior and post implementation of the Companies Act, 2013. The total number of firm-year observations in our sample is 22,668. The number of observations prior to the introduction of the Act is 9,417, while that in the post-implementation era is 13,251.

	(1)	(2)	(3)	(4)			
	Total accruals (Modified Jon	es model) by time variable	Discretionary expenses (Roychowdhury model) by time variabl				
	Observa	ations	Observat	tions			
	Prior to 2013	Post 2013	Prior to 2013	Post 2013			
Greater than median	5,229	7,023	5,390	6,862			
Smaller than median	4,188	6,228	4,027	6,389			
Total observations	9,417	13,251	9,417	13,251			
p–value	0.00	00	0.00	4			

Table 4.4D: Two-sample t-test with unequal variances for business group affiliated firms

Table 4.4D reports the results of the two-sample t-test with unequal variances, comparing the medians of the measures of earnings management, grouped by business group affiliation. We group the observations into two groups, i.e., independent standalone firms and business group affiliated firms. The total number of firm-year observations in our sample is 22,668. The number of firm-year observations of the independent standalone firms and the business group affiliated firms are 14,696 and 7,972 respectively.

	(1)	(2)	(3)	(4)			
	Total accruals (Modified Jones	model) by time variable	Discretionary expenses (Roychowdhury model) by time variable				
	Observati	ons	Observations				
	Non–BGA Firms	BGA-Firms	Non–BGA Firms	BGA–Firms			
Greater than median	7,820	4,717	7,836	4,701			
Smaller than median	6,876	3,255	6,860	3,271			
Total observations	14,696	7,972	14,696	7,972			
p–value	0.000		0.000)			

Table 4.5: The baseline model – The impact of the Companies Act, 2013 and business group affiliation on earnings management (EM)

Table 4.5 reports our baseline model, which is the impact of the Companies Act, 2013 on the earnings management of firms. We use both the Jones (1991) and Roychowdhury (2006) models to measure the earnings management practices of the firms. In columns (1) - (3) we report the total accruals earnings management model (Jones, 1991) and in columns (4) - (6) we do the same for the discretionary expenses earnings management model (Roychowdhury, 2006) respectively. For both the models, we first report the results for the entire time period, i.e., from 2000 - 22. Then we proceed to segregate the results into before and after the implementation of the Companies Act, 2013 and report the results in columns (2) and (3) for the Jones model and columns (5) and (6) for the Roychowdhury model, respectively. We study the change in earnings management of the companies due to the implementation of the legislation and therefore, the primary explanatory variable is the time variable, which segregates the entire time period between pre- and post-legislation periods. The coefficient of the primary explanatory variable is positive and statistically significant, implying that the earnings management tendencies of firms have increased in the post-2014 era. This suggests that the legislation has a positive impact on earnings management by the companies. This is an undesirable impact, especially from the point of view of the minority shareholders and the regulators. In addition, we also examine the moderating impact of business group affiliation on the Act–EM relationship. We find a positive and significant influence, which is indicated by the coefficient of the interaction term between business group affiliation and the time variable. This suggests that the business group affiliated firms perform more EM compared to the independent standalone companies, especially in the post-legislation period.

	(1)	(2)	(3)	(4)	(5)	(6)
	Jones	Jones	Jones	Roychowdhury	Roychowdhury	Roychowdhury
	Model	Model	Model	Model	Model	Model
	2000 - 22	2000 - 13	2015 - 22	2000 - 22	2000 - 13	2015 - 22
Time variable	.006**			12.793***		
	(.002)			(1.075)		
Business group affiliation	.162**	.156**	.168***	4.948***	4.159***	5.176***
	(.051)	(.102)	(.005)	(.685)	(1.092)	(1.608)
Business group affiliation interacted with the time variable	.126**			5.246***		
	(.094)			(1.073)		
Size of the firm	.026*	.051*	.011**	48.095***	46.895***	56.904***
	(.014)	(.029)	(.025)	(15.125)	(21.519)	(20.023)
Age group of the firm	022*	051**	003**	-3.477***	-4.865***	-3.789***
	(.018)	(.035)	(.037)	(.442)	(.011)	(.249)
Audited by Big4	005**	059*	083***	-5.297**	-9.761**	-4.686***
	(.058)	(.112)	(.095)	(.786)	(1.324)	(.392)
Debt service coverage ratio	.013***	.011**	.015**	.007**	.012**	.003*
	(.559)	(.211)	(.806)	(1.688)	(1.247)	(2.001)
Current portion of long-term debt	022**	027**	018*	033***	032**	034*
	(.142)	(.336)	(.004)	(.699)	(.717)	(.687)
Return on assets	.572***	.205**	.803***	21.383*	19.497**	26.406***
	(.115)	(.246)	(.113)	(5.483)	(3.592)	(3.295)
Debt equity ratio	319***	302*	331*	217*	208***	223**

	(.001)	(.002)	(.001)	(.607)	(.842)	(.440)
Proportion of shares held by institutional investors	016***	237*	261**	-21.475***	-17.754**	-28.871***
	(.140)	(.281)	(.223)	(1.969)	(1.132)	(1.395)
Total dividend payment as a percentage of PAT	.136***	.021**	.217**	.536*	1.204*	.061**
	(.237)	(.558)	(.008)	(.104)	(.147)	(.074)
Price to book ratio	.159*	.151**	.164*	1.712**	1.628**	1.772***
	(.004)	(.006)	(.002)	(1.396)	(2.177)	(.841)
Price earnings ratio	.200**	.178*	.215***	1.692**	1.426***	1.881*
-	(.030)	(.004)	(.048)	(.772)	(1.707)	(.108)
Accounting flexibility	.003**	.004**	.002**	.025*	.003***	.041**
	(.022)	(.051)	(.001)	(.309)	(.661)	(.058)
Constant	.161*	.171	1.018	-17.359*	-18.813**	9.345
	(.097)	(.186)	(2.448)	(1.979)	(1.792)	(6.148)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,668	9,417	13,251	22,668	9,417	13,251

Standard errors are in parentheses *** p<.01, ** p<.05, * p<.1

The sample consists of 22,668 firm-year observations over the period 2000 - 22. The number of observations vary depending on the model considered. Please refer to appendix 4.1 for the detailed description, including sources and derivation of the variables.

Table 4.6: Relationship between the introduction of the Companies Act, 2013, business group affiliation, CSR engagement and earnings management

Table 4.6 reports the results of our interaction models. In this study, we explore the effect of the Companies Act, 2013 on the earnings management of firms, i.e., we investigate the Act-EM relationship. In addition, we also examine the moderating effects of business group affiliation as well as CSR engagement on the Act-EM relationship. Therefore, we interact the time variable with the business group and CSR engagement variables and finally, estimate the triple interaction between the time, business group and CSR engagement variables. In columns (1) - (3) we report the total accruals earnings management model (Jones, 1991) and in columns (4) - (6) we do the same for the discretionary expenses earnings management model (Roychowdhury, 2006) respectively. For both the models, we first report the results for the entire time period, i.e., from 2000 - 22. Then we proceed to segregate the results into before and after the implementation of the Companies Act, 2013 and report the results in columns (2) and (3) for the Jones model and columns (5) and (6) for the Roychowdhury model, respectively.

The results indicate that the CSR engagement has a negative influence on the earnings management, while business group and time have positive influences. The coefficients of the interaction terms involving business groups (i.e., business group with CSR and business group with time) suggest that the business group affiliated firms perform more EM over the years and continue to do so through CSR as well. The coefficient of the interaction term between CSR engagement and time suggests that earnings management through CSR has increased in the post-Act era. Finally, the sign of the coefficient of the triple interaction term between business group affiliation, CSR engagement and time variable, suggests that in the post-Act era, the business group affiliated firms do more earnings management and CSR in comparison to their standalone independent counterparts.

	(1) Jones Model 2000 – 22	(2) Jones Model 2000 – 13	(3) Jones Model 2015 – 22	(4) Roychowdhury Model 2000 – 22	(5) Roychowdhury Model 2013 – 22	(6) Roychowdhury Model 2015 – 22
Time variable	.032**			5.894**		
Business group affiliation	(.006) .203* (.092)	.256*** (.021)	.172** (.101)	(4.896) 6.126*** (3.579)	5.957*** <i>(1.468)</i>	6.231*** (1.057)
CSR engagement	022*	042**	011*	-1.393***	-1.717**	-1.139**
Time variable interacted with business group affiliation (time*busgrp)	(.117) .218** (.126)	(.154)	(.074)	(1.851) 9.441*** (2.697)	(2.459)	(.114)
Time variable interacted with CSR engagement (time*csr)	.003**			2.225***		
CSR done by business group affiliated firms (busgrp*csr)	(.142) .178** (.154)	.205** <i>(.152)</i>	.156** <i>(.126)</i>	(1.035) 3.958*** (1.898)	4.099** <i>(1.331)</i>	4.921** <i>(3.262)</i>
CSR done by business group affiliated firms interacted with the time variable (time*busgrp*csr)	.215*** <i>(.197)</i>	. /		8.691** <i>(4.571)</i>	· /	· · ·

Size of the firm	.025*	.049**	.012***	4.015***	4.746***	5.708***
	(.014)	(.032)	(.025)	(1.448)	(1.597)	(2.323)
Age group of the firm	022**	051*	.004**	-10.001***	-14.611***	12.095***
	(.018)	(.035)	(.037)	(3.424)	(6.023)	(5.259)
Audited by Big4	001***	064**	075**	-4.493***	-18.067**	-5.381**
	(.059)	(.112)	(.095)	(4.586)	(8.343)	(4.403)
Debt service coverage ratio	.042**	.023***	.019***	.023**	.012*	.004***
	(.001)	(.002)	(.005)	(.015)	(.002)	(.006)
Current portion of long-term debt	087**	042*	-0.41*	-1.618***	-1.865***	344***
	(.003)	(.001)	(.001)	(.049)	(.111)	(.037)
Return on assets	.558***	.215***	.289***	10.824*	8.861**	2.416***
	(.117)	(.247)	(.114)	(2.891)	(.909)	(.163)
Debt equity ratio	023**	012**	011*	626***	125***	252**
	(.001)	(.002)	(.001)	(.046)	(.042)	(.056)
Proportion of shares held by institutional investors	005**	239***	279***	-6.603***	-1.156***	-3.726*
	(.042)	(.082)	(.024)	(.506)	(1.445)	(1.748)
Total dividend payment as a percentage of PAT	.064**	.042**	.021***	.073***	.001***	.053**
	(.006)	(.004)	(.001)	(.092)	(.001)	(.072)
Price to book ratio	.045**	.022***	.024**	.106***	1.646***	.511**
	(.002)	(.006)	(.002)	(.118)	(.176)	(.028)
Price earnings ratio	.064**	.042***	.021**	.012***	.008***	.002***
	(.004)	(.006)	(.001)	(.003)	(.003)	(.032)
Accounting flexibility	.073**	.044***	.032**	.114**	.061***	.042***
	(.005)	(.006)	(.004)	(.002)	(.001)	(.004)
Constant	.122	.152	5.234	-1.359***	-4.947***	-2.668*
	(.107)	(.188)	(1.558)	(1.039)	(1.478)	(.324)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,668	9,417	13,251	22,668	9,417	13,251

Standard errors are in parentheses *** p < .01, ** p < .05, * p < .1The sample consists of 22,668 firm-year observations over the period 2000 – 22. The number of observations vary depending on the model considered. Please refer to appendix 4.1 for the detailed description, including sources and derivation of the variables.

Table 4.7: 2–Step Heckman correction for sample selection bias

Table 4.7 shows the results of the 2–step Heckman correction for sample selection bias. In columns (1) and (2), we report the selection bias tests using the Jones (1991) model and in columns (3) and (4) we do the same for Roychowdhury (2006) model. The Inverse Mills Ratio, i.e., lambda, for both the models are presented in the last row of the table and are statistically insignificant, implying that there is no selection bias in our study.

	(1)	(2)	(3)	(4)
	Jone	s Model	Roychow	dhury Model
	First step	Second step	First step	Second step
Time variable	.191*	.059*	11.021**	7.352*
	(.272)	(.007)	(8.245)	(1.908)
Business group affiliation	.891**	.014*	15.345*	7.721**
	(.029)	(.044)	(.038)	(3.003)
Business group affiliation interacted with the time variable	.881***	.126**	.321***	1.804**
	(.291)	(.094)	(.682)	(.485)
Size of the firm	.268*	.021*	.068**	2.037***
	(.679)	(.022)	(.299)	(.753)
Age group of the firm	228*	020*	177**	-1.536**
	(.353)	(.026)	(.271)	(.047)
Audited by Big4	237**	008**	-4.147*	-5.965*
	(.146)	(.087)	(.489)	(3.678)
Debt service coverage ratio	.004*	.001*	.004*	.054*
	(.279)	(.004)	(.127)	(.206)
Current portion of long-term debt	022*	001**	508*	-2.668***
	(.561)	(.009)	(.501)	(.565)
Return on assets	1.016*	.581*	.083*	1.179*
	(.288)	(.171)	(.384)	(1.011)
Debt equity ratio	004**	002*	482*	-3.246*
	(2.371)	(.004)	(.045)	(1.744)
Proportion of shares held by institutional investors	-1.108*	006	328*	-9.139*
	(.951)	(.205)	(.087)	(7.462)
Total dividend payment as a percentage of PAT	.001*	.001	5.378*	.055*
	(.633)	(.002)	(.422)	(.216)
Price-to-book ratio	.001	.001*	5.518*	.402*
	(.487)	(.004)	(2.144)	(.122)
Price-earnings ratio	.409*	.001	.557*	.003
	(.282)	(.055)	(.082)	(.042)
Accounting flexibility	.001	.001	.435	.002*
	(.353)	(.208)	(.588)	(.003)
Cash flow from operations	1.205*		2.256**	
	(.298)		(.129)	
Cash flow from investing activities	.002*		.742*	
	(.516)		(.345)	
Cash flow from financing activities	.002*		3.116**	
	(.641)		(1.156)	
Return on assets lagged by one year	.014**		2.139*	

(.462)		(1.942)	
2.703*		3.547*	
(.428)		(1.129)	
.001*		.004*	
(.103)		(.013)	
-3.101***	.145*	2.952*	-48.253***
(.597)	(.045)	(1.269)	(4.958)
5.414		40.958	
(5.971)		(7.878)	
22,658		22,666	
	(.462) 2.703* (.428) .001* (.103) -3.101*** (.597) 5.414 (5.971) 22,658	(.462) $2.703*$ $(.428)$ $.001*$ $(.103)$ $-3.101***$ $.145*$ $(.597)$ $(.045)$ 5.414 (5.971) $22,658$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

Standard errors are in parentheses

*** p < .01, ** p < .05, * p < .1The number of observations vary depending on the model considered. Please refer to appendix 4.1 for the detailed description, including sources and derivation of the variables.

Table 4.8: Instrumental variable – Two-stage least squares (IV-2SLS)

Table 4.8 reports the instrumental variable two-stage least squares (IV-2SLS) regression analysis results. We select the one-year lagged values of our primary explanatory variable, viz., the time variable lagged by one year and report the results. In columns (1) and (2) we report the IV-2SLS results for the total accruals earnings management model (Jones, 1991) and in columns (3) and (4), we do the same for the discretionary expenses earnings management model (Roychowdhury, 2006). The results of the IV-2SLS analysis suggest that our outcomes are not affected by endogeneity.

	(1)	(2)	(3)	(4)
	Total a	ccruals	Discretionar	y expenses
	(Jones,	(Jones, 1991) (Roychowdhury, 20		nury, 2006)
	First	Second	First	Second
	stage	stage	stage	stage
Time variable lagged by one year	7.604*		2.835**	
	(2.562)		(.497)	
Time variable	1.928*	.904***	11.423***	9.909**
	(1.024)	(.094)	(4.486)	(.519)
Business group affiliation	2.994**	.051**	.192**	.041***
	(.011)	(.112)	(1.258)	(.011)
Business group affiliation interacted with the time variable	.021***	.008**	1.564***	.791**
	(.012)	(.003)	(.771)	(.255)
Size of the firm	.156*	3.536***	2.913**	.005**
	(.237)	(.836)	(1.227)	(.003)
Age group of the firm	-1.090**	074*	513**	003**
	(.689)	(.316)	(.386)	(.003)
Audited by Big4	-2.471*	-2.903*	-1.679***	004**
	(1.545)	(1.117)	(1.566)	(.007)
Debt service coverage ratio	.001*	.001*	1.013*	.001*
	(.000)	(.001)	(.647)	(.000)
Current portion of long-term debt	002*	002*	291*	003*
	(.000)	(.002)	(.252)	(.000)
Return on assets	.985*	5.515**	.978*	.007**
	(.216)	(1.219)	(.361)	(.008)
Debt equity ratio	005**	063*	-1.689*	003*
	(.002)	(.084)	(.568)	(.000)
Proportion of shares held by institutional investors	-1.399*	-6.358*	-3.062*	055*
· ·	(.776)	(1.315)	(1.521)	(.024)
Total dividend payment as a percentage of PAT	.001*	.006**	1.123**	.003*
	(.000)	(.014)	(1.004)	(.000)
Price to book ratio	.002**	.052**	.105*	.002**
	(.001)	(.009)	(.538)	(.000)
Price earnings ratio	.001**	.023***	.006**	.004***
	(.000)	(.001)	(.033)	(.001)
Accounting flexibility	.002***	.004**	.009**	.005*
	(.000)	(.001)	(.004)	(.001)
Constant	.043	11.633**	2.914*	.018***
	(.577)	(1.871)	(1.251)	(.009)
Industry effects	Yes	Yes	Yes	Yes
Observations	22,668	22,668	22,668	22,668

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

The sample consists of 22,668 firm–year observations over the period 2000 - 22. The number of observations vary depending on the model considered. Please refer to appendix 4.1 for the detailed description, including sources and derivation of the variables.

Appendices

Appendix 4.1: Description of regression variables, sources, and derivations

Variable	Description	Source			
Dependent variable(s)					
mdfta_ta	It represents the modified discretionary accruals, following Jones (1991) and Dechow <i>et al.</i> (1995).	Our calculation from Prowessdx data.			
disexp	It represents the discretionary expenditures, following Roychowdhury (2006) model.	Our calculation from Prowessdx data.			
Explanato	ry time variable	-			
time	It is a binary variable representing the time of introduction of the Companies Act, 2013 and implemented in the following year. This variable assumes the value one (1) if the year is post–2014 and zero (0) otherwise.	Our calculation from Prowessdx data.			
Moderatin	g & control variables	I			
busgrp	It is a binary variable representing the ownership of a firm, assumes the value one (1) if the firm is affiliated to a business group, zero (0) otherwise.	Our calculation from Prowessdx data.			
CST	It represents the CSR engagement of a firm. It is the proportion of net income that a firm spends towards its CSR initiatives.	Our calculation from Prowessdx data.			
Cosize	It is the natural logarithm of the total assets of a firm, i.e., [ln(total assets)] The total assets have been reported in million INR and subsequently, the logarithms have been calculated.	Our calculation from Prowessdx data.			
roa	It represents the return on assets of a firm.	Prowessdx. Taken reported.	as		

age	It is a discrete variable and represents the age group of a firm. We use the age groups as reported in Prowessdx database and assign score the ages of the firms as under: age = 1 if age_group=="After 1991" age = 2 if age_group=="Between 1986 and 1990" age = 3 if age_group=="Between 1972 and 1985" age = 4 if age_group=="Between 1951 and 1971" age = 5 if age_group=="Betore 1950"	Our calculation from Prowessdx data.	
psii	age = 6 if age_group=="NA" It represents the proportion of shares held by institutional investors and is not reported. This is derived by deducting the proportion of shares held by non-institutional investors from 1. The formula used is (1 – Proportion of shares held by non- institutional investors) = Proportion of Shares held by Institutional Investors.	Our calculation from Prowessdx data.	
dscr	It is the debt service coverage ratio of a firm.	Prowessdx. Taken reported.	as
aud_score	It is a binary variable, which takes either 0 or 1. The value of 1 is assigned if the firm is audited either by any of the Big 4 auditing and consulting firms or their associates in the current period. If the firm is audited by any other firm, a value of 0 is assigned ³² .	Our calculation from Prowessdx data.	
std	The current portion of the long-term debt of a firm.	Prowessdx. Taken reported.	as
deq	The debt–equity ratio of the firm of a firm.	Prowessdx. Taken reported.	as
div_pc	The total dividend payment as a proportion of the net income, i.e., the dividend payout ratio of a firm.	Prowessdx. Taken reported.	as
nsepb	The price to book ratio of a firm, based on firm's listing data on the National Stock Exchange. It represents the growth opportunities for the firm.	Prowessdx. Taken reported.	as
nsepe	The price to earnings ratio of a firm, based on firm's listing data on the National Stock Exchange. It represents the growth opportunities for the firm.	Prowessdx. Taken reported.	as

 $^{^{32}}$ In India, the Big 4 (Deloitte, PwC, E&Y, KPMG) auditing firms operate on their own and also through their associates, who are expected to have the same impact. At the time of this study, there are 36 associates of the Big 4 auditing firms in India. Hence the variable *aud_score* is assigned a value 1 if it is audited by either any of the Big 4 or by any of their associates.

noa	It represents the accounting flexibility of a firm. Following Sarkar	Our		
	et al. (2008), we calculate as the total assets divided by lagged sales	calculation		
	revenues.	from		
		Prowessdx		
		data.		
cfo	The cash flow from operations of a firm.	Prowessdx.		
		Taken	as	
		reported.		
cff	The cash flow from financing activities of a firm.	Prowessdx.		
		Taken	as	
		reported.		
cfi	The cash flow from investing activities of a firm.	Prowessdx.		
		Taken	as	
		reported.		
ronw	The return on net worth of a firm.	Prowessdx.		
		Taken	as	
		reported.		
Appendix 4.1 presents the descriptions, sources, and derivations of all the variables in this study.				
The sample comprises of 22,668 firm-year observations over the period 2000 – 2022.				

Chapter Five

Conclusion

The principal aim of this dissertation is to investigate the difference in the use of voluntary and mandatory CSR engagement by the firms both as a risk management and as an earnings management strategy. The moderating effects of business group affiliation, the degree of severity of the pandemic, and information asymmetry are examined in the individual chapters respectively. The following sub-section summarizes the conclusions of each study.

5.1 Influence of CSR engagement on credit ratings

The first empirical chapter examines the influence of CSR engagement on the credit ratings (CR) of the long-term debt instruments and also investigates the moderating impact of business group affiliation on the CSR-CR relationship. A detailed analysis of the extant literature reveals that (1) firms are unable to focus their CSR initiatives since no extant study measures the relative effectiveness of the different avenues of CSR and (2) business groups consist of diversified commercial enterprises and the affiliate firms benefit from the internal capital markets, which facilitate transfer of resources to the financially distressed affiliates. Considering these findings, this study examines the difference between the influences of the CSR expenses on the credit ratings of the long-term debt instruments issued by the business group affiliated firms (bga-firms) and their independent standalone counterparts. In addition, we also examine the CSR-CR relationship for the manufacturing firms since they cause more environmental pollution than the non-manufacturing ones.

Our findings suggest that the CSR expenses positively influence the credit ratings of a firm and the three components of CSR engagement also individually have identical positive influences on the same. This suggests that as a firm dedicates a higher proportion of its profits towards the compassionate causes, the higher are its likelihood of being awarded a higher credit rating. We find consistent results for the manufacturing firms and find positive and significant influence of CSR engagement on their credit ratings as well. We also study the moderating effect of business group affiliation on the CSR-CR relationship and our findings suggest that the business group affiliated firms are more likely to be awarded higher credit ratings despite incurring comparable CSR expenses as their independent standalone counterparts. This may be attributed to the fact that the business group affiliated firms enjoy the benefit of coinsurance provided by the parent firm along with the other affiliates within the same group. In addition, the parent company of the business groups participate in the national development agenda that is promoted by the government and this participation reduces its political risk, which in turn

reduces the credit risk and improves the credit ratings. The parent company accedes this benefit to all its affiliates, thereby improving their individual credit ratings.

This study expands the understanding of CSR engagement as a risk management strategy and its influence on a key financial performance metric, viz., credit ratings. This study aids in the awareness of the impact of CSR expenses on credit ratings in a manner that can be effortlessly implemented by the firms. The extant empirical studies use the MSCI index as a measure of the CSR engagement by the firms and the index does not suggest ways that a firm may improve its CSR engagement. We objectively measure CSR engagement of a firm by the proportion of its earnings that it spends on CSR initiatives through the three available channels, viz., donations, community development, and pollution and environment related expenses. Therefore, the corporate managers can rely on this study while formulating their CSR and longterm borrowing strategies since we unambiguously establish a direct causal relationship between the two. In addition, the findings of our comparative analysis of the three channels of CSR engagement as effective measures of risk management, should also guide the corporations to pursue the most effective CSR avenue to manage their credit risk, thereby saving scarce resources of the firm and adding value to its shareholders. Our findings are also helpful for the regulators, who can note that the marginal benefit of CSR has reduced after the introduction of the mandatory CSR, indicating that the majority of the firms are complying with the CSR regulation. In addition, the regulators can also rely on our study to identify the firms which tend to misuse CSR and pursue their ulterior motive rather than benefitting the larger society. We explore this aspect of CSR further in the third empirical chapter.

The independent credit rating agencies (CRAs) also benefit substantially from the findings of this study while awarding credit ratings to the long-term debt instruments issued by companies, especially the ones who engage with CSR solely to meet the compliance requirements. This suggests that the management of the company adopts a reactive rather than a proactive attitude and perpetuating this lackadaisical approach by the top management is likely to soon permeate the other strata of decision-making. Therefore, this apathetic stance can be considered as a precursor of the impending crisis for the firm. Finally, our measure of CSR engagement of the firms provides the academia with an objective and appropriate measure of firm-level CSR engagement and future researchers can use it in the context of any market, irrespective of the latter's maturity and development.

5.2 Influence of the CSR announcements on stock returns

The second empirical chapter examines the impact of the exclusive CSR announcements on the short-term stock returns and also isolates the firm-specific characteristics that justify the investors' reactions to such declarations. In other words, in this study, we explore the investors' reactions to the exclusive CSR announcements that companies make during the recent pandemic and attempt to provide the theoretical foundations of such behaviour. Our findings expand the understanding of market efficiency and investors' reactions to the benevolent initiatives of the firms. Erstwhile literature on investors' reactions primarily deals with corporate announcements regarding financial performance (Thompson, 1985; Ahern, 2009; Sorokina and Thornton, 2012; Neuhierl, Scherbina and Schlusche, 2013), dividend payments (Grinblatt, Masulis and Titman, 1984; Miller and Rock, 1985; Teplova, 2008), restructuring like mergers and acquisitions or divestitures (Deng, Kang and Low, 2013; Rani, Yadav and Jain, 2015; Adnan and Hossain, 2016) and inclusion/exclusion from the sustainability indices (Martin Curran and Moran, 2007; Oberndorfer et al., 2011), while that on the pandemic discusses the effects of the lockdown announcements on the stock markets (Huo and Qiu, 2020; de Lima Galarza, 2021). However, no existing research discusses the commendable corporate participation in eradicating the pandemic, i.e., there is a dearth of study that focusses on the affirmative actions that corporations all over the world undertake to alleviate the situation. Therefore, it is compelling to analyse the impact of the exclusive announcements regarding the CSR initiatives on the stock returns at a time when all commercial activities of the firms are halted due to the pandemic.

Our findings suggest that the investors react positively to the announcements of the CSR initiatives of the firms. We also find that stocks of the firms from the industries which are more affected by the pandemic, generate higher returns compared to the ones from the less affected industries. The results also suggest that the stocks of the highly impacted firms generate higher negative returns before announcing their participation in the pandemic relief efforts and create higher positive returns in the post-announcement period, compared to the less impacted ones. We relate this result with the stakeholder theory of the firm and also find evidence of a positive moderating influence of the severity of the pandemic on the CSR announcement and the stock returns (SR) relationship. In other words, we evince that the firms from the more affected industries benefit more from the CSR announcements compared to the ones from the less affected industries. We proceed to assess the impact of the individual components of the CSR

initiatives of the firms and evince that all the components of CSR initiatives individually positively influence the stock returns. Thereafter, we extend our analysis and examine this positive influence from the points of view of financial constraints and bankruptcy risks. The results indicate that and firms with more financial constraints risk create even higher returns for their shareholders. Moreover, firms which are highly affected by the pandemic and facing higher financial constraints risk generate higher short-term returns in comparison to their opposites. Finally, our analysis incorporating the bankruptcy risk suggest that the stock returns and proximity to bankruptcy, are negatively related. In other words, the closer a firm is to bankruptcy, the higher are its short-term stock returns due to the CSR announcements. Consistent with our earlier results regarding financial constraints risk, we find evidence that the firms which are highly affected by the pandemic and are closer to bankruptcy, generate higher short-term stock returns in comparison to their the firms which are highly affected by the pandemic and are closer to bankruptcy, generate higher short-term stock returns in comparison to their converses.

This study significantly extends finance literature, particularly on CSR, stakeholder theory, market efficiency, and the financial impact of the pandemic. First, our findings reveal the influence of the exclusive CSR announcements on the short-term stock returns. Second, this study reveals the moderating influence of the severity of impact by the pandemic on the CSR-SR relationship. Third, the comparison of the impacts of the various components of CSR initiatives on the stock returns reveals their relative effectiveness as factors to augment shareholders' returns. Finally, the results further reinforce the risk management capabilities of CSR, especially the moderating effects of the financial constraints risk and bankruptcy risk on the stock returns. The results are particularly helpful for the corporate managers, especially of the firms which are facing high level of financial constraints risk or are close to bankruptcy.

5.3 CSR engagement and earnings management

The third and final empirical chapter of this thesis examines the influence of the implementation of the mandatory CSR expenses on the earnings management (EM) practices of firms. We examine the behaviour of the business group affiliated firms and conduct a comparative study with their independent standalone counterparts. An examination of the hitherto literature suggests that the previous studies on the implementation of the mandatory CSR expenses are largely limited to exploring the impact of the Companies Act, 2013 (Act) on the profitability of the firms (Manchiraju, 2015; Manchiraju and Rajgopal, 2017; Mukherjee, Bird and Duppati, 2018; Sharma and Aggarwal, 2022) while the ones on earnings management discuss the prevalence of the earnings management practices, especially among the business

group affiliated firms (Siregar and Utama, 2008; Bhaumik and Gregoriou, 2010; Choi, Lee and Park, 2013; Sarkar, Sarkar and Sen, 2013; Beuselinck and Deloof, 2014; Das, 2021; Zhang and Qu, 2023). The Companies Act, 2013 makes CSR expenditures mandatory for the listed firms and no extant study discusses its impact on the EM practices and this is the exact gap in literature that this study fulfils.

Given the fact that the mandatory CSR expenditure is contingent on the firm being consistently profitable over the last three years in succession, a firm with the intention of avoiding the CSR expenses, may be incentivized to manage its earnings. In other words, the implementation of the mandatory CSR expenses through the Act may motivate the firms to practice earnings management. We use both the Jones (1991) and Roychowdhury (2006) models of earnings management and find that the firms increase their EM practices in the post-Act period. Moreover, we also find that the business group affiliated firms (bga-firms) practise higher levels of EM compared to the independent standalone firms, and this is largely due to the fact that the bga-firms benefit from the presence of the internal capital markets which eases the transfer of funds among the affiliate firms of the same group. We also evince that increased CSR engagement lowers the tendency to manage earnings, indicating that the more morally responsible firms are eager to maintain their image as honest and ethical businesses. However, this tendency has reduced by a small margin in the post-Act period. On the other hand, the business group affiliated firms increase their earnings management compared to the independent standalone firms management.

Our findings regarding the influence of introducing mandatory CSR engagement on earnings management are consistent with existing studies, who critique the regulators for transforming a voluntary activity like CSR into a compliance requirement. The critics further posit that the imposition of the mandatory CSR expenses acts as an additional tax burden on the firms (Kapoor and Dhamija, 2017; Dharmapala and Khanna, 2018), who are penalised for being profitable (Sharma, 2013; Singh and Verma, 2014; Bhattacharyya and Rahman, 2019, 2020; Garg, Gupta and Bhullar, 2021; Samanta, Guha and Mukherjee, 2022; Ahamed and Tripathi, 2023). As a result, the corporate managers exercise their discretionary powers to report the earnings of a firm that reduces the tax liabilities and also saves the firm from incurring any CSR expenses (Patro and Pattanayak, 2017; Aswani, Chidambaran and Hasan, 2020; Hickman, Iyer and Jadiyappa, 2021). Our results regarding the relationship between CSR engagement and earnings management practices are consistent with existing literature [see for example,

Hong and Andersen (2011), Kim, Park and Wier (2012), Almahrog, Marai and Knezevic (Almahrog *et al.*, 2015), Martínez-Ferrero, Banerjee and García-Sánchez (2016), García-Sánchez *et al.*, (García-Sánchez *et al.*, 2020), Bansal and Kumar (2021), Choi *et al.*, (2021)] and we find that firms with high CSR engagement are less likely to involve with earnings management. This finding is also consistent with the ethical theory of the firm, which states that the ethical firms have a lower tendency to manage their earnings (Prior, Surroca and Tribó, 2008; Hajawiyah *et al.*, 2020).

Overall, this dissertation presents a reasonably comprehensive investigation of the association between CSR engagement and financial risk, and we study the causal relationship from the perspectives of all its three theoretical foundations, viz., the stakeholder theory, the risk management theory and information asymmetry. In the first two empirical chapters, we analyse the influence of voluntary CSR engagement on the financial risk of a firm from the perspectives of the stakeholder theory (SHT) and the risk management theory (RMT) and in the third, we do the same from the standpoint of information asymmetry. Congruent with the stakeholder and risk management theories, we confirm that CSR engagement can function as an effective and efficient instrument to mitigate the financial risk of a firm. A firm with high CSR engagement is awarded a higher credit rating and its shareholders are rewarded with higher short-term stock returns. On the other hand, mandatory CSR increases information asymmetry since a firm is incentivised to reduce the incidence of the regulatory CSR expenses by managing its earnings. These are the most important findings of our research.

5.4 Implications for the academia

This study makes substantial contributions to the academia, and we envisage that future studies, especially in the domain of CSR, business groups, and risk management, will benefit in multiple ways. First, our measure of CSR engagement is objective and has wider applicability, particularly in the markets where the MSCI index is not present or is in nascent stage. Second, we substantially expand the risk management theory and the stakeholder theory and ascertain a strong complementary relationship between them. Finally, we contribute to the literature on business groups, particularly in EMEs, and anticipate further interest in the area.

5.5 Implications for regulators or policymakers

This thesis reveals the intricate workings of the business groups, especially their risk management techniques and also the prevalence of earnings management practices through related party transactions (RPTs). The evidence from this study shows that the presence of the internal capital markets (ICMs) is one of the most important attributes of the business groups that is used heavily both by the parent firm and its affiliates in formulating strategic decisions for the entire group. The business group affiliated firms are considered to be safer both from the standpoints of investment and portfolio management, and magnitude of CSR engagement.

The positive relationship between CSR engagement and risk management may encourage the regulators to consider amending the present rules and the associated punitive measures or even introduce new ones to inspire firms to increase their CSR involvement. However, the regulators only need to motivate a firm to do more CSR as making CSR spending mandatory does not have the desired outcome and instead is more likely to incentivise it to increase its propensities to manage its earnings, as we evidence in our study. Moreover, we demonstrate that there is a propensity among the business groups to garb their related party transactions with the CSR expenses in order to divert the stakeholders' and the regulators' attentions away from those incongruous transactions. The regulators need to channelize their attention towards identifying and penalising such firms in order to enhance protection for the small investors.

5.6 Implications for corporate managers

CSR engagement is a board-level decision, as are long-term borrowings and earnings management decisions and the corporate managers can benefit from our findings in multiple ways. We establish a definite and unambiguous causal relationship between CSR engagement and credit ratings of long-term debt instruments. We are confident that our results will assist the corporate managers while formulating these strategies. Our results further reveal the investors' reaction to the exclusive CSR announcements and the managers can consider making exclusive public disclosures of the same rather than declaring the firm's CSR engagement as a part of the earnings announcements. This result is even more relevant for the managers of the firms facing high levels of financial constraints risk or are close to bankruptcy. Finally, our result regarding the CSR engagement and earnings management will help the managers comprehend the causal effects of one of their crucial decisions on the other.
The managers of the business group affiliated firms can particularly benefit from the results of this dissertation. This study highlights the various ways in which the managers of the business group affiliated firms can benefit from the internal capital markets, both in terms of increasing their CSR engagement and managing their risks. At the same time, our findings also caution them against manipulating their earnings at the cost of the small investors, since the business groups are liable to heightened public and regulatory scrutiny.

5.7 Limitations of the study

Akin to any other research, this dissertation has its limitations. The main limitation of the study is that we only consider data of listed firms. We consciously take this step since authentic and reliable data of the unlisted firms are not readily available. This limits the applicability of our findings to a large extent. Moreover, we consider only the quantitative financial data of the companies in our sample, while being fully aware that the credit rating agencies decide the ratings based on a wide gamut of both quantitative and qualitative factors of firms. Moreover, in order to analyse the market reactions to the CSR announcements, we consider only the firms which exclusively announce their participation and contribution towards the pandemic relief. Therefore, we do not consider the data of the companies which announce the pandemic relief efforts as a part of their earnings announcements. However, these are not entirely limitations since results from different settings can be considered as contributions to the body of knowledge in CSR.

5.8 Scope for future study

Throughout the dissertation, as a measure of CSR engagement, we use the proportion of income that a firm spends towards its CSR initiatives. There is a possibility to extend this measure and conduct a comparative study regarding the relative effectiveness of our measure vis-à-vis the MSCI index. Future research can also be directed towards developing a measure for CSR engagement encompassing both our measure and the MSCI index. Moreover, future research can further expand on the complementary relationship between the risk management theory and the stakeholder theory. In addition, incorporating qualitative data to investigate the CSR-CR relationship can also be conducted to provide further insight. In addition, future studies can also measure the public perception of the charities and corporate foundations which extend philanthropic support during the pandemic. Finally, considering the data of the unlisted firms

will further expand the applicability and deepen our understanding of the various beneficial influences of CSR.

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