Corporate discipline and Firm Financial Decisions: Evidence from Regulatory Reforms.

PhD Thesis

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This thesis is the result of the author's original research. It has been composed by the author and has not been previously submitted for an examination which has led to the award of a degree.

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Abstract

This PhD thesis, comprised of 3 essays, assesses the effect of corporate discipline on corporate decisions. To do so, I focus on regulatory reforms that are aimed to improve corporate discipline. In the first two empirical studies in this thesis, I employ a setup of corporate governance reform that improves corporate discipline through internal governance in the form of board reforms and internal control mechanisms in the emerging market context of India. In my third empirical study, I exploit the staggered initiation of M&A laws in 31 countries as a plausible source of exogenous variation in the market for corporate control which improves corporate discipline through external governance and analyse the impact on corporate risk-taking.

To examine whether corporate governance reform (CGR) encourages or deters risk-taking, I examine three hypotheses related to corporate governance reform and firm risk-taking my first empirical chapter. Given the theoretical tension in the literature on the effect of CGR, my study aims to answer this question in the emerging market context of India. With a battery of robustness test, I show that risk-taking of firms in emerging market increases following CGR. This empirical chapter illustrates that corporate governance reform improves corporate discipline and discourages investment conservatism that could stem from private benefits. A version of this chapter has been previously published in the Journal of Corporate Finance.

Using the same setup employed in the first empirical studies, I examine the potential substitutability of corporate governance and dividend payout in my second empirical study. Using different proxies of dividend payout, I show corporate governance reform substitutes dividend payment; however, only when the reform is accompanied by the expansion of personal penalties. Consistent with the theory of

adequacy of punishment, the results underscore the merit of expansion of personal liability in regulatory reforms to stimulate deterring behaviour to credibly communicate the improvement in corporate governance regime.

Finally, in my third empirical study, I employ staggered changes in M&A laws as a plausible source of variation in the market for corporate control and examine the effect of these changes on firm risk-taking. Robust to a battery of robustness test, my investigation reveals a positive causal relationship between the market for corporate control and value-enhancing risk-taking.

Overall, in my thesis, I conclude that improved corporate discipline in the form of regulatory reforms positively stimulate risk-taking appetite and investment of firms and has a substitutive effect on the dividend payout.

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List of abbreviations

Abbreviation	Full Name
ADR	American Depositary Receipt
CII	Confederation of Indian Industry
CGR	Corporate Governance reform
DP	Dividend Payout
DPR	Dividend Payout Ratio
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortization
EPS	Earnings Per Share
IBA	International Bar Association
ICLG	International Comparative Legal Guides
INR	Indian Rupee
M&A	Merger and Acquisition
NPV	Net Present Value
R&D	Research and Development
ROA	Return on Assets
SEBI	Securities and Exchange Board of India
SOX	Sarbanes Oxley Act
TA	Total Assets
TRD	Thomson Reuters DataStream
UK	United Kingdom
US	United States

1. Introduction

Corporate discipline is a complex set of constraints that limits quasi-rents generated by firms (Claessens and Yurtoglu, 2013). It can also be viewed as a mechanism with which providers of finance of firms assure themselves of receiving a return on their investment (Shleifer and Vishny, 1997). Defined as a set of mechanisms, laws, and regulations or as complex interactions of the preceding factors, corporate discipline is aimed at reducing managerial opportunism and or slack, thus, forms the basis of corporate governance (Gillan, 2006). Specifically, from the corporate governance viewpoint, Gillan (2006) divides corporate discipline into two broad categories.

The first type of corporate discipline forms internal governance and is comprised of the role, structures, and incentives of the board of directors, managerial incentives and compensation; corporate capital structure; bylaw and charter provisions (or antitakeover measures) and systems of internal control.

Similarly, the second type of corporate discipline is the external governance categories of Gillan (2006) that comprises of law and regulation, federal laws, self-regulatory organizations, and state law; capital markets, the market for corporate control, labor markets, and product markets; providers of capital market information such as that provided by credit, equity, and governance analysts; markets focusing on accounting, financial and legal services from parties external to the firm (including auditing, directors' and officers' liability insurance, and investment banking advice); and private sources of external oversight, particularly the media and external lawsuits.

Over the years, the effect of corporate discipline on corporate decisions has attracted significant research interest in both theoretical and empirical fronts (Jensen and Ruback, 1983; Hirshleifer & Thakor, 1998; Nenova, (2006); Dharmapala and Khanna, 2013; Lel & Miller, 2015; Glendening et al., 2016 to name a few). Theoretically, in a perfect world with no information asymmetry and agency related frictions, corporate discipline may not be a matter of first-degree importance to optimal corporate decisions as this imposes friction and distort optimal equilibrium. To this world, corporate discipline can, therefore, be viewed more as friction than as an enabling factor (Gillan, 2006).

In the existence of information and agency frictions in the real world, corporate discipline becomes one of the important drivers of corporate decisions as it lowers the conflict of interest and information asymmetry between controlling insiders and outside investors (Gillan, 2006; Dharmapala and Khanna, 2013; Claessens and Yurtoglu, 2013 among others). While literature on corporate governance also hints the possibility of rent-seeking behaviour of different actors through corporate discipline to maximize their own opportunism, the overall consequence of corporate discipline, is Pareto optimal in the existence of information and agency related frictions (Pagano, M., & Volpin, 2005; MacNeil and Li, 2006; Bebchuk et al., 2008; Vig, 2013).[1]

Corporate discipline may be attained differently in voluntary and mandatory regimes. In the voluntary, or laissez-faire, approach, the corporate decision-makers are allowed for self-regulation and are free to adopt their own pledges or targets on any check-

[1] Pareto optimality is a state of allocation of resources from which it is impossible to reallocate so as to make any one individual or preference criterion better off without making at least one individual or preference criterion worse off (Censor, 1977). This optimality test provides the basis of allocation of economic resources when these are scarce.

and-balance mechanisms that are Pareto-optimal to the idiosyncrasy facing a firm. To this approach, the regulation introduces friction and may distort the equilibrium towards sub-optimal frontiers (Ross-Smith and Bridge, 2008; Labelle et al., 2015).

On the other hand, in the existence of information and agency related frictions, the enabling or regulatory approach refers to the adoption of a set of rules by an administrative body, such as a securities exchange commission, overseeing how laws are enacted and enforced. Under such an approach, firms follow a system of compliance with codes of governance, but with mandatory disclosure of compliance and or non-compliance.

Should corporate discipline encourage or deter firm risk-taking? Should corporate discipline complement or substitute firm dividend payout? These are important questions facing corporate practitioners and policy-makers alike. Literature, however, provides mixed and seemingly competing predictions on these important questions. Regulatory interventions, in this regard, provide a plausible exogenous distortion thereby offering researchers an interesting opportunity to test (often competing) economic views. To this end, motivated by the identification of gaps in the literature which I explain in the following section 1.1, I investigate the effect of regulatory reforms on two important corporate decisions: risk-taking and dividend policy in my thesis. Similarly, my focus on regulatory interventions is guided by reforms which aim at improving internal corporate discipline (for empirical chapters 1 and 2) and the market for corporate control as an external source of corporate discipline (for empirical chapter 3). In other words, while the regulatory reform of the first two chapters improves internal corporate governance, the regulatory reforms in the third chapters focus on external corporate governance based on Gillan (2006) classification.

Literature has been divided on the relative cost and benefits of regulations, nonetheless, there is a general agreement that these interventions would have their effects, intended and/or unintended, on corporate decisions (Bargeron et al., 2010; Claessens and Yurtoglu, 2013; Dharmapala and Khanna, 2013, Glendening et al., 2016 among others). Whereas intended effects relate to results in line with the expected policy outcomes, unintended consequences could suggest a distortive and negative impact of such regulations (Vig, 2013). It should, however, be stressed here that the outcomes of interventions could be positive or negative depending on the different beneficiaries of policy outcomes and are often contested among different schools of thought (Bargeron et al., 2010; Vig, 2013). For example, increased risk-taking could be a positive outcome for entrepreneurship and innovation. However, it can be argued to be negative for a policy-maker with a mandate to promote stability.

From the regulatory perspective, while the general focus of regulators across the world has been towards designing and reforming regulations that aim to promote the smooth functioning of the market by ensuring fairness and transparency in the marketplace, the policy reforms may face unintended consequence (Claessens and Yurtoglu, 2013; Vig, 2013). It is, therefore, a relevant concern for regulatory economists to assess the merits and effectiveness of these reforms from various economic outcomes like performance, growth, risk-taking, information environment, etc. (Claessens and Yurtoglu, 2013, Vig, 2013, Glendening, 2016). In my thesis, I examine the effect of corporate governance on firm risk-taking and dividend policy.

1.1.Motivation

Economic view on corporate decisions as insiders' utility function conjectures that a decision-maker would optimize his utility from a corporate decision (John et al., 2008; Glendening, 2016, among others). The utility comes from two important sources: utility from value-enhancing decisions and utility from private benefits (John et al., 2008). Utility from value-enhancing decisions aligns the interest of insider decision-makers with outside investors. On the contrary, utility of private benefit encourages them to make a corporate decision that may be sub-optimal to the shareholders (Paligorova, 2010). As such, an insider decision-maker faces a tradeoff between the utility from value-enhancing decisions and the utility from private benefits in the pursuit of maximizing his utility. Corporate discipline shrinks insiders' opportunism and slack. Therefore, corporate discipline works in aligning the interest of inside decision-maker with the outside investor and encourages insiders to make decisions that are value-enhancing to the shareholders (Glendening et al., 2016).

The second function of corporate discipline is its ability to reduce information friction of firms, thereby reducing information asymmetry between decision-making insiders and outside investors (Claessens and Yurtoglu, 2013). It is through corporate discipline that outside investors feel confident that insiders are making decisions that are overall beneficial to the outside investors (Glendening et al., 2016). As such, corporate discipline signals alignment of interest to the minority outside investors and boosts their confidence by lowering adverse selection cost. In light of these two stylized functions of

corporate discipline that could influence the corporate decision-making process, I explore the impact of corporate discipline on firm risk-taking and dividend policy in my thesis.

1.1.1. Corporate Discipline and Risk-taking

The economic theory maintains risk-taking as a utility function of decision-making insider and may involve utility trade-off of value-enhancing wealth effect that encourages risk-taking and utility from private benefits that encourage investment conservatism. However, literature provides inconsistent and seemingly opposing predictions on the role of corporate discipline on firm risk-taking.

1.1.1.1. Positive Prediction Argument

The first economic view on the effect of corporate discipline on firm risk-taking is that improved corporate discipline should discourage insiders' investment conservatism and therefore should have a positive effect on corporate risk-taking (John et al., 2008).

Economic utility theory maintains risk-taking as a utility function of a decision-making insider who derives utility from the wealth effect of investments and private consumption of the resources of a firm (John et al., 2008). A higher level of wealth effect from an investment is positively related to insiders' appetite for value-enhancing risk-taking behaviour. In contrast, a higher level of private benefit is negatively related to insiders' appetite for value-enhancing risk-taking behaviour. There could be several channels through which corporate discipline could improve firm risk-taking, I focus on

two of these channels.[2] These are: cost of capital channel and utility of private benefits channel.

Cost of Capital Channel

Higher utility derived from the investment-related wealth effect could be driven by the reduced cost of capital as a result of better corporate governance (Stulz, 1999; Bekaert and Harvey, 2000; Errunza and Miller, 2000; Khanna and Palepu, 2000; Healy and Palepu, 2001; Chen et al., 2009). There are three key arguments that explain why better corporate discipline could lower the cost of capital. First, better corporate discipline reduces information asymmetry between insiders and investors in the capital market through greater disclosure and independent monitoring, which subsequently lowers the information-related cost of capital (Stulz, 1999; Healy and Palepu, 2001). Second, corporate discipline improves stock liquidity in the market by reducing information asymmetry among traders (Chung et al., 2010). As liquidity is factored into the cost of capital estimation (Amihud and Mendelson, 2000; Easley and O'Hara, 2004), improved liquidity following CGR could also lower the cost of capital. Third, corporate discipline that improves investors protection attracts foreign investors, who play a crucial role in decreasing the cost of capital through international risk-sharing (Errunza and Miller, 2000) and better monitoring (Khanna and Palepu, 2000), and by providing greater market liquidity (Errunza and Miller, 2000).

[2] Other channels may include the risk-sharing, degree of diversification of decision-makers portfolio, risk appetite of managers/ insiders based on behavioural factors like exposure to risk in there early career, cultural factors and tolerance to ambiguity, religiosity etc. (Adhikari and Agrawal, 2016; Bernile et al., 2017). The list is, however, non-exhaustive.

Utility of Private Benefit Channel

Improved corporate discipline lowers the magnitude and importance of the private benefits of insiders (John et al., 2008). Corporate discipline, therefore, could discourage investment conservatism (Weisbach, 1988; Khanna and Palepu, 2000; Fauver et al., 2017; Lu and Wang, 2018). Similarly, corporate monitoring increases the disciplinary pressure on insiders and may reduce the insiders' expected private consumption (John et al., 2008). Taken together, an improvement in corporate discipline could, therefore, increase the utility from the investment-related wealth effect and decrease the utility from private benefits, both of which could encourage higher value-enhancing risk-taking.

1.1.1.2. Negative Prediction Argument

Notwithstanding the positive prediction argument, other studies on regulation show that regulatory reforms that increase corporate discipline discourages corporate risk-taking. The view suggests that reforms that expand corporate discipline increases the compliance burden, shrinks managerial flexibility, and discourages managers or insiders from undertaking potentially value-enhancing risky projects. Empirical evidence from Bargeron et al. (2010) that documents a reduction in the appetite for risk-taking among US firms following the introduction of SOX supports this view. Additionally, Cohen and Dey (2013) offer a similar argument and note that the reduced risk-taking activities of US firms following the implementation of SOX is partly due to the expanded corporate discipline of corporate insiders.

The existence of two seemingly opposing prediction of the role of corporate discipline on risk-taking motivates my empirical investigation of the effect of corporate discipline on risk-taking.

1.1.2. Corporate Discipline and Dividend Policy

My motivation to examine the role of corporate discipline on dividend payout emerges from the fact that corporate discipline and dividend policy both serve as powerful corporate signals of alignment of interest and lower information friction between decision making insiders and outside investors. As such, higher payout and corporate discipline, could both act as substitutes for each other in reducing the agency costs of free cash flow (John et al., 2015). The two also and lower adverse selection cost of information asymmetry between controlling insiders and outside investors through credible signals (Easterbrook, 1984; Hail et al., 2014). With weaker external corporate governance, firms are motivated to pay higher payout in order to establish a reputation of being fair to minority investors (Easterbrook, 1984; La Porta et al., 2000; Glendening et al., 2016). Easterbrook (1984) argues dividends signal the financial stability of the firm and thus increases investor confidence leading to a stable flow of investments. Especially in an economy with weak legal protection of minority investors, the reputational effect accounts for a significant part of the stock valuation of listed companies (Pinkowitz et al., 2006). Thus dividend payout can be argued to be a corporate governance tool for insiders to develop confidence among outside investors. Furthermore, John et al. (2015) argue that dividend commitments are stronger commitments. Therefore, in weaker information and

institutional environment of emerging market, it can be argued that a firm relies on this type of stronger commitments to boost the confidence of outside investors.

However, dividend payout is a costly strategy as it reduces the internal funding available for financing value-relevant corporate investments (DeAngelo et al., 2006; Caton et al., 2016; Glendening et al., 2016). A firm would, therefore, prefer an alternative mechanism to high DP for disciplining insiders (Caton et al., 2016; Glendening et al., 2016). From a regulatory perspective, regulatory reforms that improve corporate discipline should, therefore, substitute higher dividend payout (John et al., 2015; Glendening et al., 2016).

Literature also offers an alternative relationship between corporate discipline and dividend payout (La Porta et al., 2000; John et al., 2016). The view maintains that firms facing higher corporate discipline may be forced by empowered investors to pay higher dividends, ceteris paribus. For instance, La Porta et al. (2000) find lower dividends in countries with weaker investor protection regimes and maintain that corporate discipline complements the dividend payments. In the existence of two economic possibilities, I examine the effect of corporate discipline on dividend policy.

1.2. Corporate Discipline: A Regulatory Perspective

Studies in regulatory economics report that regulation could aim at improving corporate discipline through the improvement in internal governance or external governance (Gillan, 2006) and accordingly, could be firm initiated or facilitated by policymakers. While the general focus of regulators across the world has been towards designing and reforming

regulations that aim to promote the smooth functioning of the market by ensuring fairness and transparency in the marketplace, improving corporate discipline has been one of the central policy objectives (Claessens and Yurtoglu, 2013). My criteria in selecting the types of regulatory reforms are based on, and therefore limited to, those types of reforms that aim to improve corporate disciplining (Dharmapala and Khanna, 2013; Lel and Miller, 2015; Glendening, 2016).

Specifically, I study the mandatory corporate governance reform in a setup of an emerging market context of India in my first and second empirical chapters. In my third chapter, I extend this regulatory tool of corporate discipline by studying M&A regulations across 31 countries.

1.2.1. Corporate Governance Reforms in India

The corporate governance environment in India was largely informal before the introduction of Clause-49 in 2000 (Dharmapala and Khanna, 2013). However, as Indian companies began to seek external financing, this led to the need for a sound regulatory framework for corporate governance to ensure better investor protection. In 1998, the Confederation of Indian Industry (CII) introduced the voluntary Corporate Governance Code, which was adopted by only a few major companies. Thus, the consensus among Indian policymakers was that a mandatory set of corporate governance rules was necessary. Consequently, the Code evolved into the mandatory Clause-49 provisions in February 2000. Clause-49 of the stock exchange listing agreement is a set of Corporate

Governance Regulations enacted by the Securities and Exchange Board of India (SEBI), the governing body of listed companies in India. Clause-49 introduced greater compliance, as well as enhanced disclosure, transparency, and board independence, with initial provisions of stock delisting for non-compliance. As such, Clause-49 was the first formal corporate governance reform in India and was aimed at improving corporate discipline (Dharmapala and Khanna, 2013).

The following section presents key provisions of Clause-49.

1.2.1.1.Major provisions of Clause-49

Important Clause-49 provisions that aim to improve internal governance are as follows.

a. Requirement of independent directors:

50% of board directors are required to be independent in the case where the Chairman is the executive director and one third (33%) if the Chairman is a non-executive.

Definition of Independent Directors: Independent directors are defined as those not having any material pecuniary relationship with the company, not related to Board members or one level below Board and no prior relationship with the Company for the last three years. Nominee Directors of Financial Institutions are considered to be independent.

b. Board requirements and limitations:

Board is required to meet four times a year (with a maximum of three months between meetings).

Limit on the number of committees a director can be on is 10, but only 5 for which a director can be the Chair of the committee.

Code of conduct is required.

c. Composition of the audit committee:

The committee should have at least three directors, two of which are required to be independent.

All the members of the audit committee should be financially literate.

At least one member of the audit committee should have accounting or financial management experience.

d. Role and power of audit committee:

The committee should conduct a minimum of four meetings in an accounting year with a gap between two meetings not exceeding four months.

The major role of the committee is to review statutory and internal audits and obtain outside legal or other professional advice and review whistle-blower programmes if any.

e. Disclosures:

The clause requires firms to disclose the following:

- Related party transactions,
- Accounting treatments and departures,
- Risk management,
- Annual report, including discussion of internal controls adequacy, significant trends, risks, and opportunities,
- Proceeds from offerings,
- Compensation for directors (including non-executives, and obtain shareholders' approval),

- Details of compliance history for the last three years, and corporate governance reports (and disclose adoption, if any, of mandatory and non-mandatory requirements),
- Corporate governance reports

f. Certifications by CEO and CFO of

- Financial statements,
- Effectiveness of internal controls, and
- Inform the audit committee of any significant changes in the above.

g. Certifications by auditor or company secretary on:

- Compliance with corporate governance.

Interesting provisions associated with Clause-49 was the imposition of financial and criminal penalties for non-compliance. As Clause 49 was introduced in 2000 as a change to the listing agreement, the initial penalty for violations was delisting but no other financial penalties. However, in 2004, the amendment of Securities Contracts (Regulation) Act 1956 included Section 23E that imposed significant financial and criminal penalties for violations of the listing agreement (up to INR 250 million (around USD 6.25 million for a violation). With the introduction of stringent and economically large sanctions, that would hold corporate directors personally accountable for non-compliance, intervention would arguably translate law in paper to law in practice (Coffee 2007).

Concern related enforcement of these penalties is that the Indian judicial processes, as with any other emerging markets, is widely believed to function sluggishly (Dharmapala and Khanna 2013). However, the legal set up for enforcement of Clause 49 for non-compliance was such that, enforcement under Section 23E would occur in the first instance by SEBI with a potential appeal to the Securities Appellate Tribunal, which is a tribunal specially created to address securities laws issues and handle appeals from SEBI—followed by final appeal to the Supreme Court of India. This indicates that the legal enforcement has a special vehicle for prompt handling of cases for non-compliance providing a credible indication of smooth enforcement of sanctions for non-compliance.

1.2.2. Regulatory Reforms on the Market for Corporate Control

Further to the study of corporate governance reform aimed at improving internal governance of firms in an emerging market context of India, I also examine the regulatory reforms that aimed at improving external corporate governance. To do so, I employ the initiation of M&A laws across the world as regulatory reforms pertaining to the market for corporate control.

The takeover market forms an important platform where alternative management teams contest for the rights to manage corporate resources (Jensen and Ruback; 1983). First, in a situation when firms' internal governance structures fail to limit managerial misconduct, dissatisfied shareholders have a choice of selling, possibly against the managers will, their shares and therefore the controlling rights to outside investors who are better able to run the firm (Fama & Jensen,1983). The threat of losing their jobs and

reputational capital in the event of a takeover, in turn, should prompt the manager to act in the interest of shareholders, thus providing an external source of corporate discipline. Additionally, the takeover threat motivates directors to be more meticulous in monitoring managers, as directors themselves face the risk of being dismissed by the acquiring team when a firm becomes a target as a result of poor performance (Hirshleifer & Thakor, 1998; Lel & Miller, 2015). This improved corporate monitoring improve corporate discipline (Weisbach, 1988; Khanna and Palepu, 2000; Fauver et al., 2017; Lu and Wang, 2018).

The takeover laws increase corporate discipline by increasing takeover threat when insiders/ managers sub-optimally manage a firm corporate discipline (Lel and Miller, 2015; Glendening et al., 2016). My primary sources of data on M&A regulation around the world is Nenova, (2006); Lel and Miller (2015) and Glendening et al., (2016).

1.2.2.1. Major Provisions of M&A Regulations

The review of regulatory documents of the countries with enactments of M&A laws has revealed the following major provisions that would be important to improve the market for corporate control (Glendening, 2016).

Generally, these laws focus on equal treatment and protection of shareholders of the target company. These laws also prohibit the use of false markets to pump stock prices. Most of the laws require that M&A must be conducted quickly and without hindrance. The process of M&As should be fair, efficient, and transparent. Most M&A laws in my sample countries requires mandatory bid once the bidder controls certain percentage of

the voting rights (e.g. 15% in India, 20% in Taiwan, 30% for Germany and Ireland, 33% for Malaysia, 49% in case of Pakistan, 50% for Chile, Philippines, etc.).

Similarly, intention to control is disclosed once the bidder controls a certain percentage of the voting rights (30% in the case of Germany and 15% for Chile, for instance). Bidder may squeeze-out minority shareholders after controlling a certain per cent of the voting rights. Once the target becomes aware of the bidder's intention, the target's supervisory board and management, in most of the situation, cannot take measures to prevent the takeover without the approval of shareholders. Some laws restrict the board of the target company to exercise its efforts to frustrate bids by disposing off assets, searching for competing bids, and issuing authorised shares.

Similarly, the laws mostly require that the board of the target company should act in the interests of the company as a whole and must not deny shareholders the opportunity to decide on the merits of the bid.

1.3.Research Questions

In light of the gap in the literature on the prediction of corporate discipline related regulatory reforms on firm risk-taking and dividend payout identified in sections 1.1.1 and 1.1.2, I answer three research questions not conclusively known in the literature in my thesis.

1.3.1. Corporate Governance Reform and Firm Risk-taking

Inspired by the existence of theoretical and empirical tension in the existing literature on the effect of corporate discipline on firm risk-taking, my first research question is related to the effect of corporate governance reform on risk-taking in an emerging market context of India. While one dominant economic view is that improved corporate governance should discourage insiders' investment conservatism and therefore should have a positive effect on corporate risk-taking (John et al., 2008), other studies document reduced risk-taking appetite following CGR (Bargeron et al., 2010, Cohen et al., 2013).

These two seemingly opposing views on the effect of CGR on corporate risk-taking motivate my empirical study. Further, the focus of my examination is in the context of Indian emerging market where, compared to their developed market counterparts, the unique characteristics of firms accentuate the conflicts of interest between controlling insiders and minority outside shareholders (Bertrand et al., 2002; Bekaert and Harvey, 2003; Stulz, 2005; Claessens and Yurtoglu, 2013). Given that emerging markets have a relatively weaker market based corporate scrutiny (Stulz, 2005; Claessens and Yurtoglu, 2013), stricter regulatory interventions could reduce expected utility from private benefits and encourage corporate risk-taking.

After a few years of initial groundwork, India implemented a major CGR in 2000 with the adoption of Clause-49 introducing greater disclosure requirements, board independence, and transparency. However, following Dharmapala and Khanna (2013), I primarily focus on the later amendment of the Securities Contracts Act 1956, which introduced Section 23E in 2004. Section 23E expanded the personal liabilities of

management, board, and auditors, and imposed significant financial and criminal penalties for non-compliance with the provisions of Clause-49. As Clause-49 applicability was based on the paid-up equity capital threshold, only listed firms that had paid-up equity capital of more than or equal to Indian Rupees (INR) 30 million at any point in their traded history were required to comply with this CGR. The imposition of a stricter provision of Section 23E with exogenously separated treated and control group based on paid-up equity capital provides me with a regulatory set-up to empirically examine three hypotheses relating CGR and corporate risk-taking

My primary hypothesis examines whether the more stringent Section 23E provisions introduced in 2004 deters or encourages corporate risk-taking activities in India.

Second, the literature suggests that investment conservatism could stem from the concentrated stakes of insiders, given their private benefits (Bertrand and Mullainathan, 2003; John et al., 2008). I, therefore, examine whether CGR could play a moderating role in the link between risk-taking and variations in ownership concentration.

Finally, literature documents evidence that CGR positively affects firm valuation. These value should come from different channels. I argue that since CGR could encourage the firm to undertake positive NPV risky projects and discourage investment conservatism, the risk-taking should be value-enhancing. I, therefore, test whether corporate risk-taking could potentially be an important channel to influence firm valuation.

1.3.2. Corporate Governance Reform and Firm Dividend Policy

In my second empirical chapter, my research aims to answer important policy question of whether and under what condition the mandatory corporate governance reform substitute dividend payout in an emerging market context.

Literature establishes the agency and information related problem of free cash flow as a major driver of corporate payout policy (Jensen, 1986; La Porta et al., 2000; John et al., 2015). Dividend commitments reduce the free cash flow available at the disposal of controlling insiders, which they may otherwise use for their private benefit. Therefore, by adopting a higher dividend payout policy, a firm can establish a reputation with its external shareholders that the agency problem of free cash flow is reduced (Easterbrook, 1984; Glendening et al., 2016). However, higher dividend payout is a costly strategy as this reduces the internal funding available for financing value-relevant corporate investments (DeAngelo et al., 2006; Caton et al., 2016; Glendening et al., 2016). A firm would, therefore, prefer an alternative mechanism of disciplining the insiders to high dividend pay-out (Caton et al., 2016; Glendening et al., 2016). From a regulatory perspective, the introduction of or improvement in mandatory corporate governance rules may thus help discipline the controlling insiders through greater transparency and better corporate scrutiny. Such regulatory reforms, therefore, should substitute higher dividend payout (John et al., 2015; Glendening et al., 2016). I refer to this argument as the "Substitution Hypothesis" and test it in the context of an emerging market.

Emerging markets are an ideal set-up to empirically test the Substitution Hypothesis for two important reasons. First, firms in emerging markets, in comparison to their developed market counterparts, face greater conflicts of interest between controlling

insiders and minority outsiders as a result of weaker investor protection regimes, concentrated ownerships and the associated higher private benefits at the disposal of corporate insiders (Bertrand et al., 2002; Bekaert and Harvey, 2003; Claessens and Yurtoglu, 2013). This implies that the reputational role of dividends in communicating to external shareholders on the reduction of the agency related free cash flow problem should be particularly relevant in these emerging markets (Pinkowitz et al., 2006). Second, emerging markets face weaker market forces of corporate scrutiny, making regulatory interventions an important policy tool to improve corporate governance practices (Dharmapala and Khanna, 2013). In this study, I argue that in an emerging market, any regulatory shift in the corporate governance environment through mandatory CGR enforcement could make the reputational role of high dividend payout less relevant.

As emerging markets seek to advance their capital markets, they often adopt an established CGR framework of developed markets (Martynova and Renneboog, 2011). However, despite this importation of a CGR framework from developed markets, questions have been raised on the effectiveness of enforcement in emerging markets to deter non-compliance and to signal improved corporate governance practices. One important way of improving the quality of enforcement is by imposing adequate punishment for violations (Becker, 1968; Dutcher, 2005; Dharmapala and Khanna, 2013). Becker's (1968) model on punishment shows that expanding the severity of punishments for non-compliance has a material effect in improving the quality of regulatory enforcement. In line with this theory, Dharmapala and Khanna (2013) empirically show that the effectiveness of CGR enforcement improves by expanding the severity of CGR

sanctions. Therefore, I investigate whether the adequacy of CGR sanctions plays any role in explaining the substitution of dividend payout by CGR.

Before the year 2000, the Indian corporate governance framework was largely informal (Dharmapala and Khanna, 2013). To compensate for this weaker regulatory regime, Indian firms would often have high dividend payout to establish their reputation to external shareholders signaling the fair treatment of minority investors. In the year 2000, India introduced a Clause-49 as a mandated listing requirement. Given this was the first formal set of corporate governance rules in India, I would expect that the firms that were obliged to comply, relative to those who were not, should rely less on dividend payout as a corporate governance tool in reducing agency costs.

The initial penalty for non-compliance of Clause-49 was delisting from the stock market. However, in the year 2004, the regulators amended another Act called the Securities Contracts Act of 1956 to introduce Section-23E, which imposes severe financial and criminal penalties on insiders for violating the mandatory provisions of Clause-49. I investigate whether the additional imposition of personal liability in the form of financial penalties and criminal charges in the year 2004 has had a greater impact on dividend payout, relative to the initial collective penalty introduced by Clause-49 in the year 2000, in providing greater confidence to external shareholders and helping firms to replace dividend payout as a governance tool.

1.3.3. The Market for Corporate Control and Firm Risk-taking

The extant literature provides an inconclusive prediction on the role of the market for corporate control on firm risk-taking. The first economic prediction is the negative

association between the market for corporate control and a firm's risk-taking behaviour (Coles et al., 2008; Bargeron at el., 2010; Cohen and Dey, 2013). As the market for corporate control expands board diligence, this increased cost of external monitoring could further dampen the insiders' appetite for risk-taking (Coles et al., 2008; Cohen and Dey, 2013). Similarly, if stockholders are less than perfectly informed, transitory lower earnings may result in downward price pressure and the stocks would be undervalued, increasing the likelihood of a takeover at an unfavourable price. This encourages insiders/managers to focus on current earnings and creates a disincentive towards long-term value-enhancing risky-investments (Stein, 1988).

On the contrary, there is another widely held economic view, which predicts positive causation between the market for corporate control and risk-taking. The market for corporate control could lower the magnitude and importance of the private benefits of managers/insiders thereby discouraging investment conservatism through corporate discipline (Weisbach, 1988; Khanna and Palepu, 2000; Fauver et al., 2017; Lu and Wang, 2018). In the absence of this discipline, insiders could enjoy higher utility from investment conservatism (John, 2008). Utility from private benefits are derived from the ability of insiders to consume resources which could either be monetary, such as very high salary for the block-holding insiders, financing social events by corporate resources; or non-monetary, such as the amenities that come from controlling establishments, such as professional sport clubs, newspapers, and other social clubs (Paligorova, 2010). Similarly, this investment conservatism may also stem because of the spill over effect of the potential investment failure to other business units that founder-promoters face because of their undiversified stakes (Gopalan et al., 2006).

My focus on M&A regulation emerges from the fact that takeover acts are laws passed specifically to foster takeover activity by reducing barriers to mergers and acquisitions (M&A) transactions, and thus improves external disciplining, foster information dissemination and increase minority shareholder protection. These laws avoid the endogeneity and omitted variable problems, to the extent that they are passed by countries and not endogenously driven by firm-specific conditions. Therefore, the staggered nature of M&A laws initiations across sample countries allows me to test the causal effect of the market for corporate control on firm risk-taking.

Drawing upon the previous studies, I identify a sample of 31 countries of which 11 countries have witnessed M&A regulations in the period of 1996 to 2007.

Specifically, in the empirical chapter, I aim to answer three important question facing regulatory economists. First, whether the market for corporate control encourages or deter firm risk-taking. Second, given that as developing and developed markets face a marked distinction on the quality of enforcing institution and investor protection regimes (Claessens and Yurtoglu, 2013) whether the market for corporate control affect firm risk-taking in developed and developing economies differently. Finally, to differentiate risk-taking to corporate short-termism, I test the longer-term value implication of firm risk-taking (Glendening et al., 2016; Fauver et al., 2017).

1.4.Findings

In this section, I briefly summarize the findings of all three empirical chapters.

1.4.1. Corporate Governance Reform and Risk-taking

My causal investigation exploits CGR, the imposition of Clause-49 in the year 2004 in India on the sample of listed non-financial and non-utility Indian firms for a period of 2000-2007. I find evidence that CGR is positively related to firm-risk-taking. This finding is in line with the economic perspective that predicts a rise in corporate risk-taking activities following improvement in corporate governance regime through stringency of sanctions (Stulz, 2005; John et al., 2008). This key finding of my study is robust to series of robustness tests including use of alternative control and treatment groups, placebo experimentation, and self-selection bias.

My examination on the possible moderating role of CGR on risk-taking across different ownership concentrations finds that following the CGR, firms with higher ownership concentration pursue more value-enhancing risky projects relative to firms with lower ownership concentration. This result is consistent with the theoretical argument that CGR reduces the utility derived from private benefits and increases the utility derived from value-enhancing risky investments for the concentrated insiders (Bertrand et al., 2002; John et al., 2008; Gul et al., 2010).

Finally, the results on the value-implication of the corporate risk-taking show that post the CGR enforcement period of 2004 higher risk-taking is associated with a higher market valuation of the treated firms. This finding suggests that risk-taking is an important channel through which CGR provides value to a firm.

1.4.2. Corporate Governance Reform and Firm Dividend Policy

On my enquiry on the effect of CGR on firm dividend policy, I use the same emerging market context of India that I used in my first empirical chapter. Using a sample of non-financial and non-utility Indian listed firms from 1998-2007, my difference-in-differences (DiD) estimations provide the two main findings.

First, the introduction of Clause-49 in 2000 seems to have had no impact on the dividend payout of treated firms relative to control group firms.

Second, the Section-23E imposition in the year 2004, however, leads to a significant reduction in the dividend payout of treated firms compared to control group firms (firms that do not need to comply with Clause-49). In quantitative terms, the treated firms reduce their payout (*Div/E*), on average, by 3% to 5%, depending on the specification of estimated models.

The results are consistent with alternative measures of dividend payouts, including dividend as a proportion of total assets and dividend as a proportion of total sales. Similarly, results are also consistent with the propensity to pay dividends. Furthermore, the results are robust to several additional checks, including the use of highly comparable sub-group using propensity score matching, addressing the issue of alternative explanations, and dealing with the potential of a false experiment. These findings in an emerging market context are in line with the agency-based predictions of dividend payout (Denis and Osobov, 2008) and support the Substitution Hypothesis (John et al., 2015; Glendening et al., 2016); however, only when there is an expansion of punishment in CGR sanctions to expand personal liability of insiders, a view in line with Becker's (1968) punishment model.

1.4.3. The Market for Corporate Control and Firm Risk-taking

By exploiting staggered changes in M&A laws across 31 countries, as a plausibly exogenous source of variation in the market for corporate control, I find three important findings in my third empirical chapter.

Firstly, my natural experiment reveals a positive effect of the market for corporate control on firm risk-taking, measured by employing industry adjusted *3-year rolling standard deviation of ROA* and *R&D Expenditure*.[3] My results survive a placebo test that reduces the possibility that my results could be driven by confounding events or differences in firm-characteristics between treated and unaffected firms.

Secondly, the investigation of subsamples of developed and developing economies has a marked revelation. While the positive effect of the market for corporate control is evident in both subsamples, the magnitude of the effect is lower in developing countries. To the extent the distinction between a developed and developing markets is accounted quality of enforcement institutions and investor protection, these results lend evidence that of quality of institutions to positively catalyse the role M&A laws to translate into potential acquisition threat from provisions in the books of law.

Finally, the examination of the value implication of risk-taking shows that, firms with higher risk-taking in the post-M&A enactment, fetch higher firm valuation in the subsequent period. The result suggests that positive risk-taking in the post-M&A enactment period reflects value-relevant risk-taking and is not a consequence of over-

[3] Staggered law changes are widely used as an instrument in U.S. and international empirical research. For example, Lel and Miller (2015) and Glendening et al. (2016) employ governance law enactments that facilitate board power in transition countries that did not have a prior legal basis for boards.

investment or short-termism. To this end, I contribute to the literature on the value relevance of the market for corporate control by documenting risk-taking as one important channel through which market for corporate control brings value to the firms.

1.5.Thesis Contribution

My thesis aims to contribute to the literature on the effect of corporate discipline on important corporate decisions. The study fills the gap in the literature by adding to the debate related to the effect of regulatory reforms that improve corporate discipline on firm risk-taking and dividend policy. In this section, I discuss the contribution of my thesis and present them in the order of three empirical chapters.

1.5.1. Contribution of the first empirical chapter

My first chapter investigates the causal relationship between CGR and risk-taking in an emerging market context. It contributes to the following strands of literature. First, my study contributes to the ongoing debate about whether CGR deters or encourages risk-taking. My study suggests that the effect of CGR on risk-taking could be contextual, wherein an evolving emerging market set-up CGR can positively affect corporate risk-taking. Although CGR could add additional compliance burden-reducing the risk-taking appetite (Bargeron et al., 2010; Cohen and Dey, 2013), my study shows that the CGR could substitute the missing market-based corporate scrutiny and reduce investment conservatism, thereby encouraging value-relevant risk-taking in a setup characterised by weaker market-based corporate governance.

Second, my study also adds to the literature on the heterogeneity of ownership concentration on a firm's risk-taking. Given the evidence on the prominent role of

insiders' dominance on investment conservatism, (Bertrand et al., 2002; Gul et al., 2010; Faccio et al., 2011), I contribute by showing that CGR positively moderates the risk-taking behaviour of firms that would otherwise pursue investment conservatism because of higher ownership concentration. Finally, the literature offers support to the positive impact of CGR on firm valuation, (Fauver et al., 2017) and more so in case of emerging markets (Black and Khanna, 2007; Dharmapala and Khanna, 2013). Higher valuation following CGR could come from different channels. I extend this literature by suggesting higher risk-taking could be an important channel through which CGR augments higher firm valuation.

1.5.2. Contribution of the second empirical chapter

My second chapter answers the question on the effect of CGR on firm dividend policy in an emerging market context. It contributes to the following strands of literature.

First, this study is related to strand of literature which posits substitutive relationship between corporate discipline and dividend with the theoretical argument that higher payout and corporate discipline both could act as substitutes for each other in lowering the agency costs and adverse selection cost facing outside investors (John et al., 2015; Glendening et al., 2016). However, literature also offers an alternative, complementary relationship between corporate discipline and dividend payout with the argument that that firms facing higher corporate discipline may be forced by empowered investors to pay higher dividends, ceteris paribus. For instance, La Porta et al. (2000) find lower dividends in countries with weaker investor protection regimes and maintain that corporate discipline complements the dividend payments. (La Porta et al., 2000). My study extends

this strand of literature by showing corporate discipline would substitute dividend payout in an emerging market context of India.

Second, my study extends the substitutive link between corporate governance and dividend payout in light of the adequacy of punishment argument. Becker (1968) model on punishment posits that expanding the severity of punishments for non-compliance has a material effect in improving regulatory compliance. In line with this theory, Dharmapala and Khanna (2013) empirically show that the effectiveness of CGR enforcement improves as the severity of CGR sanctions increase. I extend this body of literature by examining the substitutive relationship between CGR and dividend payout in relation to the adequacy of CGR sanctions. I provide evidence that this substitution would materialize only when CGR is accompanied by adequate expansion of personal liability for non-compliance. I maintain that the adequacy of penalty could be an effective tool to increase confidence among the outside investors on corporate governance practices.

Third, my study also adds to the literature on the legal determinants of dividend payout (La Porta et al., 2000; Pinkowitz et al., 2006). Specific to emerging markets, studies by Aivazian et al. (2003) and Mitton (2004) show that although firm-level determinants of dividend payout in emerging markets are similar to those of developed markets, country-level legal and institutional differences are important drivers of dividend payout in these markets. I extend this literature by showing that CGR enforcement is effective in substituting higher payouts as a governance tool in an emerging market environment.

1.5.3. Contribution of the third empirical chapter

The effect of the market for corporate control on firm risk-taking has important economic implications as previous studies suggest that insiders' willingness to take risks in the pursuit of profitable opportunities is a fundamental underpinning of long-term economic growth (Baumol et al., 2007; John et al., 2008). An understanding the determinants of firm risk-taking, therefore, helps identify channels through which policy changes can be directed towards growth and economic welfare. Literature also hints the possibility that the market for corporate control could affect the utility trade off of insiders when pursuing risky endeavours (Lel and Miller; 2015: Glendening et al., 2016). To this end, my third empirical chapter explores the causal relationship between the market for corporate control and firm risk-taking in cross-country setup of 31 countries. It contributes to the following strands of literature.

First, it contributes to the literature on the market for corporate control by providing evidence of the positive causal effect of the market for corporate control on firm risk-taking. The economic views documented in the literature on firm risk-taking provide competing views. In this regard, the increased cost of external monitoring could dampen the insiders' appetite for risk-taking (Coles et al., 2008; Cohen and Dey, 2013). Similarly, if stockholders are less than perfectly informed, transitory lower earnings may result in downward price pressure and the stocks would be undervalued, increasing the likelihood of a takeover at an unfavourable price encouraging insiders to focus on current earnings and creates a disincentive towards long-term value-enhancing risky-investments (Stein, 1988). On the contrary, the market for corporate control could lower the magnitude and importance of the private benefits of managers/insiders thereby discouraging investment

conservatism through corporate discipline (Weisbach, 1988; Khanna and Palepu, 2000; Paligorova, 2010; Fauver et al., 2017; Lu and Wang, 2018). In the existence of two competing views on the effect of the market for corporate control on firm risk-taking, I extend this strand of literature by answering this open question by empirically showing the market for corporate control positively affect corporate risk-taking (John et al., 2008; Bargeron et al., 2010; Glendening et al., 2016).

Second, employing the heterogeneity of developed and developing markets, I show that firm the causal effect of the market for corporate control on risk-taking is stronger for developed countries compared to their developing counterparts. To the extent that the distinction between developed and developing markets could be attributed to the enforcement environment and investor protection regimes, my study provides an evidence that the market for corporate control acts as a compliment (and not a substitute) to other governance mechanisms on its effect on risk-taking (Glendening et al., 2016). My study complements the finding of John et al. (2008) who show that risk-taking is higher in the economies with higher investor protection regimes.

Finally, this empirical chapter contributes to the literature relating corporate discipline and firm value (Dharmapala and Khanna, 2013; Fauver et al., 2017). I contribute to this strand of literature by showing risk-taking as one important channel through which market discipline through takeover threats provides value to a firm.

1.6.Structure of the thesis

The remaining of this thesis continues as follows. Chapter 2 investigates the effect of CGR on risk-taking in an emerging market context. Chapter 3 assesses whether CGR has substitutability effect on dividend policy. Chapter 4 examines the effect of the market for corporate control on firm risk-taking in a cross country setup. Chapter 5 offers concluding remarks and a discussion on implication and future research direction.

2. Corporate Governance Reform and Firm Risk-taking in an Emerging Market

2.1. Introduction

Studies on corporate governance reform (CGR) show that it discourages corporate risk-taking. These findings, which are primarily based on the experience of adopting the Sarbanes-Oxley Act (SOX) in the US, suggest that CGR that expands the personal liability of decision-makers for non-compliance increases the compliance burden, shrinks managerial flexibility, and discourages managers or insiders from undertaking potentially value-enhancing risky projects. Empirical evidence from Bargeron et al. (2010) that documents a reduction in the appetite for risk-taking among the US firms following the introduction of SOX supports this view. They argue that the increased financial and criminal liability imposed by SOX reduces insiders' motivation to pursue risky investments. Cohen and Dey (2013) offer a similar argument and note that the reduced risk-taking activities of the US firms following the implementation of SOX is partly due to the expanded personal liability of corporate insiders.[4]

There is an alternative view that predicts a positive relationship between CGR and risk-taking to the extent that CGR improves corporate scrutiny and the monitoring of insiders. John et al. (2008) show that corporate risk-taking is higher in firms operating in better-

[4]Another strand of literature contends that a negative relationship exists between excessive investor protection and value-relevant risk-taking, based on the argument that excessive shareholder empowerment leads to short-term opportunism at the cost of value-relevant, long-term (risky) investments (Belloc, 2013; Honoré et al., 2015).

governed environments. They argue that corporate risk-taking involves a utility trade-off for insiders between the wealth effect from risky investments and the extraction of private benefits.[5] Better investor protection not only lowers the magnitude and importance of private benefits but also reduces the cost of capital, thereby creating a higher wealth effect of investments (Stulz, 1999; Bekaert and Harvey, 2000; Errunza and Miller, 2000; Khanna and Palepu, 2000; Healy and Palepu, 2001). Thus, CGR, which increases investor protection, should increase insiders' appetite for potentially value-maximising risky investments by shifting their utility toward the wealth effect of investment and away from the extraction of private benefits.

These two opposing views on the effect of CGR on corporate risk-taking motivate my empirical study. Moreover, my study focuses on a relatively weaker investor protection environment in an emerging market, where, compared to its developed market counterparts, concentrated ownership structures accentuate the conflict of interest between controlling insiders and minority shareholders (Bertrand et al., 2002; Bekaert and Harvey, 2003; Stulz, 2005; Claessens and Yurtoglu, 2013). For instance, Stulz (2005) notes that firms in countries with relatively weaker investor protection systems have dominant insiders with significant control over the resources that they use for private benefits.[6] Therefore, in an environment

[5] Utility from private benefits are derived from the ability of controlling insiders to consume resources which could either be monetary, such as very high salary for the block-holding insiders, financing social events by corporate resources; or non-monetary, such as the amenities that come from controlling establishments, such as professional sport clubs, newspapers, and other social clubs (Paligorova, 2010). Big fat Indian wedding, in this regard, has attracted a lot of media attention (https://www.business-standard.com/article/beyond-business/inside-the-big-fat-indian-wedding-conservatism-competition-and-networks-117011400505_1.html). Accessed 20 May 2019

[6] Using a *de facto* measure of firm level corporate governance standards, Claessens and Yurtoglu (2013) show that emerging markets' firms score much lower than the firms in developed markets. Similarly, Stulz (2005) shows that the potential risks of expropriation (on a scale of 0-10 with the higher value indicating a lower risk of expropriation) during the year 2002 for the US and the UK were 9.98 and 9.71 respectively. The figure for India in the same period was 7.75. He further shows that for 2002 (a period covered by my

with relatively weaker market-based monitoring, stricter CGR can substitute the missing market forces of corporate scrutiny (Dharmapala and Khanna, 2013). The resulting substitutive effect of regulatory reform could, therefore, alter insiders' utility trade-off to pursue corporate risk-taking.

After a few years of initial groundwork, India implemented a major CGR in 2000 with the adoption of Clause-49, introducing greater disclosure requirements, board independence, and transparency. However, following Dharmapala and Khanna (2013), I primarily focus on the 2004 amendment of the Securities Contracts Act, 1956, which introduced Section 23E. Section 23E expanded the personal liabilities of the management, the board, and the auditors, and imposed significant financial and criminal penalties for non-compliance with the provisions listed under Clause-49. As the applicability of Clause-49 was based on the threshold of paid-up equity capital, only listed firms that had paid-up equity capital of more than or equal to Indian Rupees (INR) 30 million at any point in their traded history were required to comply with this CGR. Thus, the imposition of stricter provisions of Section 23E, along with the exogenously separated treated and control groups of firms based on paid-up equity capital, provides a regulatory set-up to empirically examine the following three hypotheses relating to CGR and corporate risk-taking. My primary hypothesis examines whether the more stringent Section 23E, as introduced in 2004, deters or encourages corporate risk-taking activities in India. Second, since the literature suggests that investment conservatism may stem from the concentrated stakes of insiders, I examine whether CGR could play a moderating role in the link between risk-taking and variations in

sample), the value-weighted percentage of market capitalization held by corporate insiders was 58%. This is compared to the figures of 16% and 11% for the US and the UK respectively.

ownership concentration. Finally, given the evidence that CGR affects firm valuation positively, I test whether corporate risk-taking could potentially be an important channel in influencing firm valuation.[7]

Employing Regression Discontinuity (RD) around the threshold of paid-up equity capital and propensity-matched difference-in-differences (PSM-DiD) design on a sample of listed non-financial Indian firms for the period between 2000 and 2007, I find strong evidence that CGR is positively related to *earnings-volatility*, which is my core measure of corporate risk-taking. I also use *capital expenditure* and *R&D expenditure* as additional corporate investment proxies to assess the impact of CGR on fixed and innovative investments, respectively. My results are similar and economically significant with these additional corporate investment proxies. Overall, the results suggest that CGR that expands significant financial and criminal penalties for corporate insiders may mitigate their investment conservatism and encourage them to undertake risky and value-enhancing investment projects.[8] These findings are in line with the economic perspective that predicts a rise in corporate risk-taking activities following improvement in the corporate governance regime through stringent sanctions (Stulz, 2005; John et al., 2008). This key finding of my study is robust to a series of robustness tests, including the use of alternative control and treatment groups, placebo experimentation and alternative explanations.

[7] See section 3 for relevant literature and discussion on developing all three hypotheses.

[8] As Clause-49 was introduced in 2000, I also examine whether the initial introduction of CGR in 2000 has any visible effect on corporate risk-taking, but find no evidence of it. This additional test further suggests that CGR affects corporate risk-taking positively in an evolving corporate governance regime when interventions are accompanied by additional expansion of personal liability and stricter financial and criminal sanctions for non-compliance (Dharmapala and Khanna, 2013).

My examination of the possible moderating role of CGR on risk-taking across different ownership concentrations finds that, following CGR, firms with higher ownership concentration tend to take more risks relative to firms with lower ownership concentration. This result is consistent with the theoretical argument that CGR reduces the utility derived from private benefits and increases the utility derived from value-enhancing risky investments for concentrated insiders, thereby encouraging them to undertake risky investments (Bertrand et al., 2002; John et al., 2008; Gul et al., 2010). Finally, the results pertaining to the value-implication of corporate risk-taking show that, after the CGR enforcement period of 2004, higher risk-taking is associated with a higher market valuation of the treated firms. This finding suggests that risk-taking is an important channel through which CGR provides value to a firm.

This paper contributes to the literature in the following ways. First, I add to the ongoing debate of whether CGR deters or encourages risk-taking. My study suggests that the effect of CGR on risk-taking could be context-dependent, where, in an emerging market set-up, CGR can positively affect corporate risk-taking. Although CGR could be an additional compliance burden, thus reducing the appetite for risk-taking (Bargeron et al., 2010; Cohen and Dey, 2013), my study shows that CGR could substitute the missing market-based corporate scrutiny and reduce investment conservatism, thereby encouraging value-relevant risk-taking in a set-up characterized by weaker market-based corporate governance.

Second, my study also adds to the literature that relates ownership concentration to corporate risk-taking. Given the evidence that firms with concentrated insiders' ownership prefer risk avoidance (Bertrand et al., 2002; Gul et al., 2010; Paligorova, 2010; Faccio et al., 2011), I contribute by showing that CGR positively moderates the link between ownership

concentration and risk-taking behaviour of firms that would otherwise pursue investment conservatism. Finally, the literature supports the positive impact of CGR on firm valuation, specifically in the case of emerging markets (Fauver et al., 2017; Black and Khanna, 2007; Dharmapala and Khanna, 2013). I extend this literature by suggesting that higher risk-taking could be an important channel through which CGR may augment higher firm valuation.

The rest of chapter 2 is organised as follows. Section 2.2 provides a brief explanation of Clause-49. Section 2.3 develops the hypotheses, which is followed by a discussion of the data in Section 2.4. Section 2.5 examines the empirical results, and Section 2.6 concludes the chapter.

2.2. CGR in India

2.2.1. Background

Corporate governance environment in India before 2000 was largely informal. The Security Exchange Board of India (SEBI), the governing body of listed companies in India, introduced CGR in its listing agreement on February 21, 2000. The new mandatory clause in the equity listing agreement introduced greater compliance, disclosure, board independence and transparency. This is referred to as Clause-49, which is also popularly known as the SOX of India. Clause-49 could be considered as the first mandated corporate governance reform in India.

Only firms that had achieved a paid-up equity capital of more than or equal to INR 30 million or a net worth of INR 250 million at any point in their history since being listed were initially subject to Clause-49. As shown in Figure 1.1, Clause-49 provides a phased-in implementation period during which larger firms are required to comply first, followed

by mid-sized firms and, finally, small-sized firms. However, firms that are listed for the first time from 2000 onward are required to comply immediately, regardless of whether they meet the criteria of paid-up capital or net worth. This implies that the control group comprises firms that are listed before 2000 and that do not meet the two threshold criteria imposed by the reform.

…**Insert Figure 2.1 about here**…

In 2004, the amendment to the Securities Contracts Act, 1956 included Section 23E, which expanded the personal liabilities of the management, the board, and the audit committee, and imposed significant financial and criminal penalties for violations of the listing agreement (up to INR 250 million per violation). Further, Dharmapala and Khanna (2013) maintain that the threat of stricter punishment and expansion of personal liability improves the expected enforcement of CGR in emerging markets. I use 2004 as the CGR enforcement year following previous empirical studies (Dharmapala and Khanna, 2013).

2.2.2 Relevant Provisions of Clause-49 that could affect firm risk-taking

Apart from an overall improvement in corporate governance, I identify three specific provisions in Clause-49 that should affect corporate risk-taking in Indian firms: board independence, independence of audit committees, and certification by the CEO or CFO.

First, Clause-49 mandates greater board independence and requires 50% of the board of directors to be independent when the Chairman of the board is the executive director and one-third (33%) to be independent when the Chairman is a non-executive. Second, Clause-49 requires an affected firm to have an audit committee with a minimum of three directors, two-thirds of which are required to be independent, and at least one with

experience in financial management. The Clause also requires certification by the auditor or company secretary in compliance with corporate governance provisions and disclosures, thereby increasing their accountability. Third, Clause-49 mandates certifications of the financial statements and internal control mechanisms by the CEO or CFO and expands the personal accountability of the management and insiders on a firm's decisions.

Taken together, these three provisions related to structure and accountability of the board, the audit committee, and the management team can encourage risk-taking and value-enhancing investments by decreasing the utility from private benefits and increasing the utility from the wealth effect of risky investments (John et al., 2008). Paligorova (2010) notes that the private benefits of control could be derived from the voting power to consume resources could either be pecuniary or nonpecuniary. Some such pecuniary benefits are excess salary for an individual blockholder, or financing blockholders' social events through corporate resources. Nonpecuniary resources could include the amenities that apparently come from controlling corporations like professional sports, teams and newspapers.[9] At the same time, these provisions could also increase the compliance burden, discouraging corporate risk-taking, as documented by previous studies (Coles et al., 2008; Bargeron et al., 2010; Cohen and Dey, 2013).

[9] The concept of private benefits of control has received lots of attention in the literature (see Nenova (2003) and Dyck and Zingales (2004), among others.

2.2.3. Self-Selection

One concern related to Clause-49 is whether firms could endogenously self-select to be exposed to or remain unaffected by the reform. Dharmapala and Khanna (2013) highlight two scenarios in which a firm could endogenously self-select to remain unaffected by the CGR, based on the threshold of paid-up equity capital and how these scenarios are less likely in a Clause-49 set-up. First, a firm that meets the current criteria of paid-up capital may choose not to comply by lowering its paid-up equity capital. However, this strategy is not realistic as the compliance criteria are backwards-looking, and the firm would have been affected by Clause-49 if it had reached the paid-up capital or net worth criteria at any point in its history. Second, a firm may have had a lower paid-up capital or net worth than the threshold required to comply and may wish to abstain from raising its capital base, that is, enhance its paid-up capital, to remain unaffected. However, if the firm is growing in size and earnings significantly, then it is very likely to reach the required net worth threshold. This is because net worth is that part of the capital base that is adjusted for retained earnings and several reserves and is, therefore, less likely to be manipulated. Finally, if any firm is below the required threshold, but wishes to be affected by the regulation, it could endogenously issue additional equity to reach the paid-up capital threshold. However, Dharmapala and Khanna (2013) empirically do not observe any such strategic manipulation in the Indian data.

2.3. Related Literature and Hypotheses Development

2.3.1. Firm risk-taking and CGR

Economic theory models the effect of CGR on firm risk-taking as a utility function of an insider who derives utility from the wealth effect of investments and private consumption of the resources of a firm (John et al., 2008). A higher level of wealth effect from an investment is positively related to insiders' appetite for value-enhancing risk-taking behaviour. In contrast, a higher level of private benefit is negatively related to insiders' appetite for value-enhancing risk-taking behaviour. The positive effect of CGR, as elaborated below, on a firm's risk-taking could stem from different channels.

First, the higher utility derived from the investment-related wealth effect could be driven by the reduced cost of capital. Previous studies show that better corporate governance is associated with a lower required rate of equity-return. For instance, Bekaert and Harvey (2003) note that country corporate governance influence the pricing of securities with better institutional regimes lowering cost of equity capital. There are number of studies (Stulz, 1999; Bekaert and Harvey, 2000; Errunza and Miller, 2000; Khanna and Palepu, 2000; Healy and Palepu, 2001; Chen et al., 2009) which demonstrate that by better country-level institutional qualities (governance regimes), on average, lower the cost of capital of domestic securities.

I highlight three key arguments that explain why better corporate governance could lower the cost of capital. First, better corporate governance reduces information asymmetry between insiders and investors in the capital market through greater disclosure and independent monitoring, which subsequently lowers the information-related cost of

capital (Stulz, 1999; Healy and Palepu, 2001). Second, progress in corporate governance improves stock liquidity in the market by reducing information asymmetry among traders (Chung et al., 2010). As liquidity is factored into the cost of capital estimation (Amihud and Mendelson, 2000; Easley and O'Hara, 2004), improved liquidity following CGR could also lower the cost of capital. Third, better investor protection attracts foreign investors, who play a crucial role in decreasing the cost of capital through international risk-sharing (Errunza and Miller, 2000) and better monitoring (Khanna and Palepu, 2000), and by providing greater market liquidity (Errunza and Miller, 2000).

Second, as improved corporate monitoring lowers the magnitude and importance of the private benefits of insiders, CGR may discourage investment conservatism through independent board monitoring (Weisbach, 1988; Khanna and Palepu, 2000; Fauver et al., 2017; Lu and Wang, 2018). Similarly, harsher sanctions in mandatory CGR provisions increase the disciplinary pressure on insiders and may reduce the insiders' expected private consumption. Taken together, an improvement in CGR could, therefore, increase the utility from the investment-related wealth effect and decrease the utility from private benefits, both of which could encourage higher value-enhancing risk-taking.

Contrary to this positive prediction, studies also document evidence of the negative association between CGR and a firm's risk-taking behaviour (Coles et al., 2008; Bargeron at el., 2010; Cohen and Dey, 2013). Previous studies suggest that stricter provisions of CGR, which assign expanded financial and criminal liabilities, increase risk-aversion and thus discourage decision-makers from taking on value-maximising risky investments (Bargeron at el., 2010). Similarly, it is argued that for growing and innovative firms, greater external monitoring may be expensive (Coles et al., 2008). As CGR expands the

role and number of external directors, this increased cost of independent monitoring could further dampen insiders' risk-taking appetite (Coles et al., 2008; Cohen and Dey, 2013).

Therefore, in hypothesis 2.1 ($H_{2.1}$), I empirically test the following two conflicting views on the role of CGR in corporate risk-taking.

$H_{2.1a}$: Ceteris paribus, enforcement of CGR should increase corporate risk-taking.

$H_{2.1b}$: Ceteris paribus, enforcement of CGR should decrease corporate risk-taking.

2.3.2. CGR, *Ownership Concentration, and Risk-taking*

An emerging market set-up characterised by the prevalence of concentrated ownership structures, where few concentrated owners have full control over corporate decisions and resources, witnesses a higher conflict of interest between dominant insiders and minority outsiders (Stulz, 2005; Claessens and Yurtoglu, 2013). These concentrated owners could opt for lower risk-taking because of two important reasons.

First, concentrated insiders would derive higher utility of private benefits because of their higher control over corporate resources, which could incentivise them to pursue investment conservatism (Bertrand et al., 2002; John et al., 2008; Gul et al., 2010). CGR should reduce the expected utility from such private benefits by increasing the likelihood of monitoring and prosecuting misappropriation (Aggarwal et al., 2008; John et al., 2008). This reduction in the utility of private benefits could thus encourage risk-taking.

Second, concentrated insiders may choose to avoid risk-taking because of their under-diversified stake in a firm. For example, Paligorova (2010) finds that compared to

institutional counterparts like mutual funds, banks, financial, and industrial companies, concentrated individuals and large family shareholders tend to indulge in lower corporate risk-taking, largely due to their under-diversified stakes. Similarly, Faccio et al. (2011) note that large undiversified shareholders pursue more conservative investment policies. As CGR expands the influence of minority shareholders in corporate decision-making, this shift could positively induce the risk-taking activities of otherwise conservative firms because of concentrated ownership.

I, therefore, expect higher risk-taking in firms with higher ownership concentration, when compared to their counterparts with lower ownership concentration, following CGR. Accordingly, I state the following second hypothesis ($H_{2.2}$):

$H_{2.2}$: Ceteris paribus, enforcement of CGR should increase corporate risk-taking in firms with greater ownership concentration.

2.3.3. CGR and the Value-Implication of Risk-taking

Existing studies find a positive role of CGR on a firm's market valuation (Black and Khanna, 2007; Dharmapala and Khanna, 2013; Fauver et al., 2017). Specifically, Black and Khanna (2007) and Dharmapala and Khanna (2013) show that CGR interventions in an emerging market context are value-enhancing. However, the channels through which CGR influences firm valuation are less clear.

Related literature also posits that higher corporate risk-taking should increase the market valuation of firms (John et al., 2008; Faccio et al., 2011). Aligning this empirical evidence with the possibility that CGR could positively affect corporate risk-taking, I

argue that corporate risk-taking could, therefore, be the channel through which CGR translates into higher firm valuation. In other words, the market rewards the positive shift in risk-taking of firms following CGR with a higher valuation. Accordingly, my third hypothesis ($H_{2.3}$) is as follows:

$H_{2.3}$: Ceteris paribus, following the enforcement of CGR, firms with higher corporate risk-taking should have higher market value.

2.4. Data and Descriptive Statistics

My primary source of data is the Prowess database, maintained by the Centre for Monitoring Indian Economy (CMIE). Prowess provides detailed annual financial data and other firm-specific variables of both listed and unlisted public limited companies.[10] For my study, I primarily use all non-financial and non-utility firms available in the database for the sample period of 2000 to 2007 listed in or before 2000. I exclude the financial and utility firms as they follow different financial reporting standards, and both their payout policy and access to external capital markets are regulated (Renneboog and Trojanowski, 2011). For my examination of cross-listed Indian firms, I obtained the relevant data from Dharmapala and Khanna (2013).[11] My dataset consists of a sample of 26,584 firm-year observations of 3,839 non-financial and non-utility firms listed on either the Bombay

[10] The database has been used by a number of studies, including Lilienfeld-Toal et al. (2012), Vig (2013), and Gopalan et al. (2016).

[11] I thank Dhammika Dharmapala and Vikramaditya Khanna for sharing their data on cross-listed Indian firms before the enforcement of Clause-49. I also matched the data on cross-listed Indian firms with those collected from the website www.adr.com.

Stock Exchange (BSE) or the National Stock Exchange of India Ltd. (NSE) for the period 2000 to 2007 for which there are no missing data for at least one of the three proxies used in the analysis.[12] A description of the variables used in the study is also provided in Appendix table A2, and a breakdown of the sample by industry is shown in Appendix 3. I use the Prowess database code to identify industries and group them into 22 broad industry sectors following Vig (2013).

2.4.1. Risk-Taking and Corporate Investment Proxies

Following the literature, I use *earnings-volatility* as my prime variable to capture corporate risk-taking in my empirical testing (John et al., 2008; Faccio et al., 2011; Boubakri et al., 2013). As riskier projects exhibit higher volatility, *earnings-volatility* captures the degree of risk-taking in a firm's operations, based on the volatility of the operating earnings (John et al., 2008; Boubakri et al., 2013). I calculate *earnings-volatility* as the three-year rolling standard deviation of earnings, where earnings are measured using earnings before interest, taxes, depreciation, and amortisation (EBITDA) expressed as a percentage of total assets.

To gauge the effect of CGR on fixed and innovative investments, I also use two other alternative dependent variables: *capital expenditure* and *R&D expenditure*. Both of these measures of corporate investments are shown to be linked to risk-taking and have been used widely in the literature on risk-taking (Bargeron et al., 2010; Belloc, 2013; Koh and Reeb, 2015). *Capital expenditure* captures the size of tangible investments. It is

[12] Prowess variables are reported as of March 31, each year. Therefore, I use March-end financial data for a given year as previous year-end data.

computed as the difference between long-term assets for year "t" and year "t-1" scaled by long-term assets for the year "t-1." *R&D expenditure* reflects a firm's level of innovative investments (Bargeron at el., 2010; Belloc, 2013) and is measured as the total monetary value of research and development expenditure scaled by total assets.[13]

2.4.2. Control Variables

I use a number of control variables that could also explain the cross-sectional and temporal variations of corporate risk-taking. Studies show that the size of a firm can play a key role in the ability and appetite of the firm to make investment decisions (Whited and Wu, 2006). I control for *Size* by taking the natural logarithm of total assets where assets are expressed in millions of INR. I also account for the capital structure of the firm (*Leverage*), as investment decisions and risk-taking are directly affected by access to finance (Almeida and Campello, 2007; Campello et al., 2010). Similarly, creditors can have interests that are different from those of shareholders in the risk-taking of a firm because of their fiduciary stake and their concave payoffs (Acharya et al., 2011). I measure *Leverage* as the book value of the debt-to-equity ratio. The literature also establishes an association between a firm's operating liquidity (cash holding) and levels of corporate risk-taking (Denis and Sibilkov, 2010). For example, if firms expect financing uncertainty, those with higher investment needs can build up liquidity to hedge against a possible future credit shock. In keeping with the literature, *Liquidity* is measured as the ratio of cash and cash

[13] Any missing *R&D expenditure* observations are not treated as zero, as Koh and Reeb (2015) suggest that firms for which R&D expenses are missing are significantly different from zero R&D firms. This exclusion significantly reduces the number of observations available for regressions with *R&D Expenditure*.

equivalent to current liabilities (Kang, 1997).

Promoters, as they are the founding members and insiders of a firm, can affect the level of corporate risk-taking (John et al., 2008). I control for ownership concentration (*OwnCon*) as the proportion of total shares held by promoters. Finally, risk-taking may also be influenced by the growth potential of firms, as argued by the literature on finance and growth (Levine, 2003). The growth potential of the firms is proxied by the ratio of the market value of equity to its book value, *Market-to-Book (MB)*. As corporate risk-taking may differ based on time-invariant firm-specific characteristics, such as gender (Faccio et al., 2016), I control for *Firm Fixed Effect* in my empirical models. Finally, I control for *Year Fixed Effect* to capture the effect of time-events driving the results.

2.4.3. Descriptive Statistics

Table 2.1 contains summary statistics for the dependent and control variables for the entire sample, as well as for the pre-CGR (2000-2003) and post-CGR periods (2004-2007). It shows a statistically significant growth (at the 1% significance level) in firms' *earnings-volatility* (5.83% to 7.20%), *capital expenditure* (11.46% to 14.03%), and *R&D expenditure* (1.25% to 1.68%) in the post-CGR period in comparison with the pre-CGR period. Three of the controls (*Size*, *Liquidity*, and *MB*) also witnessed a significant increase in the post-CGR period. However, *Leverage* decreased significantly,[14] and there was no significant change in *OwnCon* in the post-CGR period. These descriptive differences offer some preliminary evidence that the enforcement of CGR could have increased the

[14] A decrease in leverage may suggest the creditors' response to increased risk-taking on part of the firm. Alternatively, this may also imply attractiveness of equity financing when compared to debt financing in the post-2004 period.

corporate risk-taking behaviour of the firms.

…Insert Table 2.1 about here…

2.4.4 Clause-49 Groups

The treated group comprises listed Indian firms affected by Clause-49 and control group firms unaffected by CGR. By construction, the treated firms are larger than the control firms. I address the issue of comparability by generating four different groups, depending on when the firms were affected by Clause-49 (based on the paid-up equity capital threshold). Group 1 comprises the larger Indian firms (listed as flag "A" in BSE), which were required to comply by March 31, 2001. Group 2 comprises mid-sized firms with paid-up equity capital of at least INR 100 million or net worth of INR 250 million at any point since their incorporation. These firms were required to comply by March 31, 2002. Group 3 (3A and 3B) comprises small-sized firms with paid-up equity capital between INR 30 million and INR 100 million and were required to comply by March 31, 2003. Group 3A consists of firms with paid-up capital ranging between INR 45 million and INR 100 million, and Group 3B consists of firms with paid-up capital ranging between INR 30 million and INR 45 million. Group 4A firms have paid-up equity capital ranging between INR 15 million and INR 30 million. Group 4B comprises firms with paid-up equity capital less than INR 15 million. Firms in Group 4 (4A and 4B) were not affected by Clause-49.

I present firm characteristics before CGR for all the four different groups in Table 2.2. The discontinuity around the paid-up equity capital threshold separates Group 3 firms (3A and 3B) as treated firms, whereas Group 4 firms (4A and 4B), which are the control firms, remain unaffected by the CGR. This exogenous separation of firms into treated and

control groups by Clause-49 allows me to employ RD and difference-in-differences (DiD) design for empirical investigation.

…Insert Table 2.2 about here…

2.5. Main Results

The RD approach is able to credibly estimate the causal effect of CGR on the risk-taking of treated firms. Further, RD design also overcomes concerns about the alternative effects driven by firms that may be far away from the paid-up equity capital threshold at which CGR was applicable. My main results are based on the RD and DiD research designs.

I start the analysis by presenting the discontinuity plot of risk-taking (earnings-volatility) of Indian firms over continuous variation of paid-up capital. Figure 2.2 presents four discontinuity plots of earnings-volatility around the threshold of paid-up equity capital. Figure 2.2.a and 2.2.b show linear and quadratic discontinuity plots. The figures show that there is a discontinuous jump in the earnings-volatility above the threshold of paid-up capital of INR 30 million for a firm to be subject to the treatment. The break is even sharper for the narrower sample around the threshold as shown by figures 2.2.c and 2.2.d respectively.

…Insert Figure 2.2 here…

2.5.1 Regression Discontinuity (RD) Test

Following Lemieux and Milligan (2008), I conduct an RD test on the cross-section of firms for two years of post-CGR period (i.e., 2004-2005), as shown in equation (2.1).

$$Risk_{it} = \alpha + \beta.1_{(Treated=1)} + \delta(paid - up_i) + \boldsymbol{X}_{it}.\boldsymbol{\delta} + \vartheta_j + e_{it}, \qquad (2.1)$$

where $1_{(Treated=1)}$ is a categorical variable taking the value of one for firms with paid-up equity capital of equal to or greater than INR 30 million and zero otherwise. $Risk_{it}$ is *earnings-volatility* as defined in the earlier section (*i* is indexed as the firm and *t* as the year). I use two additional corporate investment proxies (*capital expenditure* and *R&D expenditure*) as additional dependent variables. $\boldsymbol{X_{it}}$ is a vector of key control variables as defined earlier and ϑ_j is industry fixed effects. My key coefficient of interest, β, is the discontinuity estimator of the causal effect of CGR on the treated firms. The main identification assumption of the RD approach is that $\delta(paid - up_i)$ is a smooth function of paid-up equity capital: that is, $\delta(paid - up_i)$ controls for any continuous impact of paid-up equity capital on a firm's risk-taking in 2004 and 2005.[15]

I report the results from the RD analysis in Table 2.3. Models (1) to (3) report coefficients for entire sample firms, whereas models (4) to (6) report coefficients only for firms in Groups 3 and 4, as described above. Table 2.3 shows that the coefficients on risk-taking and corporate investment measures are both positive and significant (at least at the 5% significance level), implying a discontinuous increase in risk-taking and corporate investment on the part of treated firms in 2004 and 2005. Similarly, compared to the entire sample, the coefficients of the threshold dummy for risk-taking and corporate investment proxies are higher in magnitude in sub-sample firms (reported in Models 4 to 6), which implies a stronger increase in corporate risk-taking in treated firms that are closer to the

[15] In the results reported in Table 2.3 I assume $\delta(paid - up_i)$ to be linear in paid-up equity capital. However, the results are consistent with the polynomial functional form for $\delta(paid - up_i)$.

threshold. This result supports hypothesis 1a and rejects hypothesis 2.1b.

In terms of control variables, *OwnCon* is negatively related to all the proxies of risk-taking and corporate investments and is consistently significant (at least at 10%) across different models and subsamples. This result is in line with the theoretical prediction that ownership concentration encourages a firm to pursue investment conservatism. *Size* seems to affect *earnings-volatility* and *R&D expenditure* negatively, and *capital expenditure* positively. Similarly, *MB* is significant and positively associated (at the 1% significance level) with risk-taking and corporate investment measures, implying the value relevance of risk-taking. Coefficients of *Leverage* and *Liquidity* also have the expected signs, even though they are not consistently significant across the models.

…Insert Table 2.3 about here…

2.5.2 Propensity Score Matched Difference-in-Differences (PSM-DiD) Regression

Although the RD regression of the cross-section of firms around the threshold of paid-up equity capital provides evidence of the positive effect of CGR on firm risk-taking, there are other factors besides paid-up equity capital that may affect corporate risk-taking. I, therefore, apply Propensity Score Matching (PSM) to the firms around the threshold of paid-up equity capital to generate the most comparable treated and control firms and run a PSM-DiD regression for this subset of firms in Group 3 (treated firms) and Group 4 (control firms).

…Insert Table 2.4 about here…

In applying PSM, I first estimate a probit model using firms in Groups 3 and 4. The dependent variable is equal to one if the firm belongs to Group 3 and zero if it belongs to

Group 4. The probit model includes all control variables from equation (2.2). I use propensity scores estimated from Model (1) of Panel A in Table 2.4 to perform matching between treated and control firms, using the closest propensity score, following Smith and Todd (2005). This generates 171 pairs of matched firms from Groups 3 and 4. To examine whether treated and control firms generated from the PSM technique reduce the possible observable differences among treated and control groups prior to CGR enforcement, I further run the probit model with the matched sub-sample alone as a diagnostic test. As shown in Model (2) of Panel A in Table 2.4, no independent variables are significant in explaining the assignment of these matched firms into treated and control groups. In addition, the pseudo R^2 decreases sharply from 0.113, prior to the matching, to 0.023, following the PSM, thereby reducing the explanatory power of the model with the matched firms. This diagnostic test in Model 2 indicates that matching reduces possible observable differences among treated and control groups prior to CGR enforcement.

To assess the pre-CGR and post-CGR trends in risk-taking of the matched treated and control group within groups 3 and 4, I present the time series of yearly average figures of *earnings-volatility* of these comparable firms for the period between 2000 and 2007 in Figure 2.2.

…**Insert Figure 2.2 about here**…

I see in Figure 2.2 that the control firms do not show a significant change in the trend following the 2004 CGR. Further, the visual impression of Figure 2.2 shows that both the treated and control groups do not have significant differences in their pre-CGR trends. However, following CGR, the treated firms show a significant increase in risk-taking, in line with hypothesis 2.1a.

For estimating the causal effect of CGR on corporate risk-taking in the sample of these matched treated and control firms, I run the following regression specification (2):

$$Risk_{it} = \alpha + \beta.1_{(Clause49=1)}.1_{(After=1)} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X_{it}}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it} \quad (2.2)$$

where $Risk_{it}$ is the dependent variable as defined in the earlier section (i is indexed as the firm and t as the year). $1_{(Clause49=1)}$ is an indicator variable that takes the value of one for treated firms and zero for control firms. $1_{(After=1)}$ in Equation (2.2) is a categorical variable that takes the value of one for the post-CGR period and zero otherwise. $\boldsymbol{X_{it}}$ is a vector of key control variables as defined earlier. γ_i is the firm fixed effect and τ_t is the time fixed effect. DiD coefficient, β, is the coefficient of the interaction term $1_{(Clause49=1)}.1_{(After=1)}$, and measures the causal effect of CGR on the treated firms.

In Panel B of Table 2.4, I report the PSM-DiD regression results. It shows that the DiD coefficients of risk-taking and corporate investment proxies for these matched firms are significantly positive (at the 1% significance level). I also present the univariate mean DiD estimates of PSM firms for all risk-taking and corporate investment measures in Panel C, and find positive and significant univariate DiD estimates that are consistent with the results in Panel B. The results in Table 2.4 support hypothesis 2.1a further and reject hypothesis 2.1b.

To further assess the efficiency of the matching technique and the effect of unobserved bias driving my results, in Panels D and I present the bias reduction by the matching and sensitivity of my inference to hidden bias following Rosenbaum Gamma

(2002). Panel D shows that the percentage of bias after match is 1.40% and is statistically not different from zero, thereby implying the efficiency of the matching technique. On the analysis of hidden bias, my inference is insensitive to a bias that would increase the odds by 50% (factor 1.5) at 5% significance and insensitive to a bias that would increase the odds by 75% at 10%. The causal inference would be overestimated only when the odds are double. These additional efficiency tests increase confidence in the matching technique.

2.5.3 The Effect of the Introduction of Clause-49 in 2000 on Corporate Risk-taking

The empirical investigation so far has followed prior literature, and I use the 2004 expansion of personal liabilities in CGR as the enforcement year. In this section, I examine whether the initial introduction of Clause-49 in 2000 affects corporate risk-taking. To do so, I run a DiD panel regression, as in equation (2.2). However, the $1_{(After=1)}$ of equation (2.2) in this case takes the value of one for years from 2000 to 2002 and zero for years from 1997 to 1999. Control and treated firms are all non-financial, domestically listed firms, as defined in the notes to Table 2.2. Control variables include all except *OwnCon*, as defined in the notes to Table 2.1. *OwnCon* does not appear as a control variable, as data on *OwnCon* are available only for 2001. Table 2.5 reports the findings for the proxies of risk-taking and corporate investments. I find that the introduction of CGR in 2000 does not have a significant effect on risk-taking of treated firms.

…Insert Table 2.5 about here…

Why do I fail to see any change in corporate risk-taking after the introduction of Clause-49? It is important to note that the initial penalty for non-compliance was delisting.

Delisting is considered to be a significant sanction to deter non-compliance of regulatory provisions, as it affects, among others, a firm's access to and cost of external capital (Stulz, 1999; Brav, 2009). To examine this surprising finding further, I hand-collected data on delisting from 2000 to 2007. My data show that 1,245 firms were delisted between 2000 and 2007, of which only 20 firms were delisted on the ground of non-compliance with regulations. Only 12 firms were delisted for non-compliance with SEBI regulations not related to Clause-49, with no firm delisted on the ground of violating Clause-49. On the basis of this evidence, I argue that, in the absence of any actual delisting, the threat of being delisted as a penalty might not be robust enough to induce the expected changes in corporate behaviour, particularly in the context of emerging markets (Dutcher, 2005; Dharmapala and Khanna, 2013; Claessens and Yurtoglu, 2013).

The use of robust penalties to induce changes in corporate behaviour is also supported by existing studies that highlight the importance of stronger sanctions for non-compliance (Dutcher, 2005).[16] For example, Dharmapala and Khanna (2013) in their investigation of CGR in India note that the prospect of public enforcement actions, in the form of expanded financial sanctions and criminal liabilities for non-compliance, may act as a strong stimulus to deter insiders from diverting corporate resources for their personal benefit.[17] They also argue that in the absence of stricter enforcement provisions, even

[16] Becker's (1968) economic model notes that maximizing punishments for non-compliance, particularly monetary fines, may encourage expected enforcement.

[17] However, there is now some evidence that SEBI is imposing sanctions for non-compliance. For example, www.livemint.com notes the following for the year ending December 31, 2013: "As part of the initial action, the two exchanges (BSE and NSE) have imposed penalties and suspended trading in companies' shares mostly for non-compliance with clauses 35 and 49. BSE has imposed a total fine of Rs. 2.56 crores on companies breaching clause 35, and a fine of Rs. 44.54 crores for non-compliance with Clause-49. NSE has imposed a total fine of Rs. 9.34 lakhs on 32 firms. This fine amount will keep increasing since it is imposed

firms that are willing to adopt or have already adopted, better corporate governance practices could incur significant costs to convince outside investors credibly. Further, the addition of more severe sanctions is a strong signal of greater reputational penalties. Consistent with the argument that sanctions need to be adequate to induce expected changes in corporate behaviour (Dutcher, 2005), my findings highlight the importance of stricter CGR sanctions in stimulating corporate risk-taking.

2.6. Robustness Checks for Hypothesis 2.1

Although I control for various firm-level characteristics, and firm and year fixed effects, in my examination of hypotheses 1a and 1b, there could be other differences in my treated and control groups that could have an impact on corporate risk-taking. Alternatively, my results could capture other contemporaneous shocks. I address these alternative explanations through a series of robustness checks in the following sub-sections, which strengthen the causality claim of the positive effect of CGR on corporate risk-taking further.

2.6.1. Addressing Pre-CGR Corporate Governance Differences

It is possible that some of the firms within the treated group could be those that were exposed to a higher level of governance standards before CGR in 2004. Hence, their inclusion in my sample as treated firms could lead to a bias in my results. I deal with this issue by identifying 84 firms within the treated group that are cross-listed in international

on a per-day basis."[Source (https://www.livemint.com/Money/BnUE7CAEJ5TUi6RApPwO6M/ BSE-NSE-find-widespread-violation-of-listing-norms.html). Accessed 4 June 2018, 18.23 BST]

exchanges as at or before 2004 and employ them as my alternative control group. Existing studies suggest that internationally cross-listed firms, particularly of emerging markets, exhibit superior corporate governance when compared to their domestic counterparts since the cross-listed firms need to comply with the higher CGR requirement of the developed market listing agreement (Stulz, 1999; Coffee, 2002; Karolyi, 2012).[18] Therefore, I maintain that the effect of domestic CGR intervention should have a smaller effect on the corporate governance practices of cross-listed Indian firms, relative to firms listed domestically alone.

One potential concern regarding the comparability of cross-listed firms with the entire sample of domestically listed treated firms is that these firms, on average, are of larger size when compared to overall treated firms. To address this, I generate a size-decile of all treated firms (excluding the cross-listed firms) based on average size (natural logarithm of book value of total assets in millions of INR) before 2004, and assign size-matched treated firms to firms falling in the uppermost size-decile (average size of 8.85 versus 8.86 of cross-listed firms prior to 2004 CGR). I repeat the PSM as described in Section 5.2.2 from this size-matched universe of treated firms and obtain 81 pairs of propensity score-matched treated firms and cross-listed firms as an alternative control group.

[18] The superiority of corporate governance of cross-listed firms is explained by the bonding argument. The argument contends that the prevalence of potential agency conflicts in firms in emerging economies, in large part, is a result of fragile regulatory oversight, inadequate transparency, and disclosure requirements, as well as weak legal protection of minority investors. To overcome these deficiencies in governance, firms in developing markets choose to bond themselves credibly with the legal and financial institutions of developed markets by means of international cross-listing (Stulz, 1999; Coffee, 2002; Karolyi, 2012).

Table 2.6 reports PSM-DiD regressions of these size-matched treated firms.[19] In line with my main findings in Tables 2.3 and 2.4, the DiD coefficients of these matched groups, as reported in Panel B of Table 2.6, are positive and significant (at the 1% significance level). The results from univariate DiD estimates in Panel C are also consistent with my main results.

To further assess the efficiency of the matching technique and the effect of unobserved bias driving my results, in Panels D and I present the bias reduction by the matching and sensitivity of my inference to hidden bias following Rosenbaum Gamma (2002). Panel D shows that the percentage of bias after the match is 1.66% and is statistically not different from zero, thereby implying the efficiency of the matching technique. On the analysis of hidden bias in panel E, the causal inference would be overestimated only when the odds are double, which is less likely. Therefore the employed technique is robust on bias reduction and the results are less sensitive to hidden bias.

Thus, the use of cross-listed firms as an alternative control group reduces the possibility of my results supporting hypothesis 2.1a. They are driven by pre-CGR corporate governance differences among treated firms.

…Insert Table 2.6 about here…

2.6.2. Placebo Test

My main tests rely on the premise that there is no notable economy-wide shock in 2004, other than the enforcement of Clause-49, as an explanation of the systematic changes

[19] The dependent variable of the probit model in Panel A in Table 2.6 is a dummy variable which takes the value of one if a firm is cross-listed in or before 2004, and zero if it is a Clause-49 affected firm in the uppermost size decile before 2004, and not cross-listed. The covariates for propensity score estimation in column 1 of Panel A are the same as in equation (2.2).

observed in corporate risk-taking. From my examination of the political economy of India through media coverage and previous empirical studies, I find no such economy-wide shock in 2004. However, it could be that my results are simply reflecting the effect of confounding shocks before or after the 2004 intervention or continuation of the pre-existing trend. To address this, I use a placebo test. I design two pseudo-shock periods, one for 2002 (two years before the enforcement shock) and the other for 2006 (two years after the enforcement shock). My treated and control groups remain the same as determined by Clause-49. I re-run regression equation (2.2), this time altering the dummy variable $1_{(After=1)}$ to $1_{(FalseAfter=1)}$ which takes the value of one for the years 2002 and 2003 for False-Experiment 1 (FSY=2002) and zero for two years before 2002. Similarly, for False-Experiment 2 (FSY=2006), $1_{(FalseAfter=1)}$ is one for the years 2006 and 2007 and zero for two years before 2006.

Table 2.7 reports the DiD regression results from these false experiments. The estimates of risk-taking and corporate investment proxies show an insignificant effect for both 2002 and 2006, suggesting that confounding events around CGR are not driving my results. In an unreported table, with 2003 (one year before true experiment year) as the false experiment year, I find the results to be consistent with Table 2.7. However, the placebo test, with 2005 as the false experiment year, shows a significant positive effect, which is consistent with the expectation that the effect of the CGR on risk-taking is persistent for 2005. It is worth mentioning that as there could be an anticipation of legal reforms given the fact that a law takes some time from initiation to enforcement, the insignificant placebo could mean that firms may be hesitant to act on the reform stimulus,

given the higher noise and uncertainty surrounding their implementation. In the event that a firm decides to act ex ante on an anticipated reform cue, the causal effect could be underestimated (Dharmapala and Khanna, 2013).

…Insert Table 2.7 about here…

2.6.3. Addressing the possibility of industry-specific shocks

Another possibility that could undermine my causal finding is the effect that industry-specific shocks could drive corporate risk-taking.[20] To address this issue, I interact the industry variable, which takes a unique value for each industry defined in Appendix table 2.1, with the year dummies and run DID regression with firm fixed effect and the interaction of industry and year. Appendix table 2.2 presents the results accounting for the effect of industry-specific shocks, if any, besides other firm controls. All the coefficients are statistically and economically significant.

2.7. Possible Channels through which CGR affects corporate risk-taking

In the discussion of possible channels through which CGR could affect risk-taking in Section 2.1, I contend that a firm's risk-taking is related positively to insiders' utility from the wealth effect of investments and negatively to insiders' utility from private benefits. In this section I examine changes in the magnitude of the key channels in the post-CGR period compared to their pre-CGR values. I maintain that changes in these metrics following the CGR could encourage corporate risk-taking.

[20] For example, there could be a possibility that (risky) investment opportunities and/or competition between different industries have changed around the same time of the CGR and therefore driving the results.

2.7.1. Cost of Equity Capital

As discussed in Section 3.1, I explore whether the cost of equity capital has reduced significantly in the post-2004 period, which could lead to higher positive net present value (NPV) investments. I examine the dividend yield of my sample firms as a proxy of the cost of equity capital (Bekaert and Harvey, 2000; Errunza and Miller, 2000; Hail and Leuz, 2006). I compute the dividend yield as a ratio of dividend paid per share to the market price per share of a firm's common stock. Table 2.8 shows a 0.35 percentage points decrease (significant at the 1% significance level) in the dividend yield of treated firms, whereas the change in the dividend yield of control firms is not significant. This reduction in the cost of equity capital following CGR in 2004 could have encouraged corporate risk-taking.

…Insert Table 2.8 about here…

2.7.2. Liquidity

I explore whether a decrease in the cost of capital is associated with improvement in stock liquidity. To do so, I examine the changes in liquidity measures for the treated and control groups following the 2004 reform in Clause-49. I use two widely used measures of liquidity. First, I use the Amihud (2002) Illiquidity Ratio (ILR) as measured by the annual average ratio of absolute daily return to the daily trading volume. The second illiquidity measure that I use is the number of days with zero returns (DZR) as a proportion of total

trading days in a year (Bekaert et al., 2007).[21] Table 2.8 shows that the Amihud ILR of treated firms decreases sharply by 0.186 units (significant at the 1% significance level) in comparison to a slight (0.088 units) decrease in control firms. Similarly, the DZR of treated firms decreases by 6.17 percentage points (significant at the 1% significance level) in comparison with an increase of 1.69 percentage points for the control groups. Overall, both illiquidity measures show a significant decrease for treated firms post-CGR when compared to those of control firms (significant negative DiD estimates at the 1% significance level). The improvement in (lowering of) liquidity (illiquidity) could encourage investment in positive NPV projects through a reduced cost of capital.

2.7.3 Foreign Ownership

The increased presence of foreign investors can reduce the cost of capital through higher monitoring (Khanna and Palepu, 2000) and international risk-sharing (Errunza and Miller, 2000). To examine the changes in the ownership of foreign investors in my sample, I compute foreign equity ownership of the treated and control firms before and after CGR. I measure foreign equity ownership as a ratio of the number of shares held by foreign non-promoter shareholders to the total number of shares held by all non-promoters. Table 2.8 shows that treated firms witness an average increase of 6.12 percentage points in foreign ownership (significant at the 1% significance level) in comparison with the insignificant

[21] ILR enables a relationship between the changes in stock price and trading volume. A lower ILR implies higher market liquidity. Zero returns occur when the cost of transactions becomes greater than the value of information for the informed trader, therefore reflecting concerns of the liquidity in informed trades on returns of securities (Lesmond, 2005; Bekaert et al., 2007). Further, greater transaction costs lead to a higher number of zero returns.

increase of 0.31 percentage points for control firms. The univariate DiD estimate is a positive 5.81 percentage points and statistically significant at the 1% level. Increased foreign investors following CGR of 2004 could reduce the cost of capital and improve monitoring, both of which can encourage value-enhancing risk-taking.

2.7.4. Board Independence

Studies note that independent directors are often valued for working in favour of shareholders by disciplining managers (Bhagat and Bolton, 2008). Board independence could positively affect value-enhancing corporate risk-taking in firms where insiders or managers are more likely to be risk-averse in pursuing more conservative investments (Lu and Wang, 2018). Similarly, independent boards are important for yielding innovative outcomes (Sena et al., 2018). The value-enhancing effect of independent directors increases when CGR mandates crucial roles for them, such as sitting on audit committees (Nguyen and Nielsen, 2010). Board independence can be an important channel in encouraging investment in wealth-creating risky projects, as better monitoring and accountability can reduce private consumption (Johnson et al., 2000; John et al., 2008; Claessens and Yurtoglu, 2013). To assess this channel, I calculate an *Independent Board* metric as a ratio of the number of independent board members to the total number of board members. As expected, and implied by the provisions of Clause-49, Table 2.8 shows that the *Independent Board* of treated firms increases by 7.71 percentage points in the post-CGR period when compared to a relatively smaller increase (2.17 percentage points) of independent boards of the control firms in the same period.

To sum up, my examination of the potential channels through which CGR can impact risk-taking and corporate investments shows that, following CGR, treated firms experience a lower cost of capital, potentially resulting from higher liquidity, a higher presence of foreign investors, and better scrutiny of corporate decisions through a greater degree of board independence. Similarly, an increase in independent monitoring by an independent board and foreign owners can help reduce the utility from expected private benefits, thereby encouraging value-maximising risk-taking and corporate investments. Taken together, the shift in these factors is likely to encourage corporate risk-taking of treated firms in the post-CGR period, in line with hypothesis 2.1a.

2.8. Ownership Concentration and the Role of CGR

In this section, I examine hypothesis 2.2 by using the difference-in-difference-in-differences (DiDiD) estimation, as shown in equation (2.3):

$$Risk_{it} = \alpha + \omega.1_{(Clause49=1)}.1_{(After=1)}.\overline{OwnCon_{\iota}} + \chi.1_{(Clause49=1).}\overline{OwnCon_{\iota}} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X_{it}}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it} \quad (2.3)$$

where $\overline{OwnCon_{\iota}}$ is the two-year average of promoters' shareholding before the enforcement of Clause-49. The coefficient ω estimates the impact of CGR on the cross-section of treated firms based on the heterogeneity of their ownership concentration prior to CGR. For CGR to stimulate positive corporate risk-taking among firms with higher ownership concentration, ω of Equation (2.3) should be positive.

To examine hypothesis 2.2, I proxy ownership concentration as the percentage of shares owned by promoting shareholders. I calculate the two-year average of promoters' shareholding before the enforcement of Clause-49 to generate heterogeneity in ownership structure prior to Clause-49 enforcement and make the variable interact with $1_{(Clause49=1)}.1_{(After=1)}$ to obtain the triple interaction term: *DiDiD-OwnCon*= $1_{(Clause49=1)}.1_{(After=1)} * \overline{OwnCon_\iota}$ as shown in Equation (2.3).

Table 2.9 reports the *DiDiD-OwnCon* coefficients without and with controls. Without controls (Model 1), the coefficients of *DiDiD-OwnCon* for *earnings-volatility, capital expenditure*, and *R&D expenditure* of treated firms show significant positive values of 0.05, 0.10, and 0.01 percentage points respectively (significant at the 1% level). The results are consistent when I include all the controls in Model 2 for all three proxies of risk-taking and corporate investments. Overall, the results suggest that in comparison with the treated peers with lower ownership concentration, corporate risk-taking of treated firms with higher ownership concentration has significantly increased, following the enforcement of CGR, supporting hypothesis 2.2. This is consistent with the argument that improvements in corporate governance enable firms, which are otherwise conservative because of insiders' dominance, to make more value-enhancing risky investment decisions (Stulz, 2005; John et al., 2008; Paligorova, 2010; Boubakri et al., 2013).

…Insert Table 2.9 about here…

2.9. CGR, Risk-Taking, and Firm Value

In hypothesis 2.3, I argue that risk-taking could be an important channel through which the enforcement of CGR provides a higher firm valuation. To test this conjecture, I

investigate whether an increase in corporate risk-taking and corporate investments following CGR is associated with higher firm valuation. To do so, I use a panel regression with firm value as the explanatory variable, as presented in equation (2.4):

$$\begin{aligned} Value_{it} = \alpha + \theta.1_{(Clause49=1)}.1_{(After=1).}Risk-taking \\ +\beta.1_{(Clause49=1)}.1_{(After=1).} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} \\ + \boldsymbol{X_{it}}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it} \end{aligned} \quad (2.4)$$

where I proxy, firm value using Tobin's Q, computed as the ratio of the sum of total liabilities, book value of preferred stock and market value of equity to the book value of total assets. I use book value, rather than the market value of the preferred stock because preference shares are traded very thinly in the Indian market during the study period. All control variables, except MB, remain as specified in equation (2.2). $1_{(Clause49=1)}.1_{(After=1)}.Risk-taking\ (Corporate\ Investment)$ is an interaction term where *Risk-taking* (corporate investments) is gauged by *earnings-volatility (capital expenditure* and *R&D expenditure),* and $1_{(Clause49=1)}$ and $1_{(After=1)}$ are as defined in equation (2.2).

I report the results of the estimation in Table 2.10. Models 1 to 6 report the results of equation (2.4) without and with controls for each instance of risk-taking and corporate investment proxies as well. The results in Models 1 and 2 show that the firm value of higher risk-taking treated firms is significantly greater (at the 1% level) than that of lower risk-taking firms (minimum value of 0.04 in Model 1). In terms of economic magnitude, this implies a one standard deviation increase in a firm's risk-taking, as proxied by *earnings-volatility*, is associated with a minimum of 0.274 units increase in the Tobin's Q

of treated firms (with an average standard deviation of *earnings-volatility* of 6.85 percentage points).[22] The value relevance proposition also holds for *capital expenditure (*Models 3 and 4*)* and *R&D expenditure* (Models 5 and 6).

…Insert Table 2.10 about here…

There could be a possibility that the risk-taking and corporate investment proxies could overlap in terms of information content. In order to assess whether these measures contribute to higher firm valuation separately, as reported in Table 2.10, I run a horse-race procedure by including the triple interaction terms of these risk-taking and corporate investment measures together in a single model. Model 7 reports the interaction terms of *earnings-volatility* and *capital expenditure* together, and Model 8 uses triple interaction terms of all three proxies of risk-taking and corporate investments. I report Models 7 and 8 separately as the incorporation of the triple interaction with *R&D expenditure* in Model 8 significantly reduces the number of observations. Models 7 and 8 show that each of the three proxies of risk-taking and corporate investments is individually significant at the 1% level and contributes to higher firm valuation in the post-CGR period.

Finally, in Model 9 of Table 2.10, I replicate the evidence of Dharmapala and Khanna (2013) and find that firm valuation has increased in an economically meaningful magnitude in the post-CGR period. My findings are consistent with those of Dharmapala and Khanna (2013). However, when compared to Model 8 (and Model 7) where I control for the contribution from risk-taking and corporate investments, the economic magnitude

[22] With standard deviation of *earnings-volatility* at 6.85 percentage points, the coefficient of 0.04 translates to 0.274 units (=0.04*6.85).

of the DiD coefficient reduces both in magnitude (from 0.89 to 0.38) and statistical significance, suggesting that a significant portion of value derived by the treated firms after the CGR is associated with higher risk-taking by these firms. These results further support my argument that corporate risk-taking is an important channel through which CGR affects a firm's value, supporting hypothesis 2.3.

2.10. Limitation of the empirical Chapter 1

On the question of whether CGR encourages or deters firm risk-taking, my empirical design employs a CGR of in the emerging market context of India and show that risk-taking of treated firms following the CGR. While this approach of analysis is popular in academic research (see Bargeron et al., 2010; Dharmapala and Khanna, 2013), there is still an important gap that my does not investigate: study the effect of CGR on firm risk-taking employing compliance heterogeneity of firms.

My study implicitly assumes that there is no significant difference between treated and control firms. While I have attempted to address few important sources of endogeneity, there is merit in relaxing this assumption and examining the impact of CGR on firm risk-taking based on actual compliance heterogeneity (Cohen et al., 2013). The availability of data on the actual governance practice, however, limits the appraisal on the actual CG practice and its effect in relation to risk-taking.

Similarly, as with any other study that employs policy reform, this study is also limited by the fact that regulatory shock may not be truly exogenous (Dharmapala and Khanna, 2013). While I attempt to reduce the effect of any industry-specific shock that could drive my results and employ placebo tests to examine the systematic difference

between the treated and control firms around the CGR, the possibility that CGR could be a reactionary action to the corporate practice facing an economy and thus could be endogenous to corporate behavior emerging from there remains (Atanasov and Black, 2016).

2.11. Conclusion.

Existing studies suggest a negative effect of stricter Corporate Governance Reform (CGR) on corporate risk-taking, primarily due to higher compliance costs and expanded liabilities of insiders/managers. I revisit the relation between CGR and risk-taking in an emerging market setup categorised by weaker market forces of corporate scrutiny and insiders' ownership encouraging firms to pursue investment conservatism.

Using a 2004 CGR in India, I find that stricter CGR in an emerging market leads to greater corporate risk-taking. I further find risk-taking as an important channel through which CGR enhances firm valuation. The findings support the view that stricter CGR enforcement can have a positive effect on corporate risk-taking and corporate investment decisions in an evolving regulatory environment.

Table 2.1
Descriptive Statistics: CGR and Risk-taking

Table 2.1 reports the average of variables (along with their standard deviation presented in the second row and number of observations presented in the third row for each variable) used in the analysis for the entire study period and also segregated into two periods, i.e. before Clause-49 enforcement (2000-2003) and after Clause-49 (2004-2007). *Earnings-volatility* is defined as a three-year rolling standard deviation of earnings before interest, taxes, depreciation and amortisation (EBITDA) scaled by total assets. *Capital expenditure* is the change in long-term assets scaled by previous year total long-term assets. *R&D expenditure* is computed as a fraction of total assets. The measures of risk-taking and corporate investments are expressed in percentages. *Size* is the natural logarithm of total assets expressed in millions of Indian currency (INR). *Leverage* is the ratio of book value of debt to book value of equity. *Liquidity* is the book liquidity obtained by dividing liquid assets by current liabilities. *OwnCon* is the ownership concentration variable computed as shares owned by promoting shareholders as a percentage of total shares outstanding. *MB* represents the ratio of the market value of shareholders' equity to its book value. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively. The sample period ranges from the year 2000 to 2007. Source: CMIE database.

Variables	Overall [1]	Pre-Clause-49 [2]	Post-Clause-49 [3]	Difference [3-2]
earnings-volatility	6.54	5.83	7.20	1.37***
	(5.78)	(5.60)	(5.92)	
	26336	12630	13706	
capital expenditure	12.80	11.46	14.03	2.57***
	(11.20)	(10.21)	(11.92)	
	26584	12763	13821	
R&D expenditure	1.47	1.25	1.68	0.43***
	(1.58)	(1.43)	(1.71)	
	5988	2974	3014	
Size	6.10	5.96	6.23	0.27***
	(1.86)	(1.77)	(1.95)	
	26584	12763	13821	
Leverage	1.37	1.46	1.28	-0.18***
	(1.73)	(1.91)	(1.54)	
	19560	9762	9794	
Liquidity	2.83	2.81	2.84	0.03**
	(5.52)	(5.12)	(5.90)	
	22858	11339	11519	
OwnCon	49.09	49.08	49.09	0.01
	(19.98)	(19.62)	(22.07)	
	16372	6929	9443	
MB	1.41	1.02	1.77	0.75***
	(2.54)	(2.05)	(2.81)	
	25842	12257	13585	

Table 2.2
Firm Characteristics of Groups Exogenously Determined by Clause-49 before 2004 Enforcement

Table 2.2 reports the average values of variables used in this study along with their standard deviations (in parentheses) and firm-year observations respectively of firms classified into five different groups based on the applicability of Clause-49 and size. Variables are defined in the notes to Table 2.1. Groups 1 to 3 firms are subject to Clause-49, as explained in the text. Group 1 firms are large-cap companies listed as the flag "A" category on the Bombay Stock Exchange Ltd. (BSE). Group 2 firms are mid-cap companies that have paid-up capital greater than INR 100 million or net worth greater than or equal to INR 250 million. Group 3 firms are low-cap firms that have paid-up capital between INR 100 million and 30 million. I classify 3A firms with paid-up capital between 100 million and 45 million and 3B firms with paid-up capital between 45 million and 30 million. Groups 4 comprise control firms. Group 4A firms have paid-up capital between INR 15 million and 30 million. Group 4B firms have paid-up capital less than INR 15 million. The last column reports the summary statistics for cross-listed firms. The sample period is from 2000 to 2003. Source CMIE.

Variables	Mean (SD), *no. of observations*						
	Treated groups				Control Groups		Alt. Control Group
	Group 1	Group 2	Group 3		Group 4		Cross-listed Firms
			Group 3A	Group 3B	Group 4 A	Group 4B	
earnings-volatility	3.13	5.34	6.06	6.82	6.84	6.82	3.55
	(2.79)	(4.40)	(5.32)	(4.90)	(4.90)	(4.18)	(3.49)
	605	4729	2868	2542	918	642	326
capital expenditure	16.49	10.87	11.28	11.41	9.97	12.87	14.16
	(12.44)	(10.57)	(10.18)	(10.23)	(10.71)	(9.37)	(12.46)
	607	4779	2881	2602	924	624	328
R&D expenditure	1.98	1.02	1.26	1.41	1.52	1.48	1.03
	(2.85)	(1.74)	(2.41)	(2.35)	(1.54)	(1.42)	(2.20)
	344	1102	483	302	286	261	208
Size	8.84	7.01	5.07	4.85	4.85	3.90	8.86
	(1.52)	(1.16)	(0.85)	(0.97)	(0.98)	(1.32)	(1.44)
	607	4779	2881	2602	924	624	328
Leverage	1.11	1.70	1.52	1.19	1.20	1.26	1.10
	(2.22)	(3.08)	(3.38)	(2.43)	(2.50)	(2.76)	(1.11)
	599	3856	2133	1795	464	589	326
Liquidity	2.66	3.30	2.62	2.33	2.34	2.50	2.47
	(6.76)	(9.37)	(3.41)	(1.94)	(6.92)	(3.65)	(1.93)
	605	4444	2189	2408	556	637	326
OwnCon	56.37	51.63	43.34	46.98	48.87	54.90	38.72
	(18.33)	(18.92)	(17.85)	(19.34)	(19.89)	(25.18)	(16.81)
	569	2780	1222	1378	290	364	326
MB	2.28	0.91	0.81	0.97	0.98	1.11	2.26
	(3.36)	(1.80)	(1.93)	(2.70)	(2.09)	(1.61)	(6.49)
	597	4617	2691	2511	907	608	326

Table 2.3
Regression Discontinuity Around Paid-up Equity Capital Threshold

Table 2.3 reports the results of different specifications of the following regression equation:

$$Risk_{it} = \alpha + \beta.1_{(Treated=1)} + \delta(paidup_i) + \boldsymbol{X}_{it}.\boldsymbol{\delta} + \vartheta_j + e_{it},$$

where $Risk_{it}$ is *risk-taking* proxied by *earnings-volatility*. I further use two additional proxies of corporate investment: *capital expenditure* and *R&D expenditure* as dependent variables. Variables are defined in the notes to Table 2.1. $1_{(Treated=1)}$ is an indicator variable that takes the value of one for firms with paid-up equity capital of INR 30 million or more and zero otherwise. $\boldsymbol{X}_{it}$ is a vector of firm-level control variables. Firm level controls include size, leverage liquidity, ownership concentration (OwnCon) and market-to-book (MB). ϑ_j controls for industry fixed effects. e_{it} is the error term. Heteroscedasticity robust t-statistics are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% significance levels respectively. The sample period ranges from the year 2004 to 2005. Source: CMIE database.

	With entire Sample Firms			With Group 3 (treated) and Group 4 (control)		
	earnings-volatility	*capital expenditure*	*R&D expenditure*	*earnings-volatility*	*capital expenditure*	*R&D expenditure*
	[Model 1]	[Model 2]	[Model 3]	[Model 1]	[Model 2]	[Model 3]
Clause-49	0.73**	2.27**	1.05***	0.84**	2.64**	1.66***
	(2.34)	(2.23)	(2.94)	(2.43)	(2.52)	(2.73)
Size	-0.88***	1.31***	-0.50***	-1.61***	2.60***	-0.89**
	(-12.87)	(4.35)	(-2.86)	(-7.85)	(11.48)	(-2.51)
Leverage	-0.03	0.78***	-0.12***	-0.23***	1.53***	-0.01
	(-0.71)	(4.26)	(-6.58)	(2.91)	(4.01)	(-0.06)
Liquidity	-0.02	-0.03	-0.07*	-0.01	-0.13	-0.13
	(-1.28)	(-0.57)	(-1.77)	(-0.29)	(-1.17)	(-1.54)
OwnCon	-0.02***	-0.05*	-0.02***	-0.02*	-0.17***	-0.03***
	(-3.48)	(-1.79)	(-2.88)	(-1.78)	(-3.92)	(-3.39)
MB	0.43***	2.02***	0.37***	0.54***	3.20***	1.55***
	(7.87)	(6.81)	(3.64)	(4.78)	(5.52)	(3.03)
Constant	10.09***	5.74**	4.89***	8.83***	4.30**	6.97***
	(7.60)	(2.24)	(3.79)	(3.17)	(2.16)	(2.86)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3359	3353	1083	1416	1401	228
Adj. R^2	0.27	0.20	0.29	0.18	0.17	0.27

Table 2.4
PSM-DiD Regression Around Paid-up Equity Capital Threshold

Table 2.4 reports the results of DiD regression of a subsample of treated and control firms based on Propensity Score Matching (PSM) prior to CGR enforcement. Panel A presents parameter estimates from the probit model used to estimate propensity scores for firms in the treated and control groups pre-CGR. The dependent variable is one if the firm belongs to Group 3 (treated group) and zero if it belongs to Group 4 (control group) separated by the cut-off of equity capital of INR 30 million, as reported in Table 2. Model 1 of Panel A reports parameter estimates with the entire sample of Groups 3 and 4, whereas Model 2 reports those for the propensity score-matched subsample. Heteroscedasticity robust t-statistics are reported in parentheses. Industry fixed effects are included in both Models in Panel A. Panel B presents DiD regression for matched firms as given by equation:

$$Risk_{it} = \alpha + \beta.1_{(Clause49=1)}.1_{(After=1)} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X_{it}}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it},$$

where $Risk_{it}$ is *risk-taking* proxied by *earnings-volatility.* I further use two additional proxies of corporate investment: *capital expenditure* and *R&D expenditure* as dependent variables. Variables are defined in the notes to Table 2.1. $1_{(Clause49=1)}$ is an indicator variable that takes the value of one for 171 matched treated firms and zero for 171 matched control firms from Groups 3 and 4 of Table 2.2, respectively based on pre-CGR PSM. $1_{(After=1)}$ is an indicator variable that takes the value of one for years including and after 2004 and zero otherwise. $\boldsymbol{X_{it}}$ is a vector of firm-level controls that includes size, leverage, liquidity, ownership concentration (OwnCon) and market-to-book (MB). γ_i and τ_t control for the fixed effects of firm and year respectively. e_{it} is the error term. Models [1] and [2] report regression without and with controls. Variables are winsorised at 1% and 99% for regression in Panel B. Standard errors are double clustered at the firm and year levels following Petersen (2009). Panel C presents univariate DiD estimates of the matched treated and control groups. Panels D and E report bias reduction by matching process and hidden bias measures (Rosenbaum's Gamma) respectively. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively. The sample period ranges from the year 2000 to 2007. Source: CMIE database.

Panel A: Pre-match Propensity Score Regression and Post-match Diagnostic Regression

	Dummy = 1 if in Group 3 of Treated Firms; 0 if in Control Firms.	
	Pre-match [Model 1]	Post-match [Model 2]
Size	0.30**	0.09
	(2.07)	(1.29)
Leverage	0.06**	0.01
	(2.61)	(0.34)
Liquidity	0.02*	0.01
	(1.96)	(0.89)
OwnCon	-0.00**	-0.00
	(-2.27)	(-0.72)
MB	0.12**	0.10
	(2.21)	(1.30)
Industry FE	Yes	Yes
Intercept	0.62***	0.52**
	(5.27)	(2.12)
Observations	3952	1368
p-value of χ^2	0.00	0.48
Pseudo R^2	0.113	0.023

Panel B: DiD Regression of treated and control firms based on pre-CGR PSM

	earnings-volatility		*capital expenditure*		*R&D expenditure*	
	[Model 1]	[Model 2]	[Model 1]	[Model 2]	[Model 1]	[Model 2]
DiD	1.13***	1.23***	14.59***	9.52***	0.59***	0.58***
	(3.23)	(3.82)	(6.28)	(3.10)	(2.92)	(3.37)
Size		-0.12		2.20		-0.22
		(-0.37)		(1.45)		(-1.56)
Leverage		0.06		1.33		0.10
		(0.56)		(1.09)		(0.78)
Liquidity		-0.00		-0.00		-0.16
		(-0.05)		(-0.00)		(-1.42)
OwnCon		-0.02		-0.01		-0.00
		(-1.17)		(-0.14)		(-0.39)
MB		0.12*		4.83***		0.09*
		(2.09)		(4.55)		(2.04)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.07	0.10	0.06	0.08	0.06	0.09
No. of Firms	342	342	342	342	190	190
No. of Obs.	2736	2589	2736	2697	602	602

Panel C: Univariate DiD estimator of *earnings-volatility*, *capital expenditure* and *R&D expenditure*

	Mean Treated Difference (After-Before)	Mean Control Difference (After-Before)	Mean DiD Estimator (Treated-Control)
earnings-volatility	0.57	0.05	0.52***
	(4.04)	(0.15)	(3.21)
capital expenditure	3.56	0.83	2.73***
	(3.47)	(0.35)	(3.02)
R&D expenditure	1.99	-0.02	2.01***
	(3.29)	(-0.08)	(3.21)

Panel D. Bias Reduction from Matching

Sample	p>chi2	%bias
Unmatched	0.003	24.1
Matched	0.40	1.4

Panel E: Unobserved Bias Reporting

Gamma	Q-MH+	p-value (Q-MH+)
1	4.18	0.0001
1.25	3.15	0.0008
1.50	2.05	0.0523
1.75	1.42	0.0778
2.0	1.04	0.1486

Table 2.5

The Effect of Introduction of CGR in 2000 on Corporate Risk-taking

Table 2.5 reports the results from different specifications of the regression equation:

$$Risk_{it} = \alpha + \beta.1_{(Clause49=1)}.1_{(After=1)} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X}_{it}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it},$$

where $Risk_{it}$ is *risk-taking* proxied by *earnings-volatility*. I further use two additional proxies of corporate investment: *capital expenditure* and *R&D expenditure* as dependent variables. Variables are defined in the notes to Table 2.1. $1_{(Clause-49=1)}$ is an indicator variable that takes the value of one for treated firms and zero otherwise. $1_{(After=1)}$ is a categorical variable that takes the value of one for three years following and including the year of introduction of Clause-49, i.e. the year 2000 and zero for three years before 2000. $\boldsymbol{X}_{it}$ is a vector of firm-level controls that includes size, leverage, liquidity and market-to-book (MB). γ_i and τ_t control for the fixed effects of firm and year respectively. e_{it} is the error term. Variables are winsorised at 1% and 99%. Standard errors are double clustered at the firm and year levels following Petersen (2009). t-statistics are reported in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively. Source: CMIE database.

	earnings-volatility	*capital expenditure*	*R&D expenditure*
	[Model 1] (Intro=2000)	[Model 2] (Intro=2000)	[Model 3] (Intro=2000)
DiD	0.19	0.91	0.05
$[1_{(Clause49=1)}.1_{(After=1)}]$	(1.08)	(1.51)	(1.57)
Size	-0.31**	2.13***	-0.48***
	(-2.63)	(3.12)	(-4.81)
Leverage	-0.13**	0.25**	-0.01
	(-2.27)	(2.35)	(-0.20)
Liquidity	0.01	-0.10**	-0.03
	(0.51)	(-2.58)	(-1.69)
MB	0.06	0.03	0.01*
	(1.47)	(1.78)	(1.96)
Firm and Year FEs	Yes	Yes	Yes
R^2 (within)	0.02	0.09	0.03
No. of Firms	2966	2958	602
No. of Obs.	8121	8116	2809

Table 2.6
Robustness Test: Propensity Score Matched DiD with Cross-listed Firms

Table 2.6 reports the results of DiD regression of a subsample of treated and control firms based on propensity score matching (PSM) prior to CGR enforcement. Panel A presents parameter estimates from the probit model used to estimate propensity scores for larger sized treated firms and firms cross-listed in international exchanges as at or before 2004 (alternative control firms), as shown in Table 2.2. The dependent variable is one if the firm is cross-listed and zero if it belongs to the uppermost size decile of treated firms and is not cross-listed. Model 1 of Panel A reports parameter estimates with the entire sub-sample of uppermost size decile treated firms and cross-listed firms without PSM, whereas Model 2 reports estimates with a propensity score-matched 81-pair subsample. Heteroscedasticity robust t-statistics are reported in parentheses. Industry fixed effects are included in both Models in Panel A. Panel B presents DiD regression for the matched firms as given by the equation:

$$Risk_{it} = \alpha + \beta.1_{(Clause49=1)}.1_{(After=1)} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X_{it}}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it},$$

where $Risk_{it}$ is *risk-taking* proxied by *earnings-volatility*. I further use two additional proxies of corporate investment: *capital expenditure* and *R&D expenditure* as dependent variables. Variables are defined in the notes to Table 2.1. $1_{(Clause49=1)}$ is an indicator variable that takes the value of one for 81 matched treated firms using PSM and zero for the 81 firms cross-listed in international exchanges as at or before 2004. $1_{(After=1)}$ is an indicator variable that takes the value of one for years including and after 2004 and zero otherwise. $\boldsymbol{X_{it}}$ is a vector of firm-level controls that includes size, leverage, liquidity, ownership concentration (OwnCon) and market-to-book (MB). γ_i and τ_t control for the fixed effects of firm and year respectively. e_{it} is the error term. Variables are winsorised at 1% and 99%. Standard errors are double clustered at the firm and year levels following Petersen (2009). Panel C presents univariate DiD estimates of the matched treated and control groups. Panels D and E report bias reduction by matching process and hidden bias measures (Rosenbaum's Gamma). *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively. Models [1] and [2] report regression without and with controls. The sample period ranges from the year 2000 to 2007. Source: CMIE database.

Panel A: Pre-match Propensity Score Regression and Post-match Diagnostic Regression

	Dummy = 1 if cross-listed; 0 if in uppermost size decile treated firms and not cross-listed.	
	Pre-match [Model 1]	Post-match [Model 2]
Size	0.28***	0.15
	(3.89)	(0.81)
Leverage	0.01	0.01
	(0.55)	(0.03)
Liquidity	-0.01	-0.00
	(0.51)	(-0.06)
OwnCon	-0.04***	-0.03
	(-3.69)	(-0.79)
MB	0.03**	0.02
	(2.19)	(1.04)
Industry FE	Yes	Yes
Intercept	-2.15***	-2.13***
	(-4.15)	(-3.42)
Observations	1364	648
Pseudo R^2	0.2371	0.08
p-value of χ^2	0.00	0.41

Panel B: DiD Regression of Propensity Score Matched Treated and Control Group.

	earnings-volatility		*capital expenditure*		*R&D expenditure*	
	[Model 1]	[Model 2]	[Model 1]	[Model 2]	[Model 1]	[Model 2]
DiD $[1_{(Clause49=1)} \cdot 1_{(After=1)}]$	0.66*** (4.41)	0.52*** (3.96)	7.98*** (4.68)	9.21*** (2.86)	0.99*** (2.97)	0.56*** (4.49)
Size		0.23 (-1.09)		-0.41 (-0.35)		-0.21 (-1.56)
Leverage		-0.00 (-0.13)		0.04 (0.24)		-0.14 (-1.22)
Liquidity		-0.01 (-1.07)		-0.05 (-0.36)		-0.06 (-1.27)
OwnCon		-0.02 (-1.26)		-0.11 (-1.81)		-0.01 (-1.87)
MB		0.04*** (3.36)		1.33** (4.43)		0.15*** (3.26)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.05	0.06	0.03	0.08	0.02	0.09
No. of Firms	162	162	162	162	104	104
No. of Obs.	1296	1296	1296	1296	832	832

Panel C. Univariate DiD for *earnings-volatility*, *capital expenditure* and *R&D expenditure*

	Mean Treated Difference (After-Before)	Mean Control Difference (After-Before)	Mean DiD Estimator (treated-Control)
earnings-volatility	0.96*** (3.88)	-0.20 (-0.76)	1.16*** (2.98)
capital expenditure	10.29*** (3.06)	-1.63 (-1.07)	11.92*** (2.76)
R&D expenditure	0.51** (2.35)	0.05 (0.29)	0.46** (2.33)

Panel D. Bias Reduction from Matching		
Sample	p>chi2	%bias
Unmatched	0.007	28.6
Matched	0.36	1.66

Panel E: Unobserved Bias Reporting		
Gamma	Q-MH+	p-value (Q-MH+)
1	3.63	0.0001
1.25	2.99	0.0014
1.50	2.05	0.0202
1.75	1.62	0.0523
2.0	0.87	0.1935

Table 2.7.
Placebo Tests

Table 2.7 reports the results from different specifications of the regression equation:

$Risk_{it} = \alpha + \beta.1_{(Clause49=1)}.1_{(FalseAfter=1)} + \lambda.1_{(Clause49=1)} + \rho.1_{(FalseAfter=1)} + \boldsymbol{X}_{it}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it}$,

where $Risk_{it}$ is *risk-taking* proxied by *Earnings-volatility*. I further use two additional proxies of corporate investment: c*apital expenditure* and *R&D expenditure* as dependent variables. Variables are defined in the notes to Table 2.1. $1_{(Clause-49=1)}$ is an indicator variable that takes the value of one for treated firms and zero otherwise. $1_{(After=1)}$ is an indicator variable that takes the value of one for two years after and including a false-shock year (FSY) and zero for two years before the FSY. I take years 2002 and 2006 as two different FSYs resulting in two false experiments and report in Models 1 and 2 for each proxy of risk-taking. $\boldsymbol{X}_{it}$ is a vector of firm-level controls that includes size, leverage, liquidity, ownership concentration (OwnCon) and market-to-book (MB). γ_i and τ_t control for the fixed effects of firm and year respectively. e_{it} is the error term. Variables are winsorised at 1% and 99%. Standard errors are double clustered at the firm and year levels following Petersen (2009). t-statistics are reported in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively. Source: CMIE database.

	earnings-volatility		*capital expenditure*		*R&D expenditure*	
	[Model 1] (FSY=2002)	[Model 2] (FSY=2006)	[Model 1] (FSY=2002)	[Model 2] (FSY=2006)	[Model 1] (FSY=2002)	[Model 2] (FSY=2006)
DiD-Placebo	-0.06	-0.39	0.93	2.31	0.02	0.15
$1_{(Clause49=1)}.1_{(FalseAfter=1)}$	(-0.20)	(-1.17)	(0.02)	(1.26)	(1.46)	(1.76)
Size	-0.89**	-0.29**	3.40***	2.85***	-0.08**	-0.59***
	(-2.55)	(-2.63)	(4.43)	(5.14)	(-2.41)	(-6.88)
Leverage	-0.03	-0.14***	0.46**	0.52***	0.00	-0.01
	(-1.15)	(-3.27)	(2.32)	(3.25)	(0.09)	(-0.33)
Liquidity	0.00	0.00	-0.08**	-0.19**	-0.03	-0.04
	(0.54)	(0.32)	(-2.05)	(-2.60)	(-0.59)	(-1.66)
OwnCon		-0.01		-0.04		-0.00
		(-1.37)		(-0.97)		(-0.60)
MB	0.01	0.10***	0.02	0.06*	0.07*	0.00*
	(0.14)	(3.47)	(0.07)	(1.91)	(1.82)	(1.87)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.02	0.03	0.08	0.09	0.02	0.04
No. of Firms	2966	2966	2958	2958	638	639
No. of Obs.	7416	7621	7470	7696	2136	2139

Table 2.8

Possible Channels of Increase in Risk-taking

Table 2.8 reports the univariate results of different channels of increase in risk-taking. *Dividend Yield* is the ratio of dividend paid per share to market price per share of firm's common stock. *Amihud Illiquidity Ratio* is the annual average of the ratio of absolute return to the daily trading volume. *Days with Zero Return* is number of trading days with zero return as a proportion of total trading days in a year. *Foreign Equity Ownership* is the ratio of number of shares held by foreign non-promoting investors to total non-promoting shareholders. *Independent Board* is computed as a ratio of the number of independent board members to total board members. All variables except Amihud Illiquidity Ratio are expressed in percentages. Treated firms include firms affected by CGR and Control firms include those unaffected by the reform. The before period is 2000-2003 and after period is 2004-2007. *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively. Source: CMIE database. Sample period: 2000-2007.

	Firms	Before [1]	After [2]	Mean Difference [2-1]	DiD Estimator
Dividend Yield	Control	1.46	1.44	-0.02 (-0.15)	-0.33*** (5.36)
	Treated	1.66	1.31	-0.35*** (-7.48)	
Amihud Illiquidity Ratio	Control	0.2798	0.1913	-0.088** (-2.20)	-0.097*** (-10.05)
	Treated	0.2441	0.0583	-0.186*** (-20.31)	
Days with Zero Return	Control	10.13	11.82	1.69*** (2.97)	-7.86*** (7.89)
	Treated	16.72	10.55	-6.17*** (-14.19)	
Foreign Equity Ownership	Control	2.72	3.03	0.31 (0.64)	5.81*** (9.54)
	Treated	3.42	9.54	6.12*** (20.04)	
Independent Board	Control	39.59	41.76	2.17*** (3.69)	5.54*** (6.61)
	Treated	36.78	44.49	7.71*** (12.44)	

Table 2.9

Ownership Concentration and the Role of CGR

Table 2.9 reports the results of different specifications of the regression equation:

$$Risk_{it} = \alpha + \omega.1_{(Clause49=1)}.1_{(After=1)}.\overline{OwnCon_i} + \chi.1_{(Clause49=1).}\overline{OwnCon_i} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X}_{it}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it},$$

where $Risk_{it}$ is *risk-taking* proxied by e*arnings-volatility*. I further use two additional proxies of corporate investment: *capital expenditure* and *R&D expenditure* as dependent variables. Variables are defined in the notes to Table 2.1. $1_{(Clause49=1)}$ is an indicator variable that takes the value of one for firms affected by Clause-49 and zero otherwise; $1_{(After=1)}$ is an indicator variable that takes the value of one for years including and after 2004 and zero otherwise. $\overline{OwnCon_i}$ is the two-year average of the percentage of promoters' shareholding before the enforcement of Clause-49. $\boldsymbol{X}_{it}$ is a vector of firm level control variables. Firm level controls include size, leverage, liquidity and market-to-book (MB). γ_i and τ_t control for the fixed effects of firm and year respectively. e_{it} is the error term. ω captures the effect of CGR on risk-taking (investments) over the cross-section of ownership concentration of the treated firms before enforcement. Variables are winsorised at 1% and 99%. Standard errors are double clustered at the firm and year levels following Petersen (2009). t-statistics are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% significance levels respectively. Models [1] and [2] report regression without and with controls for sample firms with non-missing control variables for each risk-taking measure. The sample period ranges from year 2000 to 2007. Source: CMIE database.

	earnings-volatility		*capital expenditure*		*R&D expenditure*	
	[Model 1]	[Model 2]	[Model 1]	[Model 2]	[Model 1]	[Model 2]
DiDiD-OwnCon	0.05***	0.01***	0.10***	0.07***	0.01***	0.01***
$[1_{(Clause49=1)}.1_{(After=1)}].\overline{OwnCon_i}]$	(4.41)	(3.71)	(3.94)	(3.11)	(4.09)	(3.95)
Interaction-Treated-OwnCon	0.00	0.00	0.00	0.00	0.00	0.00
$[1_{(Clause49=1).}\overline{OwnCon_i}]$	(0.61)	(0.63)	(0.62)	(0.68)	(0.69)	(0.60)
Size		-0.01**		0.60**		-0.40*
		(-2.88)		(2.70)		(-1.90)
Leverage		-0.00		0.20		-0.00
		(-0.35)		(0.70)		(-0.14)
Liquidity		-0.00		-0.36*		-0.02
		(-1.19)		(-2.03)		(-0.28)
OwnCon		-0.01*		-0.17		-0.00
		(-1.85)		(-1.13)		(-0.45)
MB		0.00***		2.03***		0.01***
		(4.03)		(4.91)		(2.41)
Firm and Year FEs	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.02	0.06	0.02	0.07	0.02	0.05
No. of Firms	2966	2966	2958	2958	667	667
No. of Obs.	14845	14845	14859	14859	3580	3580

Table 2.10
Value Implication of Risk-Taking

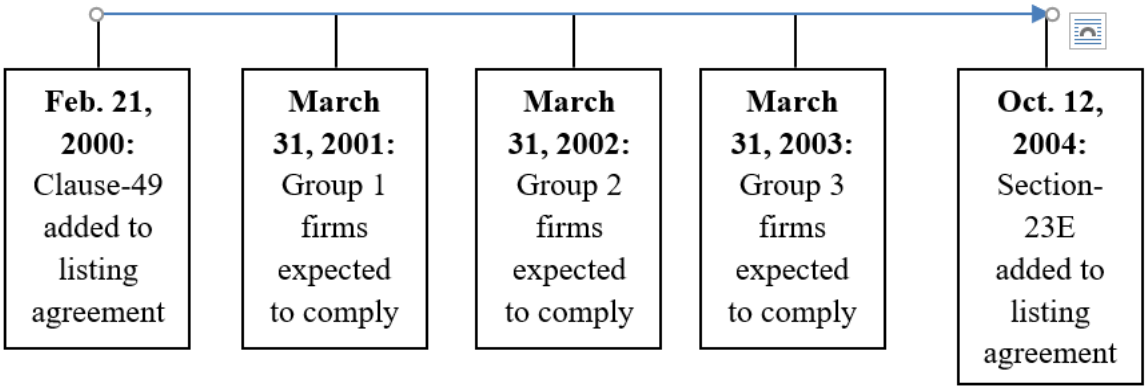
Table 2.10 reports the results of different specifications of the following specification:

$$Value_{it} = \alpha + \varphi.1_{(Clause49=1)}.1_{(After=1)}.Risk-taking + \beta.[1_{Clause-49=1}.1_{After=1}] + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X_{it}}.\boldsymbol{\delta} + \gamma_i + \tau_t + e_{it},$$

where $Value_{it}$ is *Tobin's Q* calculated as a ratio of the market value of total assets to its book value. $1_{(Clause49=1)}$ is an indicator variable that takes the value of one for firms affected by Clause-49 and zero otherwise; $1_{(After=1)}$ is an indicator variable that takes the value of one for years including and after 2004 and zero otherwise. $\boldsymbol{X_{it}}$ is a vector of firm level control variables, which include size, leverage, book liquidity and ownership-concentration (OwnCon). Risk-taking is gauged by *earnings-volatility.* I further use two other proxies of investments including *capital expenditure* and *R&D expenditure* as independent variables of interest. Variables are as defined in the notes to Table1. γ_i and τ_t control for the fixed effects of firm and year respectively. e_{it} is the error term. Variables are winsorised at 1% and 99%. Standard errors are double clustered at the firm and year levels following Petersen (2009). t-statistics are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% significance levels respectively. Source: CMIE database. The sample period ranges from the year 2000 to 2007.

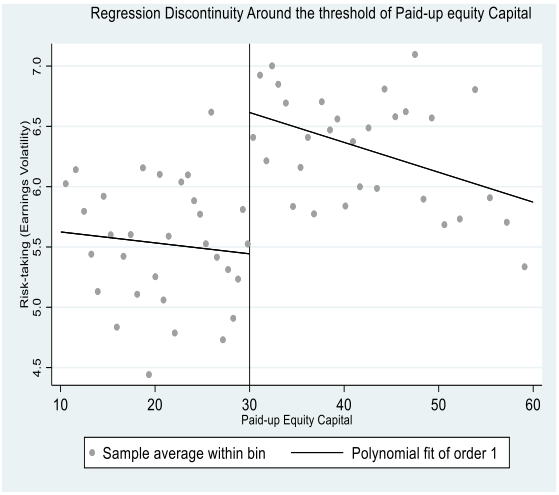
	[Model 1]	[Model 2]	[Model 3]	[Model 4]	[Model 5]	[Model 6]	[Model 7]	[Model 8]	[Model 9]
Triple Interaction-*earnings volatility*	0.04***	0.05***					0.05***	0.03***	
$[1_{Clause-49=1}.1_{After=1}.earnings-volatility]$	(9.47)	(5.01)					(5.17)	(3.00)	
Triple Interaction-*capital expenditure*			0.01***	0.01***			0.01***	0.01***	
$[1_{Clause-49=1}.1_{After=1}.capital\ expenditure]$			(9.40)	(4.94)			(5.16)	(2.91)	
Triple Interaction-*R&D expenditure*					0.06***	0.06***		0.06***	
$[1_{Clause-49=1}.1_{After=1}.R\&D\ Expenditure]$					(2.88)	(3.28)		(7.02)	
DiD		0.50***		0.27*		0.59***	0.51*	0.38*	0.89***
$[1_{Clause-49=1}.1_{After=1}]$		(2.86)		(2.03)		(2.85)	(2.00)	(2.05)	(4.47)
Size		0.51***		0.48***		0.54***	0.51***	0.73***	0.54***
		(5.34)		(3.80)		(3.32)	(4.98)	(4.33)	(4.92)
Leverage		0.08**		0.08***		0.08*	0.08***	0.07	0.09***
		(2.58)		(2.82)		(1.95)	(2.62)	(1.35)	(3.34)
Liquidity		-0.01***		-0.00**		-0.01	-0.00**	-0.00	-0.01**
		(-3.50)		(-2.16)		(-0.33)	(-2.28)	(-0.14)	(-2.40)
OwnCon		0.01		0.01		0.00	0.01	0.01	0.01
		(1.75)		(1.65)		(0.48)	(1.64)	(1.30)	(0.98)
Firm and Year Fes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2 (within)	0.03	0.10	0.02	0.09	0.02	0.06	0.10	0.13	0.04
No. of Firms	3755	2966	3782	2958	838	667	2601	667	2700
No. of Obs.	25144	14845	25842	14859	5067	3580	14564	3674	14930

Figure 2.1. Implementation schedule of Clause-49 and Section-23E

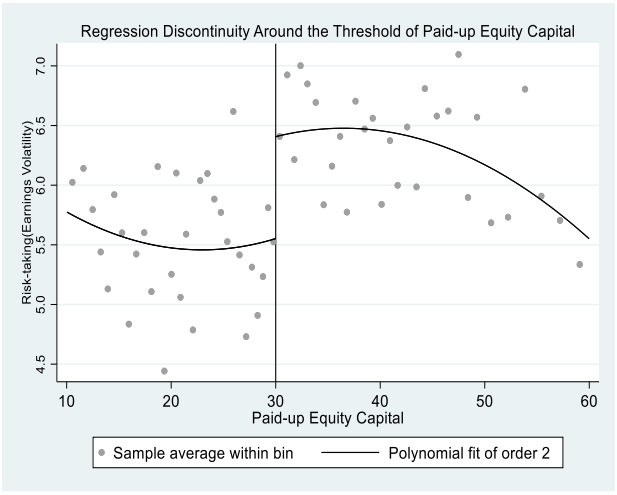


Note: A timeline of the Clause-49 and Section-23E enforcement.

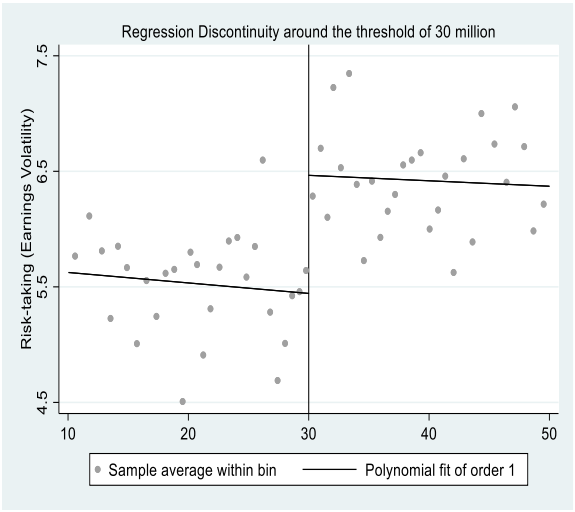
Figure 2.2. Discontinuity Plot of Risk-taking over paid-up equity capital



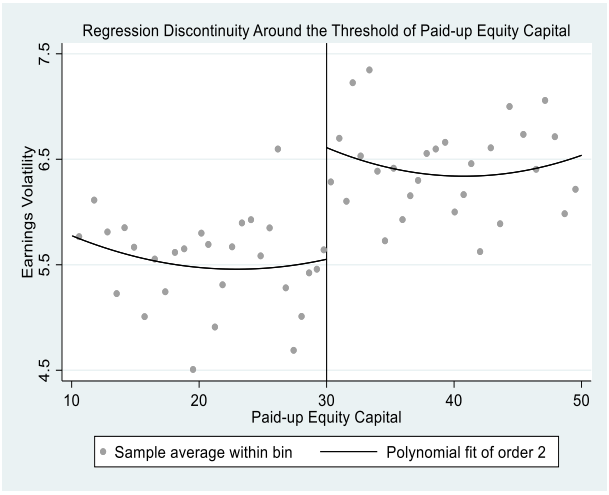
a. Discontinuity Plot (linear)



b. Discontinuity Plot (quadratic)



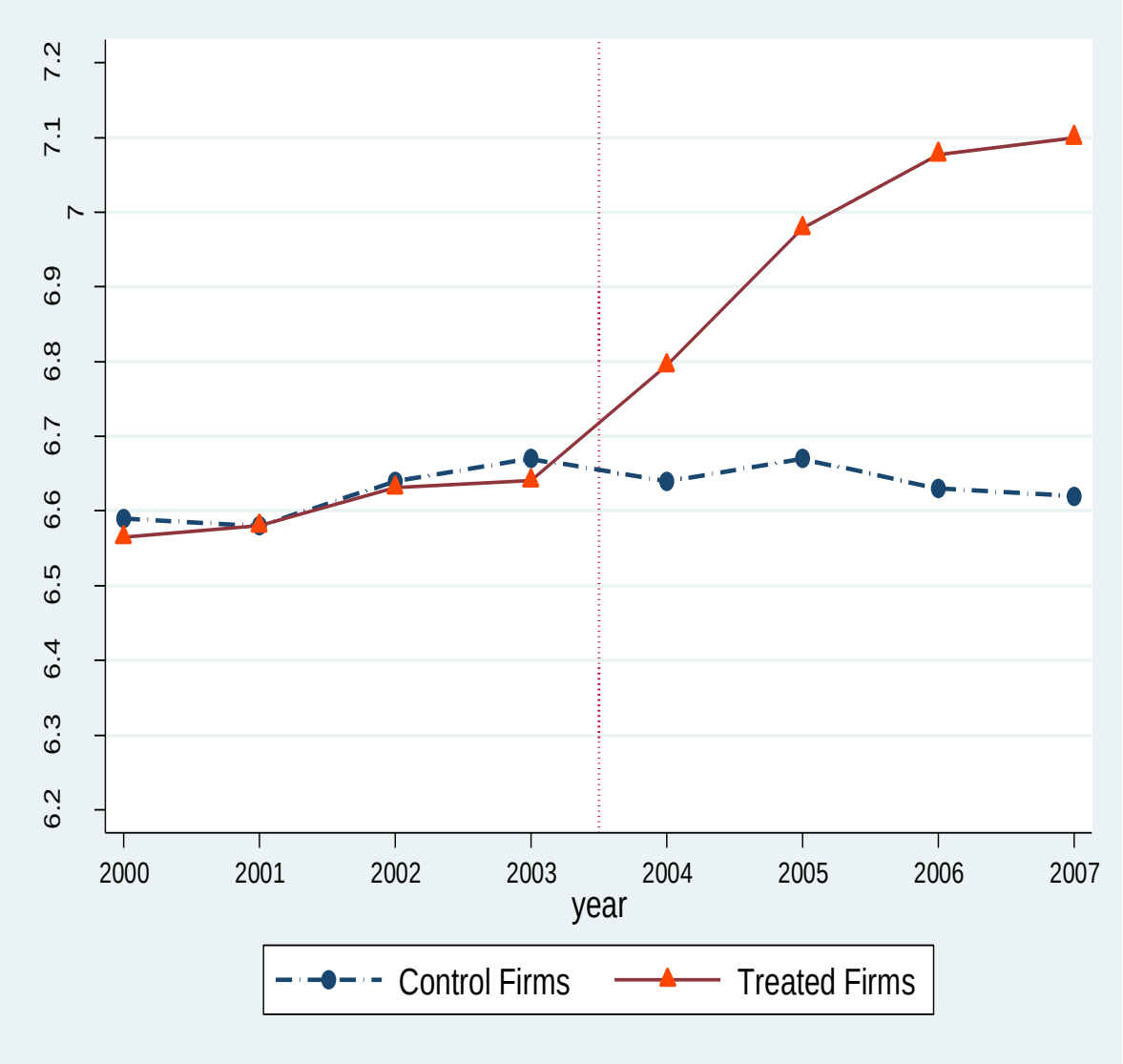
c. Discontinuity Plot (linear) on the narrower range of paid-up equity capital



d. Discontinuity Plot (quadratic) on the narrower range of paid-up equity capital

Note: The figure presents different discontinuity plots of earnings-volatility over the smooth function of paid-up equity capital with a discontinuity at the paid-up equity capital of INR 30M.

Figure 2.3
Time-series plot of *earnings-volatility* of Propensity Score matched Treated and Control firms



Note: Here, I plot the annual average of the e*arnings-volatility* of Propensity Matched Treated and Control firms over the study period of 2000-2007. Before-CGR period is 2000 to 2003 and After-CGR period is 2004 to 2007. I calculate *earnings-volatility* as a three-year rolling standard deviation of operating earnings where operating earnings is EBITDA scaled by total assets expressed in percentage. Source: CMIE database.

Appendix Table A2.1.

Industries classification of the sample

In this table, I provide an industry breakdown of my sample firm-year observation.

Industry Code	Industries	No. of firms	Observations
1	Agricultural Products	153	1024
2	Automobiles and Transport	163	1247
3	Cement and Abrasives	48	361
4	Chemicals and Pharmaceuticals	446	2905
5	Computers, Software and Its	238	1780
6	Construction	196	1370
7	Consumer Electronics	63	474
8	Diversified	76	570
9	Engines and Equipment	208	1623
10	Iron, Steel and Metals	246	1832
11	Leather and Rubber Products	34	253
12	Media and Entertainment	66	418
13	Minerals Products	21	155
14	Miscellaneous Items	37	182
15	Other Retail and Specialties	126	984
16	Paper and Wood Products	71	457
17	Plastics and Polymers	154	1186
18	Processed Food and Tobacco	76	591
19	Services	491	2872
20	Textiles	325	2040
21	Trading	535	3757
22	Wires and Cables	66	503
	Total	3839	26584

Appendix Table A2.2. Addressing Industry-specific shocks

This table reports the results from different specifications of the regression equation:

$$Risk_{ijt} = \alpha + \beta.1_{(Clause49=1)}.1_{(After=1)} + \lambda.1_{(Clause49=1)} + \rho.1_{(After=1)} + \boldsymbol{X_{ijt}}.\boldsymbol{\delta} + \gamma_i + \vartheta_j.\tau_t + e_{ijt},$$

where $Risk_{ijt}$ is corporate risk-taking proxied by (i) *Earnings-Volatility*, (ii) C*apital Expenditure* and (iii) *R&D Expenditure*, as defined in the notes to Table 2.1. $1_{(Clause49=1)}$ is an indicator variable that takes the value of one for treated firms and zero otherwise. $1_{(After=1)}$ is an indicator variable that takes the value of one for years on or after 2004 and zero otherwise. $\boldsymbol{X_{ijt}}$ is a vector of firm level controls that includes size, leverage, liquidity, ownership concentration (OwnCon) and market-to-book (MB). γ_i , ϑ_j and τ_t control for fixed effects of firm, industry and year respectively. e_{ijt} is the error term. Variables are winsorised at 1% and 99%. Standard errors are double clustered at the firm and year levels following Petersen et al. (2009). *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels respectively. Columns [1] and [3] report regression without and with controls. Column [2] reports regression without control for the non-missing sub-sample of all control variables. The sample period ranges from the year 2000 to 2007. Source: CMIE database.

	Earnings-Volatility			Capital Expenditure			R&D Expenditure		
	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
DID	0.81***	0.54***	0.44***	4.80***	3.82***	2.59***	0.21***	0.25***	0.33***
$[1_{(Clause49=1)}.1_{(After=1)}]$	(3.24)	(3.12)	(3.62)	(4.82)	(3.44)	(3.79)	(3.76)	(3.23)	(4.43)
Size			-0.84***			0.69**			-0.47**
			(-4.80)			(2.77)			(-2.29)
Leverage			-0.00			0.06			-0.00
			(-0.32)			(0.67)			(-0.03)
Liquidity			0.00**			-0.00			-0.00
			(2.72)			(-1.66)			(-0.03)
OwnCon			-0.02***			-0.01			-0.00
			(-3.70)			(1.64)			(-0.69)
MB			0.40***			0.07***			0.01***
			(5.21)			(3.88)			(3.56)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (within)	0.08	0.02	0.07	0.07	0.02	0.06	0.09	0.08	0.08
No. of Firms	3756	2089	2089	2905	2018	2030	817	646	646
No. of Obs.	25860	10952	10952	22319	10727	10778	5101	3424	3424

3. Corporate Governance Reform and Firm Dividend Policy

3.1. Introduction

As emerging economies seek to advance their capital markets, they often adopt an established corporate governance framework from developed markets (Martynova and Renneboog, 2011). However, the question remains on the effectiveness of these adopted frameworks to improve outside stakeholders on the improved corporate governance practices.[23]

Prior literature notes that one important way of improving the quality of compliance is by imposing adequate punishment for the violation of corporate governance reform (CGR) clauses (Becker, 1968; Dutcher, 2005; Dharmapala and Khanna, 2013). Becker's (1968) model on punishment posits that expanding the severity of punishments for non-compliance has a material effect in improving regulatory compliance. In line with this theory, Dharmapala and Khanna (2013) empirically show that the effectiveness of CGR enforcement improves as the severity of CGR sanctions increase. I extend this body of literature by testing the link between CGR, particularly the severity of sanctions for non-compliance, and corporate payout policy.

Existing literature establishes that the agency and information asymmetry related frictions of free cash flow affect corporate payout policy (Jensen, 1986; La Porta et al.,

[23] Claessens and Yurtoglu (2013) note that, on average, the effectiveness of CGR enforcement in emerging economies is substantially lower in comparison to their developed counterparts attributed mainly to their evolving and weaker enforcement regimes and poor quality of institutions.

2000; John et al., 2015). Dividend commitments reduce free cash flow available at the disposal of controlling insiders, which they may otherwise use for their private benefits. Therefore, by adopting a higher dividend payout (DP), a firm can establish a reputation with its external shareholders that the firm is serious in mitigating the agency problem of free cash flow (Easterbrook, 1984; Glendening et al., 2016). Similarly, Hail et al. (2014) analyse the dividend payout behavior of a global sample of firms around the mandatory adoption of IFRS and the initial enforcement of new insider trading laws and find that, following the two events, firms are more likely lower dividend payments. They further show that the results are stronger when a firm face higher agency issues or informational frictions. Taken together, these results highlight the importance of the agency and adverse selection costs to be important in shaping corporate payout policies.

Literature also offers an alternative prediction on the effect of corporate governance on dividend payout (La Porta et al., 2000). The view maintains that firms facing higher corporate discipline may be forced by empowered investors to pay higher dividends, ceteris paribus. La Porta et al. (2000) argue that by paying higher dividend payout, a firm exposes itself to more external scrutiny as higher payout requires more frequent need to raise external capital, *ceteris paribus*. However, as noted by John et al. (2016), dividend commitment is a stronger commitment when compared to debt or share-buybacks. Therefore, in an emerging market context where outside investors could doubt on a firm's commitment in the wake of weaker external governance, I argue that by paying higher dividend a firm could credibly signal their commitment (John et al., 2015).

High dividend payout can be a costly corporate strategy as this limits the use of internal funds for financing corporate investments (DeAngelo et al., 2006; Glendening et

al., 2016). Firms with higher growth opportunities would prefer an alternative mechanism to externally signal a reduction in these agency problems. One such mechanism could be to improve firm-level corporate governance by adhering to mandatory governance reforms introduced in the economy. This would help convince the external stakeholders that a firm meets the expected corporate governance standards to lower agency cost through greater transparency and better corporate scrutiny. This improvement in governance through CGR could, therefore, substitute higher dividend payout (John et al., 2015; Glendening et al., 2016). I refer to this argument as the dividend substitution hypothesis and examine it in the context of an emerging market using two CGRs: introduction of (i) adoption of mandatory CGR and (ii) additional stricter sanctions on non-compliance.[24]

Emerging markets are an interesting set-up to empirically test the dividend substitution hypothesis between CGR and dividend payout for two important reasons. First, firms in emerging markets, in comparison to their developed market counterparts, face greater conflicts of interest between controlling insiders and minority outsiders as a result of weaker investor protection regimes, concentrated ownerships and the associated higher private benefits at the disposal of corporate insiders (Bertrand et al., 2002; Bekaert and Harvey, 2003; Claessens and Yurtoglu, 2013). However, as an effective governance mechanism, John et al. (2015) show that by curbing insiders' discretion, cash distributions can assuage insider-outsider agency conflicts when agency problem is severe. This implies

[24] However, there is also a widely-held alternative view on the positive link between better corporate governance, (including new CGR) and DP. The argument is that following CGR, the empowered minority shareholders pressure corporate insiders to pay higher DP to prevent appropriation of firm's resources by insiders (La Porta et al., 2000). The existence of two seemingly opposing economic possibilities further motivates my study in an emerging market set-up.

that the reputational role of dividends in communicating to external investors on the reduction of the agency and adverse selection cost should be particularly relevant in these emerging markets (also see Pinkowitz et al., 2006). Second, emerging markets face weaker market forces of corporate scrutiny, making CGR interventions an important policy tool to improve corporate governance practices (Dharmapala and Khanna, 2013). In this study, I argue that in a setting of emerging markets, any regulatory shift in the corporate governance environment through mandatory CGR could make the reputational role of high DP less relevant.

My focus on the emerging market context of Indian is guided by the fact that conveying strong commitments through higher payout could be more important, due to the present weak institutional environment (Claessens and Yurtoglu, 2013). This argument is further supported by a survey study of CFOs of Indian firms by Anand (2004) which shows that CFOs agree that dividend payout acts as a signalling mechanism of a firm's performance and better governance. The survey was administered in the year 2001 and is comparable with my study period.

Prior to the year 2000, the Indian corporate governance framework was largely informal (Dharmapala and Khanna, 2013). To compensate for this weaker regulatory regime, Indian firms would often have a high DP to establish their reputation with external shareholders, thus signalling the fair treatment of minority investors. In the year 2000, India introduced a CGR requiring greater disclosure and board independence in the stock market listing agreement, popularly known as Clause-49, which was based on internationally established governance rules (Dharmapala and Khanna, 2013). Given that this was the first formal set of corporate governance rules in India, I would expect support

for the dividend substitution hypothesis. This implies that the firms that were obliged to comply, relative to those that were not, should rely less on higher DP as a corporate governance tool in reducing agency costs.

The initial sanction for non-compliance of Clause-49 was delisting from the stock market, which, although having a significant reputational impact on the firm, constitutes a collective penalty without any personal liability for corporate insiders. However, in the year 2004, the regulators amended another Act called the *Securities Contracts Act of 1956* which introduced Section-23E. This Act imposed severe financial and criminal penalties on insiders for violating the mandatory provisions of Clause-49, thus was introduced to improve the quality of enforcement. This setting thus allows to further investigate whether, relative to the collective penalty of the year 2000, the additional imposition of personal liability in the year 2004 provides greater confidence to external shareholders and helps firms to replace DP as a governance tool. This would suggest that the relevance of the dividend substitution hypothesis may be conditional on the credibility of the enforcement regime in convincing external stakeholders of the improvement in corporate governance practices.

Using a sample of Indian listed firms from 1997-2007, the difference-in-differences (DiD) estimations provide two main findings. First, the introduction of Clause-49 in 2000 seems to have had no causal impact on the DP of treated firms (firms that need to comply with Clause-49) relative to control group firms (firms that do not need to comply with Clause-49), rejecting the dividend substitution hypothesis. Second, after the introduction of Section-23E in 2004, there is a statistically significant and economically material reduction in the DP of treated firms compared to control group firms. In quantitative terms,

the treated firms reduce their DP, on average, by 2.70% to 3.40%, depending on the specification of estimated models. The results are consistent with alternative measures of DP, including dividend as a proportion of total assets and dividend as a proportion of total sales. Furthermore, the results are robust to several additional checks, including the use of highly comparable sub-groups using propensity score matching (PSM), employing regression discontinuity and probit model estimation, addressing the possibility of alternative explanations, and dealing with the potential of a false experiment. These findings in an emerging market context are in line with the agency-based predictions of DP (Denis and Osobov, 2008) and support the dividend substitution hypothesis (John et al., 2015; Glendening et al., 2016).[25] However, these results hold only when CGR sanctions are expanded to include the personal liability of insiders, consistent with Becker's (1968) punishment model.

My study adds to the literature that establishes agency and information related friction shaping corporate dividend policy (La Porta et al., 2000; Pinkowitz et al., 2006; Hail et al, 2014). With their cross-sectional study employing sample firms from 48 countries, La Porta et al. (2000) show that better investor protection lowers agency-related friction by enabling the outside investors to disgorge free cashflow in the form of higher dividend implying a positive relationship between country corporate governance and dividend payout. On the contrary, Hail et al. (2014) analyze the dividend payout behavior

[25] In their study on the determinants of DP of developed market firms, Denis and Osobov (2008) find evidence in support of agency-related life-cycle theory of dividends. My study, on the other hand, examines how changes of CGR regimes affect a firm's DP. Given the higher agency conflict of free cash flow between controlling insiders and minority outsiders in emerging economies, my study answers the policy question on the adequacy of CGR sanctions.

of a global sample of firms around the mandatory adoption of IFRS and the initial enforcement of new insider trading laws and find that, following the two events, firms are more likely lower dividend payments. They further show that the results are stronger when a firm face higher agency issues or information frictions. Taken together, these results highlight the importance of the agency and adverse selection costs to be important in shaping corporate payout policies by documenting substitution between country-level corporate governance and firm dividend policy.

In relation to to the emerging markets, studies by Aivazian et al. (2003) and Mitton (2004) show that although firm-level determinants of DP are similar to those of developed markets, country-level legal and institutional differences are important drivers of DP in these emerging markets.

Additionally, exploring 34 emerging economies, Abor and Bokpin (2010) find that firms in relatively well-developed capital markets tend to exhibit low dividend payout policy. This suggests capital market scrutiny could, in part, substitute the governance provided by higher dividend payout. In this regard, I extend these studies by examining the effect of corporate governance reform on dividend payout by adding the dimension of the adequacy of punishment associated with non-compliance in improving the quality of corporate governance. To this end, I show that introducing a higher severity of punishment for non-compliance, in the form of harsher criminal and financial penalties for insiders, CGR reform could convey the outside investors a credible signal of improvement of corporate governance practices of affected firms. In this condition stricter CGR could be effective in substituting DP as a governance tool in an emerging market environment.

The rest of the chapter is organised as follows. Section 3.2 develops my testable hypotheses. Section 3.3 describes the sample dataset, followed by a discussion of the empirical results in section 3.4. Finally, section 3.5 concludes the empirical chapter.

3.2. Related literature and hypotheses development

In this section, I develop two testable hypotheses on the relationship between CGR and dividend payout. The first relates to the effect of the adoption of Clause-49 in 2000 on dividend payout, and the second states the impact of the subsequent imposition of financial and criminal penalties in Section-23E in 2004 on DP.

3.2.1. Introduction of Clause-49 and the dividend substitution hypothesis between CGR and dividend payout

The dividend substitution hypothesis of corporate payout policy suggests that CGR and dividend payout act as substitutes for each other in reducing the agency costs of free cash flow and also through a signal to lower adverse selection cost. With weaker external corporate governance, firms are motivated to pay higher payout in order to establish a reputation of being fair to minority investors (Easterbrook, 1984; La Porta et al., 2000; Glendening et al., 2016). Easterbrook (1984) argues dividends signal the financial stability of the firm and thus increases investor confidence leading to a stable flow of investments. In countries with weak legal protection of minority investors, the reputational effect accounts for a significant part of the stock valuation of listed companies (Gomes, 2000). However, to the extent that dividends send better signals to the market, especially in

emerging markets with weaker information environment, the signalling argument would suggest that higher dividend payout can be associated with higher valuation. For instance, Pinkowitz et al. (2006) find that the relation between dividends and firm value is stronger in countries with weaker investor protection. Thus dividend payout can be argued to be a corporate governance tool for insiders to develop confidence among outside investors. Furthermore, John et al. (2015) argue that dividend commitment is a stronger commitment. Therefore, in weaker information and institutional environment of emerging market, it can be argued that a firm relies on this type of stronger commitments to boost the confidence of outside investors.

However, as a corporate strategy higher payout is a costly corporate governance tool as it reduces the internal funding available for financing value-relevant corporate investments (DeAngelo et al., 2006; Caton et al., 2016; Glendening et al., 2016). A firm could, therefore, prefer an alternative mechanism to high DP as a governance tool (Caton et al., 2016; Glendening et al., 2016).[26]

The corporate governance environment in India was largely informal prior to 2000. The introduction of Clause-49 was first formal mandatory CGR introduced in the year 2000 which was well covered by popular economic press and well received by domestic and foreign investors investing in the Indian capital market (Black and Khanna, 2008). Therefore, as the first formal corporate governance reform, Clause-49 introduction could enhance external shareholders' confidence in accepting the improved corporate

[26] In support of this substitution argument, Glendening et al. (2016) examine the intertemporal changes in M&A laws from 34 countries and show that improvement in the market for corporate control substitutes DP as a corporate disciplining tool.

governance practices of affected firms. Following the dividend substitution hypothesis, I suggest that this should induce significant reductions in the dividend payout of affected firms (treated group) relative to the firms not affected by the change (control group). Thus, I propose the following testable hypothesis:

$H_{3.1}$: Ceteris paribus, following the introduction of Clause-49 in 2000, affected firms (treated group) reduce their dividend payout more than the unaffected firms (control group).

Literature also offers an alternative relationship between corporate discipline and dividend payout (La Porta et al., 2000; John et al., 2015). The view maintains that firms facing higher corporate discipline may be forced by empowered investors to pay higher dividends, ceteris paribus. For instance, La Porta et al. (2000) find lower dividends in countries with weaker investor protection regimes and maintain that corporate discipline complements the dividend payments. In the existence of two economic possibilities, I examine the effect of corporate discipline on dividend policy.

3.2.2. Expansion of harsher sanctions and the effect of CGR on dividend payout

Studies suggest that even though emerging economies have increasingly adopted the established corporate governance frameworks of developed markets, the credibility of compliance environment is one of the ultimate differentiating factors of these economies (La Porta et al., 2006; Martynova and Renneboog, 2011). Literature also notes that the effectiveness of compliance, particularly in evolving regulatory regimes of emerging markets, depends on the severity of punishment associated with non-compliance (Dutcher,

2005: Dharmapala and Khanna, 2013). For instance, Dharmapala and Khanna (2013) posit that the introduction of more severe private financial and criminal penalties in 2004 for the violation of corporate governance rules increased sanctions. They further note that expansion of personal liability in 2004 was positively received by domestic and foreign investors as a credible intent to the Indian regulators on improving the corporate governance environment in India. I borrow the argument of adequacy of punishment in inducing sufficient complying behavior and maintain that the expansion of personal liability in CGR is important in establishing the credibility of the reform to the outside stakeholders in line with Dharmapala and Khanna (2013).

On account of the adequacy of sanctions in a social setup, Becker (1968) theorises that a member complying behaviour depends on his view on the probability that non-compliance is detected and prosecuted, and the size and severity of the expected punishment when violations are detected. Similarly, Dutcher (2005) contends that only sanctions that introduce substantial criminal and financial penalties can adequately deter corporate non-compliance. Further, Dharmapala and Khanna (2013) show that stricter financial and criminal penalties work more effectively in bringing about the positive effects of CGR enforcement in the emerging market context of India.[27]

In line with the above arguments, it could be argued that the expansion of personal punishment establishes confidence among external investors on the credibility of corporate governance provisions. Therefore, it may not be the adoption of CGR with penalties of potential stock-delisting alone, but the accompanying expansion of personal

[27] Karpoff et al. (2005) support the view of criminal penalties over other collective penalties in environmental violations.

liability of corporate insiders, through the imposition of stricter penalties in Section-23E that could crystallise the expected improvement in corporate governance practices. With more severe penalties, I expect the Indian firms affected by the clause to reduce their DP as higher dividends are now less required to convey the alignment of interest, which is now conveyed through the compliance with CGR. In line with these economic conjectures I test my second hypothesis ($H_{3.2}$) to capture the effect of personal and financial enforcement sanctions on the dividend substitution hypothesis:

$H_{3.2}$: Ceteris paribus, following the enforcement of Section-23E in 2004, the affected firms (treated group) reduce their dividend payout to a greater extent than their control counterparts.

Studies also argue that collective reputational penalties (e.g. delisting) are economically large enough to ensure compliance when compared to private penalties, and therefore private personal penalties may be costly, ineffective and unnecessary (Karpoff and Lott, 1993; Siegel, 2005).[28] If the dividend substitution hypothesis holds, based on this prior evidence, the adoption of CGR in 2000, which introduced the collective reputational penalties of stock-delisting, should provide adequate punishment to ensure compliance and provide external shareholders with sufficient assurance, thus supporting $H_{3.1}$. On the other hand, if the dividend substitution hypothesis holds for the 2000 CGR and the additional expansion of personal liability in 2004 is more effective than the

[28] Gneezy and Rustichini (2000) find that monetary fines can increase non-compliance, contrary to the intended higher compliance.

introduction of CGR in Clause-49, then I would expect the substitution effect of CGR on DP to be stronger in the case of testing $H_{3.2}$ relative to $H_{3.1}$.

Why do I expect delisting provision of 2000 as inadequate to increase external investor confidence for dividend substitution to materialise in favour of hypothesis $H_{3.1}$? Delisting could be considered to be a significant sanction to deter non-compliance of regulatory provisions, as it affects, among others, a firm's access to and cost of external capital. To establish my argument of inadequacy of the delisting provision as credible threat, I track the delisting practice in India by hand-collecting data on delisted firm from 2000 to 2007. My data shows that 1,245 firms were delisted between 2000 and 2007, of which only 20 firms were delisted on the ground of non-compliance to regulations. Only 12 firms were delisted for non-compliance of SEBI regulations not related to Clause-49 with no firm delisted on the ground of Clause-49 violations. Moreover, these 12 delistings occurred in the later years of 2003 and 2004. In an environment with flimsy practice of delisting as a consequence of non-compliance, I establish a premise that delisting threat can be considered a weak deterrence threat, failing to convince outside investors on any significant changes in corporate governance, thus unable to use *dividend substitution* following 2000 reform.

3.3. Data and Variables

3.3.1. Sample Data

The sample used in this study is obtained from Prowess, a database maintained by the Centre for Monitoring the Indian Economy. Prowess reports a comprehensive set of firm-

level financial and market-based variables for both publicly-listed and unlisted Indian companies. My sample includes 3,092 firms with 20,994 firm-year observations of listed firms over the period of 1997-2007. My sample period is divided into two sub-periods. The first period ranges from 1997-2002 and the second covers 2002-2007. The first sub-period is intended to measure the introduction effect of Clause-49 in 2000 and the second sub-period captures the impact of the harsher sanctions of Section-23E of 2004. I exclude the financial and utility firms as they follow different financial reporting standards, and both their DP and access to external capital markets are regulated (Renneboog and Trojanowski, 2011). I also remove firms listed after 2000 as they were affected by Clause-49 immediately after listing and therefore I do not have matching pre-CGR enforcement data for these firms. I use the yearly panel with the fiscal year ending March 31st.

3.3.2. Variables

Table 3.1 summarizes the variables and how they are constructed. My dependent variable of interest is *Div/E* which is the ratio of the sum of common and interim dividends to earnings after tax. Drawing on the existing literature, I assign *Div/E* equal to one if a firm pays dividends and when it has negative profits (Balachandran et al., 2012; 2017). Following La Porta et al. (2000), I further employ two alternative measures of dividend payout: dividend to total assets *(Div/A*) and dividend to total sales (*Div/S*) for robustness tests.

Table 3.1 about here

Following previous empirical studies, I incorporate several control variables. Studies show that the size of a firm can play a key role in a firm's dividend payout (Denis and Osobov, 2008). Fama and French (2001) report that firm size has a positive impact on dividends as larger firms tend to have higher dividend payout. I measure the firm size (denoted as *Size*) by taking the natural log of the book value of assets. Similarly, dividend payout should be affected by a firm's cash flow. The agency-related argument of dividend payout contends that higher cash flow should be associated with higher dividend payout to mitigate agency problem (John et al., 2015; Glendening et al., 2016). I measure *Cashflow* by using Earnings before Interest, Tax, Depreciation and Amortization (EBITDA) scaled by Total Assets.

I also control for the firm's capital structure (*Leverage*) as a firm's ability to pay could be influenced by creditors' concerns (Aivazian et al., 2005). Firms with higher leverage pay lower dividends as creditors can pressurise managers to reduce DP and use their cash flows to service their debt instead (Brockman and Unlu, 2009). Similarly, as the use of debt increases creditors' scrutiny and pre-commitment of free cash flow, dividend and debt may substitute each other for weaker governance (John et al., 2015). I measure *Leverage* as the ratio of net liabilities to total assets.

A firm's dividend payout could be influenced by investment and growth requirements as growing firms and firms undertaking capital investments are more in need of funds (Chay and Suh, 2009; Glendening et al., 2016). I proxy investment and growth requirement by Capital Expenditure (denoted by *Capex*) defined as the addition to Total Fixed Assets (TFA_t - TFA_{t-1}) scaled by Total Assets. Similarly, I measure *Sales Growth* as an increment in *Sales* scaled by the previous year's Sales *((Sales* $_t$ *– Sales* $_{t-1}$*)* / *Sales* $_{t-}$

$_{1)}$. I also control for a firm's *Tobin's Q* as it provides a market-based measure of valuation, including growth and investment opportunities. All else being equal, growing firms are expected to have higher market valuation against their book-size. It is argued that firms with higher growth prospects should have lower dividend payout, as managers with higher growth opportunities are expected to invest the proceeds of the firm into positive net present value projects, indicating a negative relationship between *Tobin's Q* and dividend payout (Chay and Suh, 2009). However, a positive association is equally likely, as dividends send better signals to the market, especially in emerging markets with a weaker information environment. As a result, the signalling hypothesis would suggest that higher dividend payout can be associated with a higher valuation. For instance, Pinkowitz et al. (2006) find that the relationship between dividend payout and firm value is stronger in countries with weaker investor protection. *Tobin's Q* is computed as the ratio of the sum of total liabilities, book value of preferred stock and market value of equity to the book value of total assets. I use the book value, rather than the market value of the preferred stock because preference shares are traded very thinly in the Indian market during the study period.

I further incorporate stock market Return-Volatility (shown as *Return-Volatility*) by computing the yearly standard deviation as daily stock returns to control for a firm's risk-taking. As higher risk-taking firms are likely to have lower dividend payout because of the perceived uncertainty of their profits, the expected sign of this variable is negative (John and Knyazeva, 2006). I also control for a possible role of concentred ownership and institutional investors (both foreign and domestic). All else being equal, higher insider's ownership should pay higher dividend payout (John et al., 2015; Glendening et al., 2016).

Similarly, the literature argues that institutional investors actively monitor corporations worldwide. When their holdings are large, they can pressurise management to pay a higher dividend payout, thus limiting managers' scope to divert cash flows to themselves (Khanna and Palepu, 2000; Grinstein and Michaely, 2005; Ferreira and Matos, 2008). I include the percentage of company's stock held by foreign institutional investors (*FII*); however, it is argued that their domestic counterparts often side with the managers and do not compel them to pay higher dividends (Ferreira and Matos, 2008). Therefore, I also incorporate the percentage of the company's stock held by domestic institutional investors (*DII*).[29]

I also take account of the potential role of share buybacks in explaining dividend payout. Share repurchases are increasingly viewed as viable substitutes for cash dividends due to the tax advantage of capital gains in many jurisdictions. By opting for share repurchases, investors can delay the realisation of any capital gains and subsequently the payment of taxes on these gains (Grullon and Michaely, 2002). I control for share buybacks by creating a categorical variable (designated as *Buy-back*) which takes the value of one if the firm has any repurchase activity and zero otherwise. Finally, I control for firm fixed effects, year fixed effects and firm-specific trend in dividend payout.[30,31] To

[29] Since *Insiders' Ownership*, *FII* and *DII* variables are only available from 2001, I am only able to control the effect of Insiders' Ownership and institutional investors' effect in the second sub-sample of 2002-2007.
[30] Controlling for firm-specific trends, besides firm and year fixed effects, is important because of the difference in my treated groups (large and medium sized firms) and unaffected smaller firms in which there remains a possibility of a difference in time trends in DP driving my results, as opposed to my hypothesized effect of CGR.
[31] *Firm-specific trend* measures the firm-specific linear time trend by multiplying the growth rate of *Div/E* (difference between $Div/E_{i,t}$ and $Div/E_{i,t-1}$ scaled by $Div/E_{i,t-1}$) by the linear time-trend ($t = 1, 2 \ldots N$) for the study period.

minimise the influence of obvious outliers, I winsorise all firm fundamentals at the upper and lower level of the 1% percentile.

3.4. Main Results

I begin by exploring the summary figures, followed by examining the yearly average DP over the sample period. I then discuss the univariate and multivariate DiD regression estimations.

3.4.1. Summary Statistics

Table 3.2 reports the summary statistics of the dependent and control variables. Panel A presents summary statistics for the entire study period from 1997 to 2007 and panels B, C and D describe the variables for the pre-introduction period (1997-2000), post-Clause-49 introduction period (2001-2004) and post-23E imposition period (2005-2007) respectively. Panels A, B and C show that the median firm pays zero dividends after 2000. There is an overall decreasing pattern in *Div/E* over the period (mean 0.1981 in sub-period 1997-2000, 0.1779 in sub-period 2001-2004 and 0.1469 in sub-period 2005-2007). One possible explanation for the overall fall in dividends is the introduction of the Dividend Distribution Tax (DDT) in 1997 in India, which requires the issuing companies, instead of investors, to pay taxes on cash dividends paid out during a given year, and initially introduced a cost to dividend-paying firms (PwC, 2017). However, the fall is significantly sharper in the 2005-2007 sub-period of the imposition of Section-23E compared to the earlier two periods. In terms of firm-level controls, *Size, Cashflow, Capex, Sales Growth,*

Tobin's Q all increase over the sub-periods. These results present some initial evidence that Indian firms show improvement in their real investments, growth and valuation following Clause-49 intervention, which mandated more independence, transparency and better corporate governance standards in Indian listed companies and is in agreement with previous studies (e.g. Dharmapala and Khanna, 2013). Similarly, compared to previous sub-periods, *Return-Volatility* increases in sub-period 2005-2007 (from 0.0596 to 0.0638), which indicates that following the expansion of personal liability in CGR, corporate risk-taking has improved. The institutional ownership (FII and DII) in my sample firms also shows an increase over time, suggesting that the improved information environment mandated by CGR has attracted more outside, institutional and foreign investors.[32] Buyback activity covers only 0.41% of the sample observation. In summary, I observe a general decline in dividend payout after CGR was introduced in 2000, but the decline is much sharper after 2004.

Table 3.2 about here

3.4.2 Treated and Control Group-wise Trend of Yearly Average Div/E

In addition to the summary statistics, I plot yearly average *Div/E* of both the treated and control groups to examine the general DP trends between treated and control firms. Figure 2 plots the annual average DPs of treated and control firms for a seven-year period around the adoption of Clause-49 in the year 2000 (i.e. between 1997 and 2003); Figure 3 depicts annual average *Div/E* around the imposition of Section-23E in the year 2004 (i.e. between

[32] FII has the least number of observations, which is primarily because there are no data available on this variable prior to 2000.

2002 and 2007). Although I observe a general decline in DP over the years in Figure 2, I see that the sharp fall is from the year 1997 to 1998 and attributed to the 1997 introduction of the Dividend Distribution Tax in India, which initially introduced a cost to dividend-paying firms. Similarly, there is no significant difference in the trend of *Div/E* between treated and control firms following the introduction of the 2000 CGR. This suggests that factors causing the decline affected both groups identically. However, Figure 3 shows that, in comparison to the control firms that exhibit a trend similar to the pre-2004 period, the DP of treated firms displays a sharp decline following the 2004 sanctions (Section-23E). This suggests that one of the key forces driving this systematic differential trend in DP between the treated and control group firms is the improvement in the corporate governance environment resulting from the introduction of the harsher personal liabilities for non-compliance with Clause-49 in 2004.

Figure 3.1 about here

Figure 3 .2 about here

3.4.3 Univariate DiD Analysis

Table 3.3 presents the univariate examination for the two periods: introduction of Clause-49 and imposition of Section-23E. Panel A reports three years before and three years after the average DP of both the treated and control group firms following the introduction of the Clause-49 reform.[33] The change in average DP of treated firms (0.15%) and control

[33] The three-year pre- and post-Clause-49 adoption periods are different for different groups. Pre-Clause-49 adoption period includes years 1998 to 2000 for Group 1, years 1999 to 2001 for Group 2 and years 2000 to 2003 for Group 3 firms respectively. Similarly, post-Clause-49 adoption period includes years 2001 to 2003 for Group 1, years 2002 to 2004 for Group 2 and year 2003 to 2004 for Group 3 firms. As Section-23E is imposed in October 2004, the post-Clause-49 period is limited to 2004, because of which I report

firms (-0.49%) is statistically and economically insignificant. As a result, the univariate DiD (0.64%) is statistically insignificant and economically immaterial. In summary, the univariate DiD estimates in Panel A indicate that the introduction of Clause-49 may not have had any material effect on the treated firms' DP, as measured by *Div/E,* relative to control firms, thus lending no support to Hypothesis $H_{3.1}$. The possible explanation is that the CGR of 2000 fails to have a dividend substitution effect because the reputational penalty of delisting alone does not seem to be sufficient to force firms to comply with CGR or offer confidence to external shareholders that the firms are complying with the provisions of Clause-49 and have improved their corporate governance.

In Panel B of Table 3.3, which covers the Section-23E imposition, I find a very slight and statistically insignificant decrease in the DP of the control firms (-0.71%). However, in contrast, the treated firms' *Div/E* falls by 2.72% and is statistically significant at the 1% significance level. The univariate DiD in *Div/E* between the two groups is negative (-2.01%), which not only holds economic importance but is also statistically significant. These results lend support to my second hypothesis that the threat of Section-23E's harsher personal penalties for violating Clause-49 has led to the decline in treated firms' DP since outside external shareholders now seem to be exhibiting greater trust in the possibility of compliance with the CGR and improvement in governance quality. The results are consistent when I use two other measures of dividend payout (i.e. *Div/A* and *Div/S*).

Table 3.3 about here

only two years post-Clause-49 adoption for Group 3 firms. The post-Clause-49 period for Group 4 (control) firms is taken for years 2003 and 2004.

3.4.4 Multivariate DiD Regressions

In testing my hypotheses in a multi-variable framework, I use two empirical specifications. The first, as shown in Equation 3.1, covers the CGR introduction period of 2000, i.e. the sample ranges from 1997-2004:

$$DP_{it} = \alpha + \beta.Treat_i.After\_CL49_t + \boldsymbol{X_{i,t-1}}.\boldsymbol{\delta} + \gamma_i + \tau_t + g_i t + e_{it} \qquad (3.1)$$

where DP is the payout measured by *Div/E* for firm *i* in year *t*, $Treat_i$ is a categorical variable that takes the value of one for firms affected by Clause-49 and $After\_CL49_t$ is a dummy that takes the value of one for years after Clause-49 adoption to 2004 and zero otherwise. i.e.

$After\_CL49_t$ = 1 if year>=Clause-49 adoption year to 2004

= 1 if year>=2001 for Group 1 firms

= 1 if year >=2002 for Group 2 firms

= 1 if year>=2003 for Group 3 firms

= 0 otherwise.

where groups ∈ (Group 1, Group 2, Group, Group 4) are defined in section 2. $X_{i,t-1}$ is a vector of one-period lagged control variables as defined in Table 3.1 and discussed in section 4.2. The firm- and year-fixed effects are denoted by γ_i and τ_t respectively. $g_i t$ represents the firm-specific time trend in DP, where g_i is the growth rate of DP given by

the difference between *Div/E* $_{i,t}$ and *Div/E*$_{i,t-1}$ scaled by *Div/E* $_{i,t-1}$, t = (1, 2…N) is the linear trend variable for the period from 1997 to 2007, and e_{it} is a random error term.[34]

My second model covers the enforcement period of 2004, i.e. from 2002-2007, as presented in Equation 3.2:

$$DP_{it} = \alpha + \beta.Treat_i\,.After\_S23E_t + X_{i,t-1}.\delta + \gamma_i + \tau_t + g_i t + e_{it} \qquad (3.2)$$

Here my main variable of interest is the interaction term, $Treat_i\,.After\_S23E_t$, where $After\_S23E_t$ is a dummy that takes the value of one for years after 2004 and zero otherwise. In addition to the above-stated controls, I now include FII and DII in the set of controls. The standard errors of all estimations throughout this study are clustered at firm levels. The results from the two empirical models (Equations 1 and 2) are reported in Table 3.4.

Table 3.4 about here

Models [1] to [4] report the regression outputs from equation (3.1) whereas models [5] to [8] are from equation (3.2).[35] To gauge the sensitivity of firm-specific trend on DP, I report regressions without the firm-specific trends in models [1], [2], [5] and [6] and with the firm-specific trends in models [3], [4], [7] and [8]. As I see in models [1] to [4], the coefficients of Clause-49 adoption are not statistically significant, indicating that the introduction of the CGR with reputational penalties does not have any effect on DP. This

[34] Since the data for FII and DII are only available after 2001, I are unable to control for including them in equation (3.1).

[35] I report estimations with only DiD as the key variable of interest (with and without firm-specific trend) for the Clause-49 and Section-23E regressions followed by the results of estimations, which include all the control variables (with and without firm-specific trend). This suggests that for each DiD variable I report results of four estimations.

result is inconsistent with hypothesis $H_{3.1}$ and the dividend substitution conjecture that CGR replaces DP as a governance mechanism. These outputs suggest that in the absence of personal liability in CGR sanctions, external investors are not willing to acknowledge the influence of CGR as a tool to improve governance quality.

However, when I consider the impact of Section-23E, I find that the coefficients of DiD-S23E for the year 2004 are significantly negative (at least at the 5% statistical significance level) as reported in Models [5] to [8], offering support for hypothesis $H_{3.2}$. In terms of economic magnitude, the results show a decrease of 2.7% to 3.4% of *Div/E* in the treated firms relative to the control firms. These results highlight the relevance of imposing additional personal penalties on corporate insiders for the violation of CGR provisions in emerging markets. Even though regulatory provisions in an emerging market imported from a developed market are intended to substitute internal corporate governance tools, outside investors and external shareholders are persuaded of the expected improvement in governance only when CGR is accompanied by the imposition of stringent personal penalties for non-compliance, consistent with Becker's (1968) punishment argument.

In terms of control variables, *Size* and *Cashflow* are consistent in explaining the positive effect on DP in my sample firms. Similarly, *Leverage, Sales Growth* and *Return-Volatility* also consistently explain the negative effect on a firm's DP. The moderately positive coefficient of *Tobin's Q* (significant at 10%) in Models [2] and [4] suggests that firms with higher valuation pay more dividends in the weaker corporate governance regime, arguably to establish the reputation of being fair to investors (consistent with Pinkowitz et al., 2006). However, this relation is not significant in a better corporate

governance regime following 2005 (Models [6] and [8]). Similarly, the effect of *DII* is negative, suggesting that institutional investors could provide a monitoring role, thus substituting the need to pursue a higher DP. Other control variables are statistically insignificant; however, the signs of the coefficients are generally consistent with their theoretical predictions.

I also use two other proxies of DP in my empirical tests: Dividend to Total Assets *(Div/A)* and Dividend to Total Sales *(Div/S)*. I present the results in Table 3.5. My results remain qualitatively similar and consistent with the use of these alternative proxies. In terms of economic magnitude, the 2004 CGR reduces the dividend by 0.20 percentage points of its assets and 0.40 percentage points of its sales and is consistent with the findings in Table 3.4. Therefore, with additional alternative measures of DP, I find support for hypothesis $H_{3.2}$ but not for hypothesis $H_{3.1.}$ Again, this highlights the merit of expansion of personal liability in CGR sanctions for dividend substitution.

Table 3.5 about here

3.4.5 Addressing Comparability of Treated and Control Groups

One concern of my multivariate DiD regressions in Table 3.4 is the comparability issue as the treated firms, by construction, are larger in size in comparison to control firms. I address this issue by creating comparable sub-samples of treated and control group firms. To do so, I use the provision of Clause-49 which exogenously divides Indian firms into four different groups, depending on when they are required to comply, as described in

section 2 (and shown in Figure 1).[36] I present firms' characteristics of control variables for the pre-Section-23E sanctions (2002-2004) in Table 3.6 to identify comparable firms. One concern facing the comparability of treated and control groups based on Clause-49 applicability is the differing firm-level characteristics of the two groups (i.e. comparing the combined treated groups of 1, 2 and 3 with the control group 4). As noted before, by the definition of Clause-49 applicability, treated firms are larger than the control firms.

I tackle this concern of firm heterogeneity by generating four different groups, depending on when the firms are affected by Clause-49 (based on the paid-up equity capital threshold) and use the two most comparable groups. As shown in Table 3.6, the three sub-groups 1 to 3 are firms affected by Clause-49 reform, classified based on their size. Groups 4 comprises firms unaffected by Clause-49.

Insert Table 3.6 about here

The applicability of Clause-49 regulation has separated firms into treated and control groups, based on the paid-up equity capital threshold of INR 30 Million. Although groups 3 and 4 are the most comparable firms, based on the features of control variables, I further intend to generate more conservative groups with the group 3 and 4 firms to produce, as high as possible, comparable groups. I do so by using a PSM approach for the firms around the threshold of paid-up equity capital to generate the most comparable treated and control

[36] Group 1 firms are large-cap companies listed as the flag "A" category in the Bombay Stock Exchange Ltd. (BSE). Group 2 firms are mid-cap companies that have paid-up capital greater than INR 100 million or net worth greater than or equal to INR 250 million. Group 3 firms are low-cap firms that have paid-up capital between INR 100 million and INR 30 million. Group 4 are control firms with paid-up capital less than INR 30 million. As defined in section 4, Groups 1-3 are subject to Clause-49 (treated group), whereas Group 4 is not (control group).

firms and run a PSM-DiD regression to these subset firms.[37] This generates 149 pairs of matched firms from groups 3 and 4. I present the comparison of firm characteristics of matched treated and control firms in Panel A of Table 3.7 where I find that, compared to the entire firms in groups 3 and 4, matched pairs of treated and control firms are closely comparable with each other. I present the results of the PS-Matched DiD regression in panel B where models [1] and [2] report the results of PSM-DiD regression for the introduction of Clause-49, whereas models [3] and [4] show those with the imposition of stricter personal sanctions. Further, in comparison to models [1] and [3], which report DiD regressions for the entire sample using group 3 firms as treated and group 4 as control firms, models [2] and [4] report the results for the PSM matched sub-sample within the group 3 treated and group 4 control firms. Again, consistent with previous outcomes, the introduction of Clause-49 in 2000 does not seem to have any effect. However, for the Section-23E, the reduction in DP is even stronger in economic magnitude for these matched firms (a decrease of 5.8% vis-à-vis 4.8%).

I further examine the efficiency of the matching technique by examining bias reduction and sensitivity analysis based on unobservable bias. I present the results in panel C and D. The matching technique is robust to these additional tests.

In summary, the results of the PSM-DiD of firms around the threshold of paid-up equity capital show that the DP of the treated firms does not change following the initial

[37] When applying PSM, I first estimate a probit model based on sample firms in Groups 3 and 4 for a period of 3 years prior to the application of Clause-49 for these groups, i.e. from 2000 to 2002. The dependent variable is equal to one if the firm belongs to Group 3 and zero if it is a Group 4 firm. The probit model includes Size, Leverage, Cashflow, Profitability, Tobin's Q, Return-Volatility, and a Buy-back dummy. I then use estimated propensity scores to perform matching between treated and control firms using the closest propensity score following Smith and Todd (2005).

CGR introduction in 2000. However, there is a significant drop following Section-23E imposition. This supports $H_{3.2}$ but not $H_{3.1}$. These results further reinforce the significance of stricter personal sanctions for the DP substitution effect to occur.

Insert Table 3.7 about here

I further reduce the possibility that within the treated group there could be firms that already have had high levels of corporate governance practices in place before the Clause-49 introduction, by segregating firms within the treated group that were potentially already complying with corporate governance provisions very similar to those of Clause-49. I suggest that Indian firms that are cross-listed in developed capital markets pre-2001 could have higher levels of corporate governance, as required by exchanges overseas. The bonding argument suggests that internationally cross-listed firms, particularly of emerging markets, exhibit superior corporate governance compared to their domestic counterparts since the cross-listed firms need to comply with the higher CGR requirement of the developed market listing agreement (Coffee, 2002; Karolyi, 2012). Therefore, I maintain that the effect of domestic CGR intervention should have less effect on the corporate governance practices of cross-listed Indian firms relative to domestically listed only firms. I identify 91 cross-listed non-financial and non-utility firms (as of, or before 2001) within the treated firms and use them as an alternative control group. There is an obvious concern about the comparability of cross-listed firms with the whole sample of treated firms in that these firms, on average, are larger and more visible. To address this, I identify group 1 firms in Table 3.6 as comparable treated firms as these firms are large capital, highly visible companies (listed as a flag A category in BSE listings). I repeat the PSM method and obtain 72 pairs of matched treated firms and cross-listed firms as an alternative control

group. I report the results in Table 3.8, wherein Panel A I can see that the matched firms are closely comparable with each other. The results from Panel B of Table 3.8 confirm that compared to cross-listed firms the matched domestic firms do lower their DP. However, this is not following the introduction of CGR, but only after the additional expansion of personal liabilities.

Insert Table 3.8 about here

3.4.6 Applying Discontinuity Design around the Threshold of Paid-up Equity Capital

As my CGR is based on the paid-up equity capital threshold providing sharp discontinuity between treated and control firms, I follow Lemieux and Milligan (2008) and apply the Regression Discontinuity (RD) analysis on the cross-section of firms taken as average over the period of 2001 to 2004 for the post-Clause-49 and 2005 to 2007 for the post-Section-23E imposition respectively, as shown in Equation (3.3).

$$DP_{it} = \alpha + \beta.1_{(Discontinuity=1)} + \delta(paid - up_i) + \boldsymbol{X}_{i,t-1}.\boldsymbol{\delta} + \vartheta_j + e_{it}, \quad (3.3)$$

where $1_{(Discontinuity=1)}$ is a categorical variable taking the value of one for firms with paid-up equity capital equal to or greater than INR 30 million and zero otherwise. DP_{it} is *Dividend Payout Ratio*. $\boldsymbol{X_{i,t-1}}$ is a vector of key control variables, as defined earlier and ϑ_j is industry fixed effects. My key coefficient of interest, β, is the discontinuity estimator of the causal effect of the CGR on the treated firms. The main identification assumption of the RD approach is that $\delta(paid - up_i)$ is a smooth function of paid-up equity capital;

i.e., $\delta(paid - up_i)$ controls for any continuous impact of paid-up equity capital on a firm's DP in the post-CGR period.[38]

I report the results from the RD analysis in Table 3.9. Models [1] and [2] report RD estimates of DP due to the adoption of Clause-49 and models [3] and [4] presents RD estimates of DP attributed to the imposition of Section-23E. Models [1] and [3] report coefficients for entire sample firms, whereas models [2] to [4] report coefficients only for firms in groups 3 and 4, as described above. Table 3.9 shows that the coefficients on DP measures are negative and significant (at least at the 5% significance level) post imposition of Section-23E (Models [3] and [4]); however they are insignificant around the adoption of Clause-49 (Models [1] and [2]), implying a discontinuous decrease in *Div/E* of the treated firms following the imposition of stricter sanctions. Similarly, compared to the entire sample (Model [3], the coefficient of the threshold dummy for *Div/E* is higher in magnitude in subsample firms (Models [4]), which implies a stronger decrease in DP in treated firms that are closer to the threshold. This result provides support for hypothesis $H_{3.2}$ that expansion of personal liability in CGR helps substitute the need for high DP as a governance tool.

…Insert Table 3.9 about here…

[38] In the results reported in Table 3.9, I assume $\delta(paid - up_i)$ to be linear in paid-up equity capital.

3.4.7 CGR and Likelihood to Pay Dividends

I further test whether there has been a shift in likelihood to pay dividends among the treated firms in the post-2004 period. I do so by using estimating probit models, as shown in specifications (3.4) and (3.5).

$$Dividend_{it} = \alpha + +\beta.Treat_i\,.After - Cl49_t + Treat_i + After - Cl49_t + \boldsymbol{X}_{i,t-1}.\delta + \lambda_j + e_{it} \quad (3.4)$$

$$Dividend_{it} = \alpha + \beta.Treat_i\,.After - S23E_t + Treat_i + After - S23E_t + \boldsymbol{X}_{i,t-1}.\delta + \lambda_j + e_{it} \quad (3.5)$$

where $Dividend_{it}$ takes a value of one if a firm (i) pays a dividend in year t and zero otherwise. $Treat_i.After - Cl49_t$ and $After - S23E_t$ are defined as previously. The matrix of control variables ($\boldsymbol{X}_{i,t-1}$) includes *Size, Leverage, Cashflow, Profitability, Tobin's Q, Return-Volatility* and *Buy-back* for Equation 4 regressions. Additional control variables FII and DII are included in equation 5 regressions. I further control for industry fixed effect (λ_j) as DP can vary across industries. The results, as presented in Table 3.10, show that the DiD coefficients of propensity in Models [1] and [2] are not significant following the introduction of Clause-49. It is worth noting that the overall *Likelihood to Pay* dividends in the After-Clause-49 period is lower and significant, which potentially captures the effect of the introduction of Dividend Distribution Tax in the year 1997. However, the difference between the *Likelihood to Pay* dividends of treated and control firms remains immaterial and insignificant, indicating a parallel shift in both groups. As reported in Models [3] and [4], there has been a significant reduction in *Likelihood to Pay* dividends among treated firms following Section-23E imposition in 2004, as reflected by

the significant negative DiD coefficient. This further reaffirms $H_{2,}$ that CGR substitutes DP when the regulation expands personal liability in sanctions, highlighting the significance of adequacy of sanctions in improving CGR effectiveness.

Insert Table 3.10 about here

3.5. Further Robustness Checks

In this section, I undertake a number of robustness checks to ensure that the results for the Section-23E estimation are robust.

3.5.1. False Experiments Test

I suggest that the decline in the DP of the treated firms, relative to control firms, can be attributed, at least in part, to Section-23E. However, this claim assumes that there are no important other confounding or cyclical events around 2004 that might have had an impact on DP. I, therefore, set up two false experiments, where I assume that Section-23E was enforced in October 2003 and 2005 respectively, instead of 2004. If there are any confounding/cyclical events before or after 2004 that have a strong effect on DP, I would expect these false experiments to show a significant effect, such as those reported for the year 2004.

The estimated effects of DiD estimations, reported in models [1] and [2] of Table 3.11, show that both events are statistically insignificant. To limit any spillover effects from the true experiment of 2004, I run alternative checks by using only one year before and after the alternative enforcements of 2003 and 2005 – the DiD coefficients remain indistinguishable from zero. These results reinforce my argument that it is Section-23E that triggered the substitution effect.

Table 3.11 about here

3.5.2. Shorter Sub-period for Section-23E

My initial results from Table 3.4 use a three-year period around the enforcement of Section-23E, which might capture additional effects or events that occurred close to the enforcement year. I further employ regression using a shorter period of two years before and after the enforcement of 2004 (i.e. 2003-2006) to see if the results are sharper for the narrower period. The DiD coefficient, as reported in the model [3] of Table 3.11, becomes significantly negative, even stronger in economic magnitude (a decline of 10%) in comparison to the three-year period in Table 3.4.

3.5.3 Self-selection Issue

The self-selection problem in which firms can endogenously select themselves to be affected or remain unaffected can undermine my empirical estimation. However, Clause-49 is a backward applicable regulation. For instance, if a firm has met the paid-up capital criteria at any point in the past, it is required to adhere to Clause-49 provisions, even if it does not fall within the compliance bracket during the enforcement year. This helps reduce the possibility of the self-selection of firms and deterring firms from lowering their paid-up equity capital in order to avoid Clause-49 regulation. However, there remains a possibility that the firms increase their paid-up equity capital being affected by Clause-49. Previous studies note that the paid-up equity capital of the firms used in my empirical design is stable for the study period (Dharmapala and Khanna 2013).

3.5.3 Other Potential Concerns

One possible issue is that the DP includes both interim and final dividends, which have different signalling characteristics and most studies exclude the interim dividends when analysing dividend policy (La Porta et al., 2000; Chen et al., 2014). Even though interim dividends are less frequently reported, they can signal to investors the potential DP of the stock at the terminal date (Chen et al., 2014). When I include the interim dividends, I am therefore effectively adding an additional amount of public information to my model. Nevertheless, I find that the effect of the stricter penalties remains significant, after excluding the interim dividends.

Finally, there could be concerns with the enforceability of the CGR event of 2004 in my setting. As with many other emerging economies, the sanctions imposed in 2004 could still struggle to translate from provision to practice with the existence of a weaker enforcement environment. This could undermine the credibility of my inference. However, the legal set-up for Clause-49 was such that enforcement under Section-23E would occur in the first instance by the SEBI, with a potential appeal to the Securities Appellate Tribunal (a body formed to deal with securities laws issues and which addresses SEBI appeals) and followed by a final appeal to the Supreme Court. Reports suggest that the number (turnaround time) of settled cases on enforcement decisions has been increasing (decreasing) in the post enforcement periods on issues enforced by SEBI and the Securities Appellate Tribunal.[39] Similarly, Balasubramanian et al. (2010) find that the

[39] Evidence can be found in reports such as Securities and Exchange of Board of India, Handbook of Statistics on the Indian Securities Market 2008, pp. 66-71 and SEBI, Annual Report 2007-08, pp. 103-114, 119-129.

majority of Clause-49 affected firms have complied with Clause-49 provisions in the post enforcement period.[40] Taken together, Clause-49 was introduced with a reasonably clear system for the prompt handling of cases for non-compliance, thus improving expected enforcement.

3.7. Limitation of the empirical chapter 2

By employing two subsequent CGRs in India, in this empirical chapter, I test the substitution argument between dividend payout and corporate governance reforms. Through a battery of robustness test and reducing alternative explanation, I show that CGR reform in the emerging market context of India is substitute dividend payout as a governance tools, however when accompanied by the expansion of personal liability that arguably helps to establish CGR as a credible disciplining intervention.

While I have attempted to reduce the possible sources of endogeneity by employing Regression Discontinuity Design and PSM-DiD regressions, there could still be a few sources of bias not addressed by the current study. For instance, during my sample period, there have been few other legal reforms that could confound my results. Examples include Competition Act 2002 and introduction of Dividend Distribution Tax (DDT) in the year 1997 followed by few changes in the DDT in 2001 and 2004 (Bagchi, 2007). For instance, there is a possibility that increased competition following Competition reform in 2004 can lower profitability can drive the dividend down. While this possibility seems less likely

[40] Balasubramanian et al. (2010) find that on average there has been greater compliance with provisions of Clause-49; however, the compliance is far from universal.

as corporate profitability has witnessed improvement over these periods (Operating profit of 13.96% in 1997-2000 vis-à-vis 13.99% in 2001-2004 vis-à-vis 14.63% in 2005-2007), the differential impact cannot be ignored. I make an implicit assumption that these episodes of other confounding events would affect treated and control firm systematically, which is partly supported by the insignificant coefficient under placebo test in section 4.5.2 and associated table (3.11). However, there is merit in employing estimation model incorporating the differential effect of these contemporaneous laws going forward.

Similarly, the substitution argument to hold in my setup, I implicitly assume that treated and control firms do not systematically differ in their firm-level governance. While my results hold for various sub-samples to assure that this is a reasonable assumption to make and survive the placebo indicating no systematic difference between firm characteristics driving the results other than Section 23E in 2004, the documented effect can be biased if there are other firm-level governance mechanism built by firms to substitute country-level governance (Bebchuck et al, 2009). It is therefore imperative to direct future enquiry in this direction.

Finally, the generalizability of my finding other emerging markets may be limited by the idiosyncrasy facing an economy like institutional structures, legal origin, corruption, bureaucratic quality, etc. (Mitton, 2004; Claessens and Yurtoglu, 2013). For instance, previous studies have highlighted the significant influence of legal origins and institutional development to explain dividend payout differences across the world (La Porta et al., 200). In this regard, it would be interesting to direct future research to assess the dividend payout and corporate governance nexus gauging this heterogeneity.

3.8. Conclusion

To the strand of literature that enquires what really works for corporate governance in the context of emerging markets, in this chapter, I investigate two important questions facing an emerging market. First, does the enforcement of corporate governance reform (CGR) substitute higher dividend payouts in mitigating agency and adverse selection costs in an emerging market? Further, does the adequacy of CGR sanctions play any role in explaining the substitution effect of CGR? I answer these questions by exploiting two regulatory reforms in the Indian capital market. The first reform relates to the adoption of CGR with the threat of collective penalties without criminal sanctions and the second to the additional imposition of personal liability of corporate insiders for non-compliance with criminal sanctions. My results show that firms that are affected by CGR reduce their dividend payouts ratio, on average, by at least 3%. However, this CGR substitution effect is observed only after the imposition of additional personal liability in the form of stricter financial and criminal penalties. My findings highlight the importance of expanding personal liability in regulatory interventions in order to improve the effectiveness of CGR in emerging markets.

Table 3.1. List of the Variables: CGR and Dividend Policy

This table shows the construction of the variables. Explanations are provided in the description of the variables in the text.

Variables	Calculation	Source
Dependent Variables		
Div/E	(Sum of Interim and final Dividends) / Profit after Tax	Derived from CMIE
Div/A	(Sum of Interim and final Dividends) / Total assets	Derived from CMIE
Div/S	(Sum of Interim and final Dividends) / Sales	Derived from CMIE
Independent Variables		
DiD_CL49	TREAT*AFTER_CL49	Own Calculation
DiD_S23E	TREAT*AFTER_S23E	Own Calculation
Control Variables		
Size	ln (Book-value of Total Assets)	Derived from CMIE
Cashflow	PBITDA / Total Assets	Derived from CMIE
Leverage	Net Total Liabilities / Total Assets where Net Total Liabilities = Total Liabilities – Total Capital – Reserves and Funds – Share application money and suspense	Derived from CMIE
Capex	Total Addition to Fixed Assets / Total Assets	
Sales Growth	(Total Sales $_{t}$ – Total Sales $_{t-1}$) / Total Sales $_{t-1}$	
Tobin's Q	[Total Debt + BV (Preferred Stock) + MV(Equity)] / BV(Total Assets) where MV (Equity = (365-days average of daily stock price) × (365-days average of number of shares outstanding)	Derived from CMIE
Return-Volatility	Yearly standard deviation of daily stock returns	Derived from CMIE
Insiders' Ownership	Percentage of Shares held by promoting shareholders	
FII	Percentage of Shares held by foreign corporate bodies, foreign institutions, qualified foreign institutions, foreign venture capital funds	Derived from CMIE
DII	Percentage of Shares held by Indian corporate bodies; financial institutions and banks; mutual funds; insurance	Derived from CMIE
Buy-back	1 if firm has any repurchase activity and 0 otherwise	Derived from CMIE
Firm-specific trends in DP	$g_i \times t$ where $g_i = (DP_{i,t} - DP_{i,t-1}) / DP_{i,t-1}$	Derived from CMIE
Ancillary variables		
Groups of Firms		Derived from CMIE
Group 1	= Firms listed with a listing flag "A" on BSE.	
Group 2	= Listed firms with paid-up equity capital of at least INR 100 million or net worth of 250 million as at or before 31 March 2002.	
Group 3	= Listed firms with paid-up equity capital of INR 30 million or above and < INR 100 million as at or before 31 March 2003.	
Group 4	= Listed Firms with paid-up equity capital of INR less than 30 million as at or before 31 March 2003.	
Treated firm	∈ (Group 1 or Group 2 or Group 3); Control firm ∈ (Group 4)	Derived from CMIE
TREAT	= 1 if a firm is treated (affected) by Clause-49 and 0 otherwise	Derived from CMIE
Event Dummy		
AFTER_ CL49	= 1 if year>=Clause-49 adoption year in 2001 to 2004 and 0 otherwise i.e. = 1 if year>=2001 for Group 1 firms = 1 if year >=2002 for Group 2 firms = 1 if year>=2003 for Group 3 firms	Derived from CMIE
AFTER_S23E	= 1 if year>2004 and 0 otherwise	Derived from CMIE

Table 3.2: Summary Statistics: CGR and Dividend Policy

This table shows the summary statistics (number of observations, mean, standard deviation, 25th percentile, median, 75th percentile values) of all the variables used in the analysis. Panel A reports the summary statistics of variables for the entire study period (1997-2007), whereas panels B to D report those for sub-periods including pre-Clause-49 period (1997-2000), post-Clause-49 period (2001-2004) and post-Section-23E sanction period (2005-2007) respectively. *DP* is calculated by dividing the sum of the interim and final dividends by the profit after tax. *Size* is calculated taking the natural logarithm of the book value of assets. *Cashflow* is operating cashflow obtained as the ratio of earnings before interest, taxes, and depreciation scaled by total assets. *Leverage* is the ratio of net liabilities to total assets. *Capex* is the addition to total fixed assets scaled to total assets. *Tobin's Q* is the ratio of the sum of total liabilities, book value of preferred stock and market value of equity to the book value of total assets. *Return-Volatility* is the yearly standard deviation of the stock returns. *FII* is the percentage of firm's stock held by foreign institutional investors. *DII* incorporates the percentage of firm's stock held by domestic institutional investors. *Buy-back* takes the value of one if the firm has any share repurchase activity in a given year, zero otherwise. Calculations of the variables are described in Table 3.1. Source: CMIE.

	Count	Mean	SD	p25	Median	p75
Panel A (1997-2007)						
Dividend Payout Ratio (*Div/E*)	20994	0.1667	0.2458	0.0000	0.0000	0.2716
Dividend to Total Assets (*Div/A*)	20994	0.0099	0.0141	0.0000	0.0000	0.0140
Dividend to Total Sales (*Div/S*)	20994	0.0115	0.0216	0.0000	0.0000	0.0149
Size	20994	6.1602	1.6029	4.9053	6.0054	7.2946
Cashflow	20994	0.1413	0.0817	0.0863	0.1279	0.1768
Leverage	20994	0.5425	0.2877	0.3725	0.5545	0.6886
Capex	20994	0.0750	0.1499	0.0049	0.0286	0.0883
Sales Growth	20994	0.2546	0.5818	-0.0017	0.1207	0.3298
Tobin's Q	20994	1.0144	0.7076	0.6127	0.8190	1.1471
Return-Volatility	20994	0.0662	0.0647	0.0296	0.0434	0.0838
Insiders' Ownership	13433	0.5090	0.1905	0.3771	0.5106	0.6509
FII	13433	0.0298	0.0848	0.0000	0.0000	0.0082
DII	13433	0.0863	0.1516	0.0000	0.0096	0.1020
Buyback	20994	0.0041	0.0639	0.0000	0.0000	0.0000
Panel B (1997-2000)						
Dividend Payout Ratio (*Div/E*)	7561	0.1981	0.2655	0.0000	0.0975	0.3194
Dividend to Total Assets (*Div/A*)	7561	0.0114	0.0145	0.0000	0.0046	0.0165
Dividend to Total Sales (*Div/S*)	7561	0.0130	0.0228	0.0000	0.0038	0.0174
Size	7561	6.0219	1.5234	4.8402	5.8424	7.0777
Cashflow	7561	0.1396	0.0741	0.0906	0.1297	0.1743
Leverage	7561	0.5145	0.2276	0.3728	0.5379	0.6622
Capex	7561	0.0597	0.1534	0.0093	0.0362	0.0980
Sales Growth	7561	0.2442	0.5752	-0.0104	0.1020	0.3039
Tobin's Q	7561	0.8913	0.6100	0.5862	0.7638	0.9420
Return-Volatility	7561	0.0676	0.0781	0.0365	0.0558	0.1224
Insiders' Ownership	-	-	-	-	-	-
FII	-	-	-	-	-	-
DII	-	-	-	-	-	-
Buyback	7561	0.0011	0.0325	0.0000	0.0000	0.0000

Continued…

Continued…

	Count	Mean	SD	p25	Median	p75
Panel C (2001-2004)						
Dividend Payout Ratio (*Div/E*)	7428	0.1779	0.2460	0.0000	0.0000	0.2607
Dividend to Total Assets (*Div/A*)	7428	0.0098	0.0139	0.0000	0.0000	0.0126
Dividend to Total Sales (*Div/S*)	7428	0.0113	0.0205	0.0000	0.0000	0.0133
Size	7428	6.1803	1.5759	4.9829	6.0430	7.2972
Cashflow	7428	0.1399	0.0802	0.0846	0.1259	0.1748
Leverage	7428	0.5318	0.2784	0.3554	0.5491	0.6892
Capex	7428	0.0639	0.1361	0.0034	0.0233	0.0739
Sales Growth	7428	0.2460	0.5663	-0.0137	0.1065	0.3075
Tobin's Q	7428	0.9058	0.5766	0.5666	0.7603	0.9669
Return-Volatility	7428	0.0596	0.0561	0.0261	0.0450	0.0908
Insiders' Ownership	7428	0.5140	0.1905	0.3788	0.5142	0.6568
FII	7428	0.0208	0.0649	0.0000	0.0000	0.0034
DII	7428	0.0433	0.0803	0.0000	0.0018	0.0538
Buyback	7428	0.0088	0.0931	0.0000	0.0000	0.0000
Panel D (2005-2007)						
Dividend Payout Ratio (*Div/E*)	6005	0.1469	0.2132	0.0000	0.0000	0.2249
Dividend to Total Assets (*Div/A*)	6005	0.0085	0.0136	0.0000	0.0000	0.0124
Dividend to Total Sales (*Div/S*)	6005	0.009	0.0213	0.0000	0.0000	0.0133
Size	6005	6.3095	1.7153	4.9141	6.2011	7.5972
Cashflow	6005	0.1463	0.0919	0.0825	0.1277	0.1848
Leverage	6005	0.5211	0.3533	0.3921	0.5843	0.7249
Capex	6005	0.0746	0.1603	0.0019	0.0265	0.0983
Sales Growth	6005	0.2908	0.6068	0.0000	0.1611	0.3809
Tobin's Q	6005	1.3532	0.8424	0.7965	1.1152	1.7196
Return-Volatility	6005	0.0638	0.0442	0.0261	0.0365	0.0456
Insiders' Ownership	6005	0.5032	0.1904	0.3751	0.5072	0.6422
FII	6005	0.0409	0.1032	0.0000	0.0000	0.0180
DII	6005	0.1394	0.1958	0.0000	0.0387	0.2087
Buyback	6005	0.0022	0.0465	0.0000	0.0000	0.0000

Table 3.3: Univariate Difference-in-Differences Analysis

This table presents the difference in the DP of the control and treated firms for three years before and three years after the adoption of Clause-49 in 2000 in Panel A and imposition of Section-23E in 2004 in Panel B. Treated firms are comprised of firms affected by Clause-49 reform and include Groups 1, 2 and 3 firms and Control firms include Group 4 firms that are unaffected by Clause-49 reform where groups are as defined in the notes to Table 3.1. Pre-Clause-49 adoption period includes years 1997 to 2000 for Group 1, years 1999 to 2001 for Group 2 and years 2000 to 2003 for Group 3 firms respectively. Similarly, post-Clause-49 adoption period includes years 2001 to 2003 for Group 1, years 2002 to 2004 for Group 2 and year 2003 to 2004 for Group 3 firms. As Section-23E is imposed in October 2004, the post-Clause-49 period is limited to year 2004, because of which I report only two years post-Clause-49 adoption for Group 3 firms. Post-Clause-49 period for Group 4 firms is taken for years 2003 and 2004. Pre-Section-23E imposition includes three years period from 2002 to 2004 and post-Section-23E imposition includes three years period from 2005 to 2007. DP is proxied by (*Div/E*), *(Div/A)* and *(Div/S)* computed by the total of interim and final dividends scaled by the profit after tax, total assets and total sales respectively. Difference-in-Differences (DiD) is computed by subtracting the difference in the DP of the control group from the difference in the DP of the treated group. The levels of significance are indicated as follows: * at 10%; ** at 5% and *** at 1%. Source: CMIE.

Panel A: *(period of [t-3, t+3] for Clause-49 adoption)*

	Control			Treated		
Variable	*Div/E*	*Div/A*	*Div/S*	*Div/E*	*Div/A*	*Div/S*
Pre-Clause-49	0. 1492	0.0114	0.0134	0. 1741	0.0137	0.0147
Post-Clause-49	0. 1443	0.0101	0.0108	0. 1756	0.0118	0.0120
Difference (Post-Pre)	-0.0049	0.0013	0.0026	0.0015	0.0019	0.0027
	-1.01	1.25	1.089	0.1953	0.56	0.78
Difference-in-Differences (DiD)	0.0064	0.0006	0.0001			
	(0.30)	(-0.51)	(-0.42)			

Panel B: *(period of [t-3, t+3] for Section-23E imposition)*

	Control			Treated		
Variable	*Div/E*	*Div/A*	*Div/S*	*Div/E*	*Div/A*	*Div/S*
Pre- Section-23E	0.1467	0.0101	0.0107	0.1582	0.0118	0.0125
Post-Section-23E	0.1396	0.0098	0.0099	0.131	0.0072	0.0083
Difference (Post-Pre)	-0.0071	-0.0003	-0.0008	-0.0272***	-0.0046	-0.0042
	(-1.65)	-1.05	(-1.06)	(-8.97)	(-4.55)	-5.34
Difference-in-Differences (DiD)	-0.0201***	-0.0043***	-0.0034***			
	(-7.79)	(-5.67)	(-4.68)			

Table 3.4. Difference-in-Differences Analysis – Base Results

This table shows the results of four fixed effects panel regressions, as shown in equations 1 and 2 in the text. The dependent variable is the Dividend Payout Ratio (*DP*). The independent variable of interest in models [1] to [4] is DiD-CL49 – an interaction term between an indicator variable, $Treat_i$, which takes the value of one for firms affected by Clause-49 and listed as at or before 2000 and zero otherwise, and an event indicator variable, $After\_CL49_t$, which takes the value of one for years (2001-2004) after adoption of Clause-49 and zero otherwise as explained in the text in section 5.4. The main independent variable of models [5] to [8] is DiD-S23E – an interaction term between variable, $Treat_i$, and an event indicator variable, $After - S23E_t$, which takes the value of one for years after Section-23E was applicable (2005-2007) and zero otherwise. Firm controls include *Size, Cashflow, Leverage, Capex, Tobin's Q, Return-Volatility, Insiders' Ownership, FII, DII, Buy-back,* and *firm-specific trend*. These variables are as defined in the notes to Table 3.1. *Year FE* is Year Fixed Effects and *Firm FE* is Firm Fixed Effects. *t-statistics* are reported in parentheses. Standard errors are clustered at firm level and the levels of significance are indicated as follows: * at 10%; ** at 5% and *** at 1%. Data source: CMIE. Sample period for models [1] to [4] is 1997-2004 and for [5] to [8] is 2002-2007.

	Dependent Variable: Dividend to Earnings after Tax (*Div/E*)							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
DID_S23E					-0.029**	-0.034***	-0.027**	-0.030***
					(-2.32)	(-4.55)	(-2.07)	(-3.98)
DID_CL49	0.015	0.013	0.010	0.011				
	(0.90)	(0.83)	(0.92)	(0.85)				
Size		0.035***		0.034***		0.033***		0.032***
		(6.91)		(6.10)		(6.27)		(6.15)
Cashflow		0.022***		0.024***		0.016***		0.017***
		(6.13)		(6.53)		(5.86)		(6.42)
Leverage		-0.058***		-0.058***		-0.055***		-0.055***
		(-4.34)		(-4.17)		(-8.53)		(-8.50)
Capex		-0.002		0.001		-0.006		-0.006
		(-0.11)		(0.08)		(-0.50)		(-0.50)
Sales Growth		-0.023***		-0.021***		-0.021***		-0.020***
		(-4.15)		(-4.24)		(-7.11)		(-6.74)
Tobin's Q		0.004*		0.004*		0.001		0.001
		(2.15)		(2.29)		(0.59)		(0.59)
Return-Volatility		-0.010**		-0.010**		-0.020***		-0.020***
		(-3.21)		(-3.05)		(-4.86)		(-4.86)
Insiders' Own						0.085***		0.082***
						(6.75)		(6.53)
FII						0.039		0.039
						(1.23)		(1.23)
DII						-0.039***		-0.039***
						(-2.60)		(-2.60)
Buyback		-0.016		-0.025		-0.018		-0.018
		(-0.84)		(-1.43)		(-0.73)		(-0.73)
Firm Trend	NO	NO	YES	YES	NO	NO	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Adj. R^2	0.50	0.50	0.53	0.53	0.56	0.59	0.59	0.59
No. of Firms	2653	2653	2653	2653	2564	2564	2564	2564
No of Obs.	12234	12234	12234	12234	11659	11659	11659	11659

Table 3.5. Difference-in-Differences Analysis – Alternative Measures of Dividend Payouts

This table shows the results of DiD regressions, as shown in equations 1 and 2 in the text. The dependent variable is the Dividend Payout as defined by Total Dividend scaled by book value of Total Assets for models [1] to [4] and Total Dividend to total sales for models [5] to [8]. The independent variable of interest in models [1] to [4] is DiD-CL49 – an interaction term between an indicator variable, $Treat_i$, which takes the value of one for firms affected by Clause-49 and listed as at or before 2000 and zero otherwise, and an event indicator variable, $After\_CL49_t$, which takes the value of one for years (2001-2004) after adoption of Clause-49 and zero otherwise as explained in the text in section 5.4. The main independent variable of models [5] to [8] is DiD-S23E – an interaction term between the variable, $Treat_i$, and an event indicator variable, $After - S23E_t$, which takes the value of one for years (2005-2007) after Section-23E was applicable and zero otherwise. Firm controls include *Size*, *Cashflow*, *Leverage*, *Capex*, *Tobin's Q*, *Return-Volatility*, *Insiders' Ownership*, *FII*, *DII*, *Buy-back*, and *firm-specific trend*. These variables are as defined in the notes to Table 3.1 and winsorised at the upper and lower 1% percentile levels. *Year* FE is Year Fixed Effects and *Firm FE* is Firm Fixed Effects. *t-statistics* are reported in parentheses. Standard errors are clustered at firm level and the levels of significance are indicated as follows: * at 10%; ** at 5% and *** at 1%. Data source: CMIE. Sample period for models [1] to [4] is 1997-2004 and for [5] to [8] is 2002-2007.

	Dividend to Total Assets (*Div/A*)				Dividend to Sales (*Div/S*)			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
DID_S23E			-0.002***	-0.002***			-0.004***	-0.004***
			(-3.64)	(-3.52)			(-3.16)	(-3.20)
DID_CL49	0.001	0.001			0.002	0.002		
	(0.99)	(1.44)			(1.56)	(1.49)		
Size	0.001***	0.001***	0.001**	0.001*	0.002*	0.002*	0.010***	0.010***
	(5.35)	(5.33)	(2.30)	(2.08)	(2.13)	(2.15)	(3.83)	(4.01)
Cashflow	0.009***	0.007***	0.003***	0.003***	0.005***	0.005***	0.023***	0.023***
	(3.15)	(3.89)	(4.30)	(4.24)	(7.41)	(3.32)	(3.16)	(3.11)
Leverage	-0.015***	-0.007**	-0.004***	-0.003***	-0.010**	-0.009**	-0.014***	-0.006***
	(-4.08)	(-3.51)	(-5.34)	(-3.99)	(-3.41)	(-3.35)	(-2.98)	(-2.97)
Capex	-0.002	-0.002	0.000	-0.002***	-0.003	-0.003	-0.002	-0.003
	(-1.21)	(-1.20)	(0.52)	(-2.82)	(1.98)	(-1.00)	(-0.26)	(1.35)
Sales Growth	-0.001*	-0.001*	-0.001***	-0.001***	-0.001***	-0.001***	-0.008***	-0.008***
	(-2.24)	(-2.14)	(-5.78)	(-5.69)	(-3.12)	(-3.17)	(-3.77)	(-3.86)
Tobin's Q	0.001**	0.001**	0.001***	0.001***	0.0001**	0.001**	0.001	0.001
	(2.95)	(2.92)	(4.51)	(4.50)	(2.54)	(2.56)	(1.56)	(1.04)
Return-Volatility	-0.001***	-0.001***	-0.002***	-0.002***	-0.001**	-0.002***	-0.001***	0.007***
	(-5.50)	(-4.36)	(-7.85)	(-8.08)	(-3.85)	(-6.30)	(-3.12)	(2.73)
Insider Own			0.003*	0.004***			0.024***	0.024***
			(1.96)	(5.51)			(3.56)	(3.59)
FII			0.002	0.002			0.062***	0.063***
			(0.95)	(0.86)			(3.65)	(3.77)
DII			-0.000	-0.000			-0.019	-0.019
			(-0.43)	(-0.43)			(-1.69)	(-1.69)
Buyback	-0.005	-0.004	-0.008	-0.008	-0.001	-0.004	-0.006	-0.006
	(-1.69)	(-1.64)	(-0.90)	(-0.89)	(-0.35)	(-1.43)	(-0.56)	(-0.51)
Firm Trend	NO	YES	NO	YES	NO	YES	NO	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Adj. R^2	0.68	0.68	0.70	0.70	0.66	0.67	0.54	0.54
No. of Firms	2653	2653	2653	2653	2564	2564	2564	2564
No of Obs.	12234	12234	12234	12234	11659	11659	11659	11659

Table 3.6: Firm characteristics of Treated and Control Groups

This table shows the mean and standard deviation of control variables of the sample firms classified into four different groups based on the applicability of Clause-49 for the pre-enforcement period (2002-2004). Variables are defined in the notes to Table 3.2. Group 1 firms are large-cap companies listed as the flag "A" category in the Bombay Stock Exchange Ltd. (BSE). Group 2 firms are mid-cap companies that have paid-up capital greater than INR 100 million or net worth greater than or equal to INR 250 million. Group 3 firms are small-cap firms that have paid-up capital between INR 100 million and 30 million. Group 4 are control firms with paid-up capital less than 30 million. As defined in section 4, Groups 1-3 are subject to Clause-49 (treated group), whereas Group 4 is not (control group). Firm characteristics of Indian firms cross-listed in international exchanges, which are used as alternative control groups, are presented in the last column. Source: CMIE.

Category	Treated Firms				Control Firms	Alt. Control Firms
Clause-49 Groups	Group1 Large-Cap	Group 2 Medium-Cap	Group 3 Small-Cap	Groups 1, 2 & 3 Combined	Group 4	Cross-listed Firms
Size	8.7484	7.1756	5.1912	6.3805	4.8410	8.8465
	(0.8609)	(1.2012)	(0.9185)	(1.5630)	(1.1374)	(1.0426)
Cashflow	0.1464	0.1483	0.1252	0.1316	0.1390	0.1489
	(0.0766)	(0.0754)	(0.0809)	(0.0806)	(0.0884)	(0.0697)
Leverage	0.5342	0.5611	0.5276	0.5377	0.5714	0.5124
	(0.1751)	(0.2533)	(0.3188)	(0.2775)	(0.3404)	(0.1851)
Capex	0.0877	0.0789	0.0597	0.0764	0.0660	0.0968
	(0.1291)	(0.1453)	(0.1341)	(0.1481)	(0.1594)	(0.1485)
Sales Growth	0.1160	0.1229	0.1409	0.1374	0.1942	0.0914
	(0.1915)	(0.2942)	(0.2128)	(0.279)	(0.3442)	(0.1333)
Tobin's Q	1.3374	1.1080	0.8963	1.029	0.9225	1.3959
	(0.9443)	(0.6651)	(0.6105)	(0.7040)	(0.7216)	(0.8347)
Return-Volatility	0.0346	0.0574	0.1001	0.0698	0.0446	0.0385
	(0.0193)	(0.0469)	(0.0789)	(0.0660)	(0.0507)	(0.0244)
Insiders' Ownership	0.5097	0.5198	0.4432	0.4522	0.4107	0.4930
	(0.2045)	(0.1953)	(0.2116)	(0.2331)	(0.2978)	(0.1912)
FII	0.1035	0.0437	0.0140	0.0324	0.0158	0.1020
	(0.1149)	(0.1064)	(0.0603)	(0.0887)	(0.0573)	(0.1165)
DII	0.1900	0.1242	0.0561	.0903	0.0642	0.1823
	(0.1825)	(0.1750)	(0.1187)	(0.1531)	(0.1410)	(0.1619)
Buyback	0.0162	0.0060	0.0007	0.0046	0. 0009	0.0155
	(0.1262)	(0.0770)	(0.0260)	(0.0677)	(0.0315)	(0.1236)
No. of Firms	136	1254	1461	2851	539	91

Table 3.7: Robustness Check: PS-Matched Regression around Paid-up Capital Threshold

The table reports the results of a PS-Matched DiD regression of the matched firms within Group 3 (treated) and Group 4 (control) firms around the threshold of paid-up equity capital. Panel A reports the comparison of pre CGR firm characteristics of the matched pairs of treated and control firms. Models [1] and [3] report DiD regressions for the entire sample and models [2] and [4] report the results for the PSM matched sub-sample within the treated and control groups. Firm controls include *Size, Cashflow, Leverage, Capex, Tobin's Q, Return-Volatility, FII, DII, Buy-back,* and *firm-specific trend* for models [1] and [2]. *Year* FE is Year Fixed Effects and *Firm FE* is Firm Fixed Effects. Additional control variables *Insiders' Ownership, FII* and *DII* are included in models [3] and [4]. Panels C and D report bias reduction by matching process and hidden bias measures (Rosenbaum's Gamma). All variables are as defined in the notes to Table 3.1. *t-statistics* are reported in parentheses. Standard errors are clustered at firm level and the levels of significance are indicated as follows: * at 10%; ** at 5% and *** at 1%. Sample period: 1998-2007. Data source: CMIE.

Panel A: Summary statistics of PS-Matched sub-sample Pre-Clause-49 introduction

	PS-Matched Treated Firms [a]	PS-Matched Control Firms [b]	Group 3 Firms [c]	Group 4 Firms [d]	Diff [a-b]	Diff [c-d]
Size	4.910	4.920	5.191	4.841	-0.010	0.350**
Cashflow	0.135	0.135	0.125	0.139	0.000	-0.014
Leverage	0.536	0.554	0.528	0.571	-0.018	-0.044**
Capex	0.059	0.060	0.060	0.066	0.000	-0.006
Sales Growth	0.152	0.154	0.141	0.194	-0.002	-0.053**
Tobin's Q	0.920	0.921	0.896	0.923	-0.001	-0.026*
Return-Volatility	0.052	0.050	0.100	0.045	0.002	0.056**

Panel B: PSM-DiD Regression with Group 3 and Group 4 firms around the threshold of paid-up equity capital

	Adoption of Clause-49		Imposition of Section-23E Sanctions	
	Group 3 and Group 4 Firms	PS-Matched Firms	Group 3 and Group 4 Firms	PS-Matched Firms
	[1]	[2]	[3]	[4]
DiD_CL49	0.039	0.0380		
	(1.47)	(1.10)		
DiD-S23E			-0.048**	-0.058**
			(-2.27)	(-2.27)
Controls	YES	YES	YES	YES
Firm-specific Trend	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Adj. R^2 (within)	0.07	0.14	0.03	0.06
No. of firms	296	178	296	178
No. of Obs.	1480	890	1224	832

Panel C. Bias Reduction from Matching

Sample	p>chi2	%bias
Unmatched	0.007	23.43
Matched	0.39	2.8

Panel D. Unobserved Bias Reporting

Gamma	Q-MH-	p-value (Q-MH-)
1	3.31	0.0004
1.25	2.63	0.0042
1.50	1.87	0.0300
1.75	1.23	0.1099
2.0	0.79	0.2153

Table 3.8. Robustness Check: PS-Matched DiD Regression with Cross-listed Firms as Control Group

Table 3.8 reports the PSM-DiD regression within Group 1 (treated firms) and cross-listed firms (alternative control firms. based on propensity score matching (PSM) prior to application of CGR to the groups, as shown in Table 3.5. Panel A reports the comparison of pre CGR firm characteristics of the matched pairs of treated and control firms. Panel B reports the PS-matched estimates. Models [1] and [3] report DiD regressions for the entire sample from Group 1 and Cross-listed firms and models [2] and [4] report the results for the PSM matched sub-sample within the treated and control groups. Firm controls include *Size, Cashflow, Leverage, Capex, Tobin's Q, Return-Volatility, FII, DII, Buy-back,* and *firm-specific trend* for models [1] and [2]. *Year FE* is Year Fixed Effects and *Firm FE* is Firm Fixed Effects. Additional control variables *FII* and *DII* are included in models [3] and [4]. Panels C and D report bias reduction by matching process and hidden bias measures (Rosenbaum's Gamma). All variables are as defined in the notes to Table 3.2. *t-statistics* are reported in parentheses. Standard errors are clustered at firm level and the levels of significance are indicated as follows: * at 10%; ** at 5% and *** at 1%. Sample period: 1997-2007. Data source: CMIE.

Panel A: Summary statistics of PS-Matched sub-sample Pre-Clause-49 introduction

	Cross-listed Firms (a)	Size-Matched Treated Firms (b)	PS-Matched Treated Firms (c)	Diff (a-b)	Diff (a-c)
Size	8.8465	8.7484	8.8369	0.0981**	0.009
Cashflow	0.1489	0.1464	0.1481	0.0025	0.000
Leverage	0.5124	0.5342	0.507	-0.0218	0.005
Capex	0.0968	0.0877	0.0901	0.0091	0.006
Sales Growth	0.0914	0.116	0.0901	-0.0246**	0.001
Tobin's Q	1.3959	1.3374	1.3914	0.0585**	0.004
Return-Volatility	0.0385	0.0346	0.0369	0.0039	0.001

Panel B: PSM-DiD Regression with Group A (treated) and Cross-listed (alternative control) firms

	Adoption of Clause-49		Imposition of Section-23E Sanctions	
	Group 1 and Cross-listed firms	PS-Matched Firms	Group 1 and Cross-listed firms	PS-Matched Firms
	[1]	[2]	[3]	[4]
DiD_S23E	0.037		-0.057***	
	(1.01)		(-3.07)	
DID-Matched		0.048		-0.070***
		(1.01)		(-3.07)
Controls	YES	YES	YES	YES
Firm-specific Trend	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Adj. R^2 (within)	0.04	0.13	0.04	0.09
No. of firms	206	144	206	144
No. of Obs.	1033	720	932	707

Panel C. Bias Reduction from Matching

Sample	p>chi2	%bias
Unmatched	0.007	21.1
Matched	0.39	2.62

Panel D. Unobserved Bias Reporting

Gamma	Q-MH-	p-value (Q-MH-)
1	3.14	0.0008
1.25	2.06	0.0219
1.50	1.85	0.0520
1.75	1.44	0.0701
2.0	0.89	0.1930

Table 3.9
Robustness Test: Regression Discontinuity around the threshold of paid-up capital

Table 9 reports the results of different specifications of the following regression equation:

$$DPR_{it} = \alpha + \beta.1_{(Discontinuity=1)} + \delta(paidup_i) + \boldsymbol{X}_{i,t-1}.\boldsymbol{\delta} + \vartheta_j + e_{it},$$

where DPR_{it} is *Dividend Payout* proxied by the ratio of total equity dividend to total earnings after tax. $1_{(Discontinuity=1)}$ is an indicator variable that takes the value of one for firms with paid-up equity capital of INR 30 million or more and zero otherwise. $\boldsymbol{X}_{i,t-1}$ is a vector of firm-level control which include *Size, Cashflow, Leverage, Capex, Tobin's Q, Return-Volatility, Insiders' Ownership, FII, DII, Buy-back* as defined in the notes to Table 3.21. ϑ_j controls for industry fixed effects. e_{it} is the error term. Standard errors are clustered at firm level. *t-statistics* are reported in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1% significance levels respectively. The sample period ranges from 2001 to 2004 for models [1] and [2] and from 2005 to 2007 for models [3] and [4]. Source: CMIE database.

	Adoption of Clause-49		Imposition of S2E Sanctions	
	Entire sample	Groups 3 & 4	Entire sample	Groups 3 & 4
	[1]	[2]	[3]	[4]
Discontinuity $1_{(Discontinuity=1)}$	0.002 (1.30)	0.006 (1.30)	-0.026*** (-3.01)	-0.034*** (-3.87)
Size	0.034*** (8.18)	0.047*** (6.89)	0.033*** (7.68)	0.036*** (6.50)
Cashflow	0.018** (4.53)	0.028** (2.96)	0.008*** (3.46)	0.009*** (3.27)
Leverage	-0.076*** (-7.49)	-0.085*** (-4.61)	-0.042*** (-7.73)	-0.017*** (-3.65)
Capex	-0.002 (-0.06)	-0.011 (-0.42)	-0.022 (-1.64)	-0.024 (-1.38)
Sales Growth	-0.024*** (-6.34)	-0.024*** (-8.66)	-0.017*** (-6.04)	-0.014*** (-4.64)
Tobin's Q	0.002* (2.16)	0.003* (2.33)	0.001 (1.39)	0.002 (1.23)
Return-Volatility	-0.022*** (-4.47)	-0.013** (-2.55)	-0.026*** (-5.68)	0.024*** (3.34)
Insiders' Ownership	0.009*** (6.27)	0.009*** (4.60)	0.010*** (7.53)	0.010*** (6.20)
FII	0.095 (0.93)	0.096 (1.11)	0.042 (1.29)	0.044 (0.67)
DII	-0.098 (-1.24)	-0.036 (-0.41)	-0.034** (-2.44)	-0.071*** (-3.51)
Buyback	-0.044 (-1.50)	-0.103 (-1.01)	-0.046 (-0.88)	-0.070 (-0.72)
Ind. FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R^2	0.58	0.62	0.72	0.69
No. of Firms	2726	1324	2508	1487
No. of Obs.	7428	3395	6,005	3442

Table 3.10: Changes in Dividend Payout at the Extensive Margin

The table presents the probit regression as shown in equation 3. Dependent variable $Payout_{ijt}$ is a categorical variable that takes the value of one if a firm pays a dividend in a year and zero otherwise. Firm controls include *Size*, *Leverage*, *Cashflow*, *Profitability*, *Tobin's Q*, *Return-Volatility* and *Buy-back* for columns 1 and 2 Additional control variables *FII* and *DII* are included in columns 3 and 4 regressions. Variables are as defined in the notes to Table 3.2. *Industry FE* is Industry Fixed Effects. *t-statistics* are reported in parentheses. Standard errors are clustered at firm level and the levels of significance are indicated as follows: * at 10%; ** at 5% and *** at 1%. Sample period: 1997-2007. Data source: CMIE.

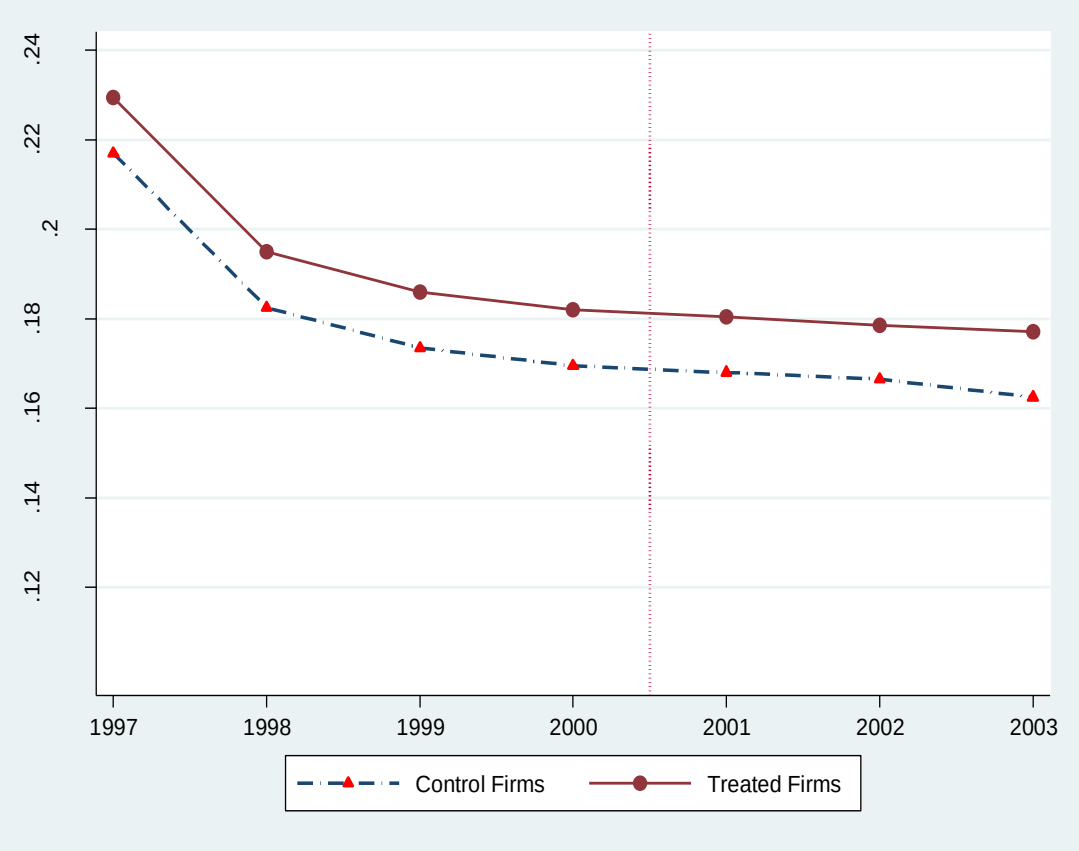
	Introduction of CGR 2000		Imposition of Stricter Sanctions	
	(1)	(2)	(3)	(4)
Treated-Cl49	0.116	0.066		
	(1.49)	(-1.31)		
After-Cl49	-0.266***	-0.431***		
	(-4.01)	(-5.50)		
DiD-CL49	0.0746	0.0328		
	(1.06)	(0.39)		
Treated-S23E			0.194	0.0681
			(1.61)	(1.71)
After-S23E			0.264	0.0299
			(1.83)	(0.50)
DiD-S23E			-0.194**	-0.157***
			(-3.20)	(-3.35)
Size		0.516***		0.506***
		(9.02)		(9.04)
Cashflow		0.643***		0.391***
		(6.67)		(3.47)
Leverage		-0117***		-0.098***
		(-7.15)		(-6.21)
Capex		0.199*		0.084***
		(1.97)		(7.67)
Sales Growth		-0.108***		-0.135**
		(-3.87)		(-2.72)
Tobin's Q		-0.0183*		-0.004
		(-2.02)		(-0.28)
Return-Volatility		-0.243***		-0.108***
		(-8.39)		(-3.57)
Insiders' Ownership				0.771***
				(4.46)
FII				0.0536
				(0.18)
DII				-0.326**
				(-2.58)
Buyback		0.657*		0.293
		(2.11)		(1.55)
Industry FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.0438	0.3319	0.0471	0.3011
Probability>χ^2	0.00	0.00	0.00	0.00
No. of Firms	2622	1489	2659	1101
No. of Obs.	11074	11074	11653	11653

Table 3.11: Difference-in-Differences Analysis – Additional Robustness Checks

This table shows the results of three fixed effects panel regressions. The dependent variable is the Dividend Payout Ratio and all variables are as reported and defined in Table 3.1. Models [1] and [2] report the DiD regression results for two false experiments with one year before and one year after the true event year, 2004. Model [3] reports the DiD regression for an alternative (narrow) period of 2003-2006. *DiD-B* is an interaction term between an indicator variable $Treat_i$ which takes the value of one for firms affected by Clause-49 and listed as at or before 2000 and zero otherwise, and the categorical variable of false-event, $After\_FE_{2003}$, which takes the value of one for year 2004, and zero otherwise. *DiD-A* is an interaction term between $Treat_i$ and a dummy variable with the false event year, $After\_FE_{2005}$ which takes the value of one for years 2006-2007 and zero for the year 2005. *DiD_S23E* is an interaction term between $Treat_i$ and the true event dummy, $After\_S23E_t$ which takes the value of one for years after Section-23E was applicable (2005-2006) and zero for the years 2003 and 2004. Firm controls include *Size, Cashflow, Leverage, Capex, Sales Growth, Tobin's Q, Return-Volatility, FII, DII, Buy-back* and *Firm-specific growth*. These variables are as defined in the notes to Table 3.2. *Year FE* is Year Fixed Effects and *Firm FE* is Firm Fixed Effects. *t-statistics* are reported in parentheses. Standard errors are clustered at firm-level, and the levels of significance are indicated as follows: * at 10%; ** at 5% and *** at 1%. Data source: CMIE.

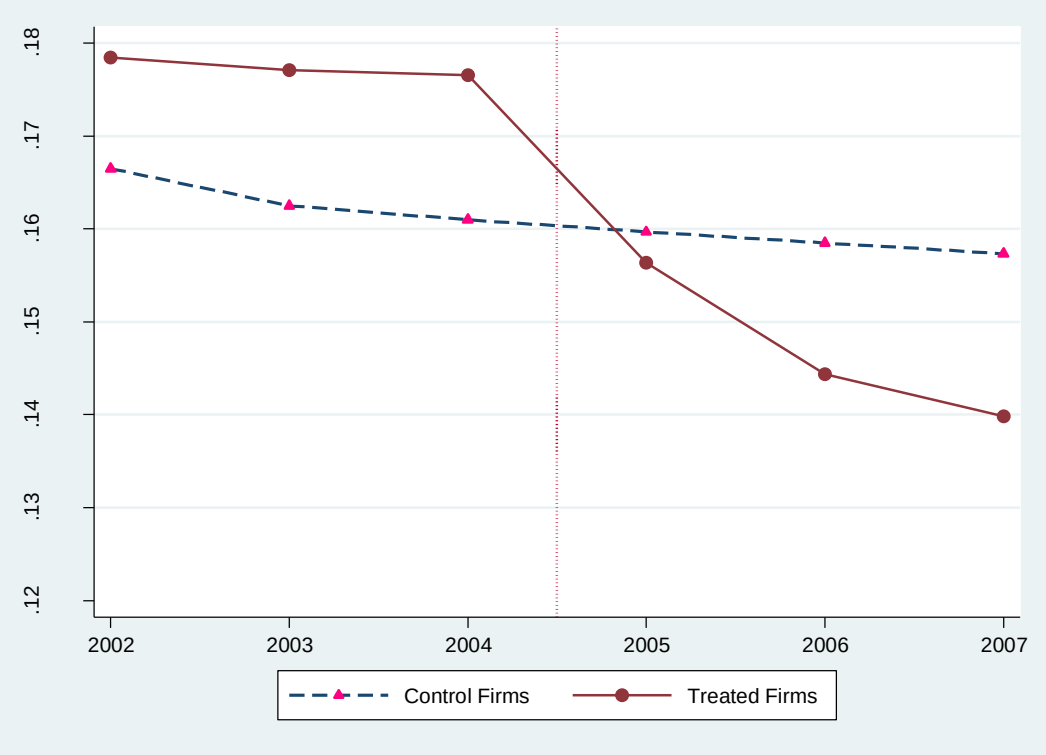
	False Experiment for 2003	False Experiment for 2005	Alt. Period (2003-2006)
	[1]	[2]	[3]
DiD-B	-0.002		
$[Treat_i \,.\, After\_FE_{2003}]$	(-0.45)		
DiD-A		0.005	
$[Treat_i \,.\, After\_FE_{2005}]$		(1.34)	
DiD_S23E			-0.06***
$[Treat_i \,.\, After\_S23E_t]$			(-3.55)
Size	-0.001***	-0.01***	-0.01***
	(-3.05)	(-3.54)	(-3.25)
Cashflow	-0.01***	-0.01***	-0.01**
	(-3.56)	(-5.89)	(-4.40)
Leverage	-0.01	-0.01*	-0.02*
	(-1.36)	(-2.08)	(-1.95)
Capex	-0.001	-0.001	-0.002*
	(-1.25)	(-1.39)	(-2.25)
Sales Growth	-0.003***	-0.001***	-0.001***
	(-3.08)	(-3.94)	(-3.29)
Tobin's Q	0.02*	0.02	0.01
	(2.19)	(1.69)	(1.49)
Return-Volatility	-0.001***	-0.001***	-0.001***
	(-3.09)	(-3.19)	(-3.75)
Insiders' Ownership	0.01***	0.01***	0.02***
	(3.13)	(3.79)	(3.94)
FII	0.01*	0.01	0.02
	(2.13)	(1.79)	(2.94)
DII	-0.001	-0.001	-0.002
	(-1.29)	(-1.32)	(-1.25)
Buy-back	-0.00	-0.01	-0.02
	(0.04)	(-0.31)	(-0.88)
FII	0.02	0.01	0.02*
	(1.56)	(1.05)	(1.92)
DII	0.09	-0.04	-0.02
	(0.49)	(-1.25)	(-0.68)
Firm-specific trend	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES
Adj. R^2	0.69	0.70	0.69
No. of firms	2209	2255	2501
No. of observations	5036	6906	8036

Figure 3.1: Dividend Payout Ratios and the Introduction of Clause-49



Note: The graph shows the average annual Dividend Payout (*Div/E*) of treated and control groups of Clause-49 regulation for the period of 1997-2003. *Div/E* is the ratio of total dividend paid to total profit after tax, as defined in Table 3.1. Treated Group firms are defined as those with paid-up equity capital of more than INR 30 million or with a net worth of more than INR 250 million as of or before 2004, or those that were listed after April 2000. All other firms are classified as Control Group firms. The vertical bar represents the year of enactment of Clause-49 in 2000.

Figure 3.2: Dividend Payout Ratios and the Adoption of Section-23E



Note: The graph shows the average annual Dividend Payout (*Div/E*) of treated and control groups of Clause-49 regulation for the period of 2002-2007. *Div/E* is the ratio of total dividend paid to total profit after tax, as defined in Table 3.1. Treated Group firms are defined as those with paid-up equity capital of more than INR 30 million or with a net worth of more than INR 250 million as of or before 2004, or those that were listed after April 2000. All other firms are classified as Control Group firms. The vertical bar represents the year of adoption of Section-23E.

4. The Market for Corporate Control and Firm Risk-taking: Cross-country Evidence from M&A Laws

4.1. Introduction

The effect of the market for corporate control on firm risk-taking has important economic implications. Studies have shown that insiders' willingness to take risks in the pursuit of profitable opportunities is a fundamental underpinning of long-term economic growth (Acemoglu and Zilibotti 1997; Baumol et al., 2007; John et al., 2008). Sustained growth, in turn, results in higher levels of economic development (Faccio et al., 2011). An understanding of the determinants of firm risk-taking, therefore, helps us to identify channels through which policy changes can be directed towards growth and economic welfare. In this regard, in this chapter, I ask an important question facing policymakers, academia and practitioners alike: Does the market for corporate control encourage or deter corporate risk-taking?

Previous studies document that the market for corporate control removes insiders' slack affecting corporate decisions. For example, exploiting inter-state variation in anti-takeover laws in the US, Garvey & Hanka (1999) show that while firms sheltered by state antitakeover laws significantly lower their use of debt, the unprotected counterparts do the reverse implying legal barriers to takeovers could increase corporate slack. I extend this

argument to the international context to test the effect of the market for corporate control on value-enhancing risk-taking.[41]

Given the important role of risk-taking to drive growth and innovation (Faccio et al., 2011), the question of whether the market for corporate control affects firm risk-taking is equally pertinent for regulators and practitioners. [42] Previous studies hint on the possibility that the market for corporate control should have a direct impact on firm risk-taking appetite. The market for corporate control improves corporate discipline through external monitoring (Lel and Miller, 2015; Glendening et al., 2016). There is a well-developed body of literature which explains why external monitoring should corporate discipline should affect firm risk-taking (John et al., 2008; Bargeron et al., 2010; Cohen and Dey, 2013 among others). However, the predictions based on two dominant economic views contradict each other, and therefore literature offers an inconclusive prediction on the role of the market for corporate control and the firm's risk-taking.

The first economic prediction is that there is a negative association between the market for corporate control and a firm's risk-taking behaviour (Coles et al., 2008; Bargeron at el., 2010; Cohen and Dey, 2013). There are two economic possibilities which

[41] The qualifier as value-enhancing risk-taking is added here to highlight the fact that not all investment endeavors are value-positive. For instance, previous study by Masulis and Wang (2007) in the US setup documents that, the insiders at firms that are protected by more antitakeover provisions are less subject to the disciplinary power of the market for corporate control and thus are more likely to indulge in value destroying acquisitions.

[42] Regulators and policy makers have expressed concerns that the rising importance of activist investors is leading firms toward short-term strategies, delivering immediate returns to shareholders at the expense of long-term investment (Organisation for Economic Co-Operation and Development, 2015). For example, in one high-profile case, Franz Müntefering, German Social Democratic Party chairman, compared private equity and activist hedge fund investors targeting German companies to an invasion of "locusts" stripping companies bare (Bena et al., 2017).

explain this lower risk-taking phenomenon. One argument is that for growing and innovative firms, increased external monitoring may be expensive (Coles et al., 2008). As the market for corporate control expands board diligence, this increased cost of external monitoring could further dampen the managers' appetite for risk-taking (Coles et al., 2008; Cohen and Dey, 2013). Second, if stockholders are less than perfectly informed, transitory lower earnings may result in downward price pressure and the stocks would be undervalued, increasing the likelihood of a takeover at an unfavourable price point which encourages managerial myopia hence would push managers to focus on current earnings and create disincentive towards long-term value-enhancing risky-investments (Stein, 1988).

On the contrary, there is another equally dominant economic view, which predicts positive causation between the market for corporate control and risk-taking. There are two economic possibilities which are congruent with this prediction. Firstly, the market for corporate control could lower the magnitude and importance of the private benefits of managers/insiders thereby discouraging investment conservatism through managerial discipline (Weisbach, 1988; Khanna and Palepu, 2000; Fauver et al., 2017; Lu and Wang, 2018). In the absence of this discipline, insiders could enjoy higher utility from investment conservatism (John, 2008). Secondly, increased threat of takeover reduces managerial slack which would otherwise encourage him to pursue a quiet life (Bertrand and Mullainathan (2003). In both cases, improvement in the market for corporate control causes an increase in the risk-taking appetite.

In the existence of this seemingly opposing economic predictions, the effect of the market for corporate control on risk-taking remains an open question. To this end, I exploit

the staggered enactment of takeover laws across countries as a plausible source of exogenous variation in the market for corporate control and examine the effect of these enforcements on corporate risk-taking. My focus on M&A regulation emerges from the fact that takeover acts are laws passed specifically to foster takeover activity by reducing barriers to mergers and acquisitions (M&A) transactions, and thus encourage information dissemination and increase minority shareholder protection. These laws evade the problems of endogeneity and omitted variables, to the extent that these laws are passed by countries and not endogenously driven by firm-specific conditions. Table 4.1 presents a list of countries and relevant M&A laws faced by sample countries. I present the complete list of countries appraised for M&A laws in Appendix table A4.1.

With the employment of staggering changes in M&A laws across 31 countries, I investigate 3 important questions. First, I examine whether corporate risk-taking changes following the initiation of M&A laws across countries. Second, drawing upon the differences among developed and developing markets on the enforcement environment and investor protection regimes, I examine whether the effect on risk-taking is different among these two categories of economies. Third, I examine the value relevance of risk-taking. This examination is important because increased takeover threat could encourage short-term risk-taking in which case, increased risk-taking should not create a longer-term value to the firm.

By employing industry adjusted *3-year rolling standard deviation of ROA* and *R&D Expenditure* as two proxies of risk-taking in the cross-country setup, the diff-in-diff specification shows a positive causal link between the market for corporate control and corporate risk-taking. Similarly, my results survive a placebo test that reduces the

possibility that the results could be driven by confounding events or differences in firm-characteristics between treated and unaffected firms. The result underscores the positive role of the market for corporate control on corporate risk-taking and investment decisions.

The investigation of the subsamples of developed and developing economies has an important revelation. While the positive effect of the market for corporate control is evident in both subsamples, the magnitude of the effect is lower in developing countries. My categorisation of firms into developed and developing markets follows Claessens and Yurtoglu (2013) who classify these markets not only based on GDP per capita but also on their stages of institutional and financial development. Their study underscores the stylised fact that emerging markets are weaker country-level governance and institutional qualities. To some extent the distinction between a developed and developing markets is accounted for by the enforcement environment and investor protection, these results lend evidence that quality of institutions, positively catalyse the role of M&A laws to affect corporate risk-taking. While my investigation with the heterogeneity of developing and developed markets is limited by a time-invariant measures of enforcement environment and investor protection regimes across countries and calls for future investigation to be directed towards exploring the effect of M&A laws on firm risk-taking based on time-varying measures, the findings nonetheless, the findings suggest that the market for corporate control could act as a compliment (and not a substitute) to other governance mechanisms.

Finally, the examination of the value relevance of risk-taking shows that firms with higher risk-taking in the post-M&A enactments, fetch higher firm valuation in the subsequent period. The implication of this result is that positive risk-taking in the post-

M&A enactment period is a reflection of value-relevant risky corporate undertakings and is not a consequence of over-investment or short-termism. To this end, I contribute to the literature on the value implication of the market for corporate control by documenting risk-taking as one important channel through which the market for corporate control acts as a governance mechanism brings value to the firms (Dharmapala and Khanna, 2013; Fauver et al., 2017).

4.2. Related Literature and hypothesis development

Building upon the literature, in this section, I develop three testable hypotheses on the relationship between the market for corporate control and firm risk-taking.

4.2.1 Market for Corporate control and Firm Risk-taking

Economic theory models the effect of the market for corporate control on firm risk-taking on corporate discipline (John, 2008). There are two seemingly opposing economic view on the prediction of the effect of the market for corporate control on risk-taking.

The first view is a positive prediction view. Two economic possibilities are congruent with this economic prediction.

Firstly, the market for corporate control can be an effective governance mechanism of corporate discipline to reduce agency problems (Jensen & Ruback, 1983; Lel & Miller, 2015). The takeover market forms an important platform where alternative management teams contest for the rights to manage corporate resources (Jensen and Ruback; 1983). First, with the takeover provisions, dissatisfied shareholders have a choice of selling their shares and therefore the controlling rights to outside investors who are more competent to manage the firm (Jensen and Ruback; 1983). The threat of losing their jobs and

reputational capital in the event of a takeover will firm a credible external source of corporate discipline and therefore should encourage the manager to act in the interest of shareholders undertaking value-enhancing risk-taking. Additionally, the M&A threat motivates directors to be more careful as corporate monitors, as these directors face the risk of being dismissed by the acquiring team when a firm becomes a target as a result of poor performance (Hirshleifer & Thakor, 1998; Lel & Miller, 2015). This improved corporate monitoring could lower the magnitude and importance of the private benefits of insiders. Therefore, the market for corporate control should discourage investment conservatism through corporate discipline (Weisbach, 1988; Khanna and Palepu, 2000; Fauver et al., 2017; Lu and Wang, 2018). In the absence of this discipline, managers could enjoy higher utility from investment conservatism (John, 2008).

Second, increased threat of takeover reduces managerial slack, which would otherwise encourage him to pursue a quiet life (Bertrand and Mullainathan, (2003). In both cases, the market for corporate control should predict a positive risk-taking outcome.

On the contrary, there is another school of economic thought which predicts a negative association between corporate discipline and firm risk-taking owing the fact that when managers face higher scrutiny in the form of takeover threat, they may prefer to chase low-hanging short-term profits and shun value relevant risky and innovative investments. (Coles et al., 2008; Bargeron at el., 2010; Cohen and Dey, 2013). Additionally, it is argued that for growing and innovative firms, greater external monitoring may be expensive (Coles et al., 2008). As the market for corporate control expands board diligence, this increased cost of external monitoring could further dampen the insiders' appetite for risk-taking (Coles et al., 2008; Cohen and Dey, 2013).

Furthermore, negative prediction emerges from short-termism effect of takeover threats. If stockholders are less than perfectly informed, transitory lower earnings may result in downward price pressure and the stocks would be undervalued, increasing the likelihood of a takeover at an unfavourable price. This could encourage managerial myopia hence would force managers to focus on current earnings and would sacrifice long-term value-enhancing investments. Regulators and policymakers have expressed concerns that the rising importance of activist investors is leading firms toward short-term strategies, delivering immediate returns to shareholders at the expense of long-term investment (Organisation for Economic Co-Operation and Development, 2015). The implication is the market for corporate control in the form of takeover threats can be damaging because it leads to managerial myopia and could deter appetite of managers to undertake longer-term value-generating risk-taking (Stein, 1988). In other words, the increased market for corporate control could encourage the firms to chase *hot money* in search of short-term profits, with little concern for long-term firm prospects.

Therefore, in hypothesis 4.1 ($H_{4.1}$), I test these two conflicting views on the role of the market for corporate control on risk-taking.

$H_{4.1a}$: An increase in the market for corporate control increases firm risk-taking.

$H_{4.1b}$: An increase in the market for corporate control decrease firm risk-taking.

4.2.2. Heterogeneity in the quality of enforcement environment and investor protection regimes and firm risk-taking.

Prior studies show that when country-level investor protection environment is weaker, firm-level governance mechanisms are generally unavailable or prohibitively expensive (e.g., Bergman and Nicolaievsky 2007; Doidge et al., 2007; Lel and Miller, 2015). Therefore, if the threat of takeover causes managerial discipline, the initiation of M&A laws should have a larger governance effect in countries with weak investor-protection laws, because alternative governance mechanisms at the firm level are less prevalent. To this end, the market for corporate control should substitute the governance environment in countries with weaker the quality of institutions and investor protection regime.

On the contrary, in the wake of weaker enforcement environment, the countries facing weaker enforcement environment fail to experience the translation of law in the book to the law in practice (Claessens and Yurtoglu, 2013; Dharmapala and Khanna, 2013). In this case, the market for corporate control would complement the other governance environment facing a country.

To the extent that the categorization of sample countries into developed and developing markets captures the differences in country-level investor protection and enforcement environment with emerging markets consistently lagging behind their developed counterparts in their country-level governance and enforcement environment, I examine whether the external market for corporate control substitutes or complements for country-level governance mechanisms in its effect on firm risk-taking, (Mikkelson and Partch, 1997; Lel and Miller, 2015). To the extent developing markets face weaker enforcement environment and investor protection regime, I state two competing

hypotheses on the heterogeneous effect of takeover threats on corporate risk-taking of firms in developed and developing markets.

$H_{4.2a}$: The effect of improvement in the market for corporate control on the risk-taking of firms in developing markets is higher compared to their counterparts in developed markets.

The prediction of $H_{4.2a}$ is based on the substitutability of one form of governance to the other (Lel and Miller (2015).

$H_{4.2b}$: The effect of improvement in the market for corporate control on the risk-taking of firms in developing markets is lower compared to their counterparts in developing markets.

The prediction of $H_{4.2b}$ is based on complementing the role of the market for corporate control to investor protection regimes and enforcement environment facing an economy (Claessens and Yurtoglu, 2013; Dharmapala and Khanna, 2013). [43]

4.2.3. Value relevance of risk-taking.

The relationship between the market for corporate control and risk-taking is based on the argument that in the absence of the corporate discipline, the insiders would pursue corporate conservatism to the extent of passing up value-maximizing risky investment endeavors (John et al., 2008; Paligorova, 2010). The investment conservatism may stem from undiversified human capital at stake (Bargeron et al., 2010; Cohen and Dey, 2013).

[43] Claessens and Yurtoglu (2013) note that developing markets consistently lags behind their developed counterparts in their enforcement effectiveness and investor protection regimes. Here I assume, the difference in developing and developed markets. The predictions of two competing hypotheses $H_{4.2a}$ and $H_{4.2b}$ on the heterogeneity of developed and developing markets are based on the assumption that difference in these two types of markets are primarily based on differences in the investor protection regimes and the enforcement environment facing these economies.

It could also stem from reputation concern of insiders (Gopalan et al., 2006). Previous studies by Glendening et al. (2016) and Lel and Miller (2015) show that the market for corporate control is effective tool of corporate discipline. To this end, the improvement in corporate discipline should increase value-enhancing risk-taking.

However, other studies also highlight the dark side of corporate discipline (Belloc, 2013; Honoré et al., 2015). For instance, Honoré et al. (2015) argue that governance practices that are designed to respond to the short-term expectations of financial markets might prove to be detrimental to long-term R&D investments. Belloc (2013) documents a similar argument showing negative effect of investor protection on risk-taking.

My third and final hypothesis, therefore, examines whether risk-taking in response to the market for corporate control is value-enhancing. However, this hypothesis is conditional on hypothesis $H_{3.1a}$ being true. Increased risk-taking may or may not capture value-enhancing investment decisions as I argue. To the extent that risk-taking is value-enhancing, this should produce significant value to the firm in subsequent years (Dharmapala and Khanna, 2013). To test this argument, I test the following hypothesis.

$H_{4.3}$: Increased risk-taking following M&A enactment should be associated with a higher firm valuation in the subsequent year.

4.3. Data and Variables.

My primary sources of data on M&A regulation around the world is Nenova, (2006); Lel and Miller (2015) and Glendening et al., (2016). The selection criteria that the M&A law

initiation should be from 1996 to 2005 makes 31 of 47 countries in the sample of my study. Appendix table 4.1 provides a snapshot of M&A laws around the world. Following previous study by Glendening et al., (2016), I include all non-financial listed firms in my sample. My data on M&A deals comes from SDC platinum database. My data on risk-taking and other firm-level control variables comes from Thomson Reuters DataStream (TRD hereafter). The data has been matched with Capital IQ data to address some of the data limitations and missing data issues within either of the two databases. The resulting matching provides me more number of observation for my analysis (this matching provides me a total number of 172,463 firm-year observation for ROA-volatility when compared to 112,403 and 132,643 firm-year observation from TRD and Capital IQ separately). For the country-level controls, I rely on the World Bank open-source data.

4.3.1. Proxies of risk-taking.

In this study, I use two popular proxies of risk-taking. The first proxy is industry adjusted earnings volatility, which I compute as 3- year rolling standard deviation of operating earnings (EBIDTA) scaled by total book value of assets. As riskier projects exhibit higher volatility, earnings-volatility captures the degree of risk-taking in a firm's operations, based on the volatility of the operating earnings (John et al., 2008; Boubakri et al., 2013). As risk-taking may differ across industry, the earnings volatility is adjusted to the industry average of earnings volatility following Acharya et al. (2011).

My second proxy is *R&D Expenditure which* reflects a firm's level of innovative investments (Bargeron at el., 2010; Belloc, 2013) and is measured as the total monetary value of research and development expenditure scaled by total assets. Any missing R&D

expenditure observations are not treated as zero, as Koh and Reeb (2015) suggest that firms for which R&D expenses are missing are significantly different from zero R&D firms. This exclusion significantly reduces the number of observations available for regressions with R&D Expenditure.

4.3.2. Control Variables.

My difference in differences (DiD) measure eliminates the role of confounding variables not controlled in the models by double differencing (Vig, 2013). However, since treated and control firms may differ from each other in firm characteristics, I additionally control for other important firm-level factors that may compete with my risk-taking explanatory variable in leading to changes in firm risk-taking. Drawing from literature, the control variables include firm size, leverage, capital expenditure, sales growth and cash holding.

Studies show that the size of a firm can play a key role in the ability and appetite of the firm to make investment decisions (Whited and Wu, 2006). I control for *Size* by taking the natural logarithm of total assets where assets are in millions in their respective currencies. I also account for the capital structure of the firm (*Leverage*), risk-taking is directly affected by access to finance (Almeida and Campello, 2007; Campello et al., 2010). Similarly, creditors can have interests that are different from those of shareholders in the risk-taking of a firm because of their fiduciary stake and their concave payoffs (Acharya et al., 2011). I measure *Leverage* as the book value of the debt-to-equity ratio. The literature also establishes an association between a firm's cash holding and levels of corporate risk-taking (Denis and Sibilkov, 2010). The prediction is a positive effect of risk-taking on firm cash holding implying firms that undertake higher risk-taking would

have higher cash holdings, ceteris paribus, because of the precautionary motive. I compute *Cash* as cash and cash equivalent as a fraction of to total assets following Denis and Sibilkov (2010).

Similarly, as firm risk-taking may differ based on time-invariant firm-specific characteristics, such as gender or other (Faccio et al., 2016), I control for *Firm Fixed Effect* in my empirical models. I control for *Year Fixed Effect* to capture the effect of global time-events driving the results. Finally, in the models using *R&D* as dependent variables, I control for time-variant industry effect by using the additional fixed effect of the interaction of industry and year. For $\sigma(ROA)_{ind-adjusted}$, I do not control $Industry\ FE \times Year\ FE$ as the variable is computed after industry adjustment.

I further control for country-level characteristics that could affect national demand for and supply of investment opportunities and could, therefore, be associated with corporate risk-taking. Since risk-taking opportunities are attractive in countries with larger market size and higher potential growth (e.g. Duanmu, 2012; Globerman and Shapiro, 2003) log of yearly GDP per capita and the annual GDP growth are controlled. Trade openness is another important determinant of corporate risk-taking as it particularly helps foreign investment that provides better risk-sharing among investors to positively stimulate corporate risk-taking (Globerman and Shapiro, 2003). Similarly, as labour dynamics play a role in corporate risk-taking, I control for the unemployment rate to capture these dynamics (John et al., 2008). The level of capital market development is another factor that could affect firm risk-taking as this provides the liquidity and

diversification required by investors to support corporate risk-taking (Erel et al., 2012). I gauge *Market Capitalization* as total stock market capitalisation as a fraction of GDP.

4.3.3. Descriptive statistics.

Table 4.1 presents the descriptive statistics of my sample. The sample period is from 1995 to 2007 and is selected such that there is at least two years observation of firms facing M&A law enactment. Panel A shows the number of observations across countries. Sample firms include listed non-financial companies from 31 countries presented in Panel A of Table 4.1. The largest observation comes from Japan, comprising 42.43 percentage of the total sample observation, while the lowest observation is from Venezuela (0.31%). In terms of affected countries, the highest and lowest observations are from Taiwan (24.08%) and Ireland (1.92) respectively. Similarly, panel B presents the distribution of my sample across different industries. I employ Fama-French classification of industry and use 29 industries excluding finance and insurance industry. In panel C, I present the distribution of key variables used in the study for the entire study period of 1995-2007. I find that average of $\sigma(ROA)_{ind-adjusted}$ is 0.0142 while median hinges around zero as this is an industry-adjusted measure of risk-taking. Similarly, the mean and median of R&D/TA are 2.46 percentage and 0.91 percentage respectively.

In terms of control variables, the average (median) *Size* of companies is 11.62 (11.53) where size is expressed as the natural logarithm of the book value of total assets in their currency of domicile. The average (median) firm has 26.46 (22.75) percentage of debt as a fraction of total assets. Similarly, the sample firms have average (median) annual

capital expenditure of 5.85 (3.45) percentage. Likewise, firms have experienced annual sales growth of 7.64 percentage, on an average in the study period. In panel D, I present the subsample analysis of key variables among treated and control firms. Panel D of Table 4.1 reveals that risk-taking proxies measured by industry adjusted earnings volatility and *R&D/TA* are higher for treated firms compared to control firms for the study period. Similarly, treated firms are seen to be more leveraged than control firms (26.74% vs 26.30%). On the contrary, control firms on an average are found to be larger in size and hold more cash. Sales growth has been higher for treated firms compared to control firms in the study period.

…Insert table 4.1 about here…

4.4. Main Results

My proposition on the market for corporate control as hypothesize in section 4.2 relies on the assumption that the enactment of M&A laws improves takeover threat as an external source of corporate discipline. While previous studies have shown this being the case (Lel and Miller, 2015; Glendening, 2016), I formally examine the validity of this assumption before I employ the enactment of M&A as a plausible source of variation in the market for corporate controls for my empirical investigation.

To do so, I start with the examination of the takeover intensity and hostile takeover intensity through time-series plot before and after these laws are enacted. Following existing literature, I define *Overall M&A Intensity* as the number of takeovers, which

includes both hostile and friendly takeovers, divided by the total number of publicly listed firms (Glendening et al., 2016). Similarly, *Hostile Takeover Intensity* is defined as the number of hostile takeovers plus tender offers divided by the total number of publicly listed firms. Data on M&A comes from SDC Platinum database. Figure 4.2 presents the time series plot of *Overall M&A Intensity* and *Hostile Takeover Intensity* in Panel A and Panel B respectively. Figure 4.2 shows a decreasing trend (linear) in *Overall M&A Intensity* (*Hostile takeover Intensity*) during the years leading up to M&A law enactment, but an increasing trend in *Overall M&A Intensity* (*Hostile takeover Intensity*) during the years following enactment. The results are in line with previous findings of Glendening et al. (2016).

Secondly, I empirically investigate whether the passage of M&A laws positively impacts takeover intensity by employing a multivariate regression as presented in Appendix table A4.1. The results of Appendix table A4.1 show that overall takeover intensity and hostile takeover intensity both improves significantly in the countries following the enactment of M&A laws. The findings reported in Appendix table A4.1 and Figure 4.2, taken together, corroborate the idea that M&A laws induce an exogenous increase in the threat of takeover.

Following the test on the validity of enactment of M&A laws as a source of variation in takeover threat in Appendix table A4.1, I then employ of a visual examination of change in risk-taking before and after M&A enactments for the treated countries. To do so, I plot time-series plots of the industry-adjusted ROA volatility and R&D investment of the treated firms which I present in figures 4.3 and 4.4 respectively where the variables are as defined in Section 4.3.1. I also plot the extrapolated values of average Adjusted ROA

Volatility and R&D investment based on the non-linear pre-period trend (plots in dotted lines in Figures 4.3 and 4.4) to show the counterfactual had there been no change in M&A laws in these treated countries following Williams (2012). Figures 4.3 and 4.4 show that there is a visible positive upward trend in the Adjusted ROA Volatility and R&D Investment in the post-M&A enactment period of the treated countries lending preliminary evidence of the association between the market for corporate control and firm risk-taking.

…Insert figure 4.3 about here…

…Insert figure 4.4 about here…

Following the visual examination of the effect of M&A laws enactments on firm risk-taking, I then employ multivariate DiD specification suggested by Glendening et al. (2016) as my empirical method to examine the effect of M&A laws on firm risk-taking. Specifically, I employ following regression specification.

$$Risk_{i,t} = \alpha + \beta . ENACT\_POST_{c,t} + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{i,t} \qquad 4.1$$

where $Risk_{i,t}$ is gauged by two proxies. The first is ROA volatility, $\sigma(ROA)_{ind-adjusted}$, defined as industry adjusted 3-year rolling standard deviation of ROA where ROA is computed as EBITDA as a proportion of total assets. The second proxy is *R&D/TA*. $\boldsymbol{X_{i,t-1}}$ is a vector of control variables explained in section 4.4.2. $ENACT\_POST_{c,t}$ is a categorical variable that takes the value of one if a firm is a treated firm (i.e. it belongs to M&A enacting countries) and following M&A enactment year, and zero otherwise.

FE includes a vector of fixed effects dummy. In the regression model with *R&D/TA* as a dependent variable, I also control for the interaction of Industry FE and Year FE to accommodate the time-variant effect of industry on firm *R&D/TA.* Table 4.2 presents the baseline regression. Models [1] and [6] are unrestricted models of $\sigma(ROA)_{ind-adjusted}$ and *R&D/TA* respectively where I present $ENACT\_POST_{c,t}$ coefficient without firm and country-level controls. While other specifications present other firm and country-specific control variables. As presented in table 4.2 the coefficient of $ENACT\_POST_{c,t}$ is significantly and consistently positive across models in line with the prediction of hypothesis $H_{3.1a}$. In terms of economic magnitude, with the coefficient of $\sigma(ROA)_{ind-adjusted}$ documented in the range of 0.0028 to 0.0068 this translates as a significant 19.72 percentage to 47.89 percentage of average $\sigma(ROA)_{ind-adjusted}$ (average $\sigma(ROA)_{ind-adjusted}$ being 0.0142). Similarly, *R&D/TA of the treated firms increased in a range of* 0.22 percentage to 1.26 percent per year after the M&A enactments. This translate to 8.94% to 51.22% of average *R&D/TA* of my sample (which is 2.46%). The results, therefore, highlight the merit of market for corporate control in stimulating firm risk-taking (John et al., 2008; Glendening et al., 2016).

…Insert table 4.2 about here…

4.5. Robustness tests

My results from difference-in-differences specification reduce the effect of confounders and are arguably less prone to confounding effects (Lel and Miller, 2015; Glendening et al., 2016). For the events other than my takeover shocks leading to changes in risk-taking,

these confounding factors have to change across 31 countries in different time period which is less likely. However, I test few possible sources of bias in the results in this section. This includes the examination of pre-treatment trend of treated and control firms. The assumption under which difference-in-differences estimation works credibly is the existence of no pre-treatment difference in the trend of treated and control group (Atanasov and Black, 2016). I, therefore, run the regression in equation 1 for both treated and control firms up to 4 lag years before treatment.

4.5.1. Examining Parallel trend assumption

One major concern in the credibility of difference-in-differences estimation lies in its assumption of a parallel trend (Atanasov and Black, 2016). This means, there is no systematic difference in the factors affecting risk-taking of treated and control firms prior to the treatment of regulatory reforms. I test this by employing residual plots of regressions (equation 4.1. for treated and control firms for up to 4 lag periods before treatment. The before treatment restriction makes $ENACT\_POST_{c,t}$ a null variable (i.e. equal to zero) transforming 4.1 as:

$$Risk_{i,t} = \alpha + \beta.\boldsymbol{X_{i,t-1}} + \boldsymbol{FE} + e_{i,t} \qquad 4.2$$

I use regression 4.2 separately for treated and control firms and plot the residuals for up to 4 lag period. Figures 4.5 and 4.6 present the residual plots with $\sigma(ROA)_{ind-adjusted}$ and *R&D/TA* respectively. These figures show that there is no systematic difference in the residuals of equation 4.2 for treated and control firms for up to 4 lag periods, thus satisfying the parallel trend assumption prior to the treatment of M&A laws.

…Insert Figure 4.5 about here…

…Insert Figure 4.6 about here…

4.5.2 Placebo Tests

My main tests rely on the premise that there are no notable confounding shocks across economies other than the M&A law enforcement, as an explanation of the systematic changes observed in corporate risk-taking. While it is unlikely that there are macro-economic shocks across different countries in different years systematically confounding to my staggered M&A regulations theoretical possibility remains. For example, that the risk-taking is trending upwards in countries before the M&A laws introduction in responses to other confounding macroeconomic factors or events such that the results reflect spurious trends rather than the corporate discipline from M&A laws. To address this, I use a placebo test as shown in equation 4.3.

$$Risk_{i,t} = \alpha + \beta_1 . Placebo_{c,t-1} + \beta_2 . Placebo_{c,t-2} + \beta_3 . Placebo_{c,t-3} + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{i,t} \quad (4.3)$$

As shown in equation 4.3, I construct three placebo treatment dummy variables, $Placebo_{c,t-1}$, $Placebo_{c,t-2}$, and $Placebo_{c,t-3}$ that are equal to 1 in the first, second and third year before the M&A law introduction in country c, zero otherwise. If my findings are indeed due to confounding events around the M&A laws introduction across countries, the placebo dummy variables' coefficients should be similar in economic and statistical magnitude compared to the treatment coefficient.

…Insert table 4.2 about here…

Models [1] to [7] of Table 4.3, I present placebo results with $\sigma(ROA)_{ind-adjusted}$ and models [8] to [14] the placebo coefficient estimates are economically small and close to zero. This is the case irrespective of whether I run the placebo experiment individually or all in the same model and when the dependent variable is $\sigma(ROA)_{ind-adjusted}$ or *R&D/TA*. Hence, it is only following the increased takeover threat due to the introduction of M&A laws firms undertake higher risk-taking.

4.5.3 Firm Characteristics and risk-taking

I examine the parallel trend assumption and confounding effect through residual plots before M&A laws in the previous section. In this section, I examine whether risk-taking appetite varies across different firm characteristics. To do so, I follow Vig (2013) and run a difference in difference in differences (DiDiD) specification as shown in equation 4.4.

$$Risk_{it} = \alpha + \omega.\boldsymbol{X_{i,t}}.ENACT\_POST_{c,t} + \beta.ENACT\_POST_t + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{i,t} \qquad 4.4$$

where ω is capturing the differential effect of M&A law introduction among treated firms based on firm characteristics. β captures the treatment effect after controlling for changes in risk-taking across firm characteristics and therefore is a causal estimate of risk-taking of otherwise very similar treated and control firms. The firm characteristics include Leverage, Size, Capex, Sales growth and Cash-holding.

…Insert table 4.4 about here…

One important fact that stands out in this examination as reported in table 4.4 is that the DiD coefficient is significant and positive after controlling for effect of the firm differences changing in the post-M&A law introduction period. The finding reinforces the

causal claim in support hypothesis 4.1a. In terms of triple-interaction term, triple-interaction term of leverage is positive (models [6] and [12] of table 4.4). One implication of this is that creditors could value the improved corporate discipline and hence could support firm risk-taking following M&A reforms. Other coefficients are in line with the theoretical predictions (at least in terms of expected signs of coefficients).

4.6. Developed Vs Developing Countries

In the existence of two seemingly opposing predictions of the differential impact of the market for corporate control on corporate risk-taking of firms in developing and developed countries, I test hypotheses $H_{4.2a}$ vis-à-vis $H_{4.2b}$ in this section. To do so, I employ two empirical strategies. First, I run the DiD regression as shown in equation 4.1 for the subsample of developing and developed economies separately. Second, I employ DiDiD regression, as shown in the equation 4.4..

$$Risk_{it} = \alpha + \omega.ENACT_{POST} \times DevelopingCountry + \beta.ENACT\_POST_{c,t} + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{it} \quad (4.4)$$

I report the results from subsample analysis and DiDiD regression analysis in table 4.5.

…Insert table 4.5 about here…

As reported in models from [1] to [4] for developed countries and from [5] to [8] for developing countries subsamples, while the DiD coefficients for both the proxies are significant and positive across both sub-samples, the coefficient in developing economies

have lower magnitude. I maintain that the lower magnitude is attributed to the poorer quality of enforcement environment and investor protection regime that pose challenges among developing economies to translate laws from provision to practice (Dutcher, 2005). To gauge the economic magnitude of this difference, I report DiDiD regression, as shown in equation 4.4 in models in models [9] and [10]. The DiDiD coefficient of both the proxies are negative (-0.0021 and -0.0190) and significant. The results are important and contribute to the debate on whether external discipline complements or substitutes other forms of governance (Lel and Miller, 2015). While the distinction between developing and developed markets can be on many grounds, previous studies highlight the enforcement environment and investor protection regimes as important differentiating factors (Claessens and Yurtoglu, 2013). To the extent the distinction between developing and developed markets can be attributed to differing enforcement environment and investor protection regimes, my finding provides an evidence that the market for corporate control could act as a compliment (and not a substitute) to other country-level governance mechanisms (Glendening et al., 2016). Specifically, my study underscores the role of enforcement environment and investor protection regimes complementing the external governance provided by takeover threats. However as a word of caution, the enforcement environment and investor protection regime changes over time. The employment of developed and developing markets to capture this variation therefore limits the generalizability of my results on the heterogeneity between treated countries in enforcement environment and investor protection regimes.

4.7. Value Relevance of risk-taking

In this section, I examine whether increased risk-taking in the post-M&A enactment is value relevant by testing hypothesis *H4*. To do so, I employ regression equation 4.5.

$$\ln(Tobin's\ Q_{i,t+1}) = \alpha + \theta.Risk_{it} \times ENACT\_POST_{c,t} \qquad 4.5$$
$$+\boldsymbol{\lambda_k X_{i,t-1}} + \gamma_i + \tau_t + \vartheta_j \times \tau_t + e_{it},$$

where $Tobin's\ Q_{i,t+1}$ is one-year lead Tobin's Q gauged by the market to book value following Rao (2017). Here, θ is my implication coefficient of interest. Other symbols are as previously explained in section 4.5.

I present the results in table 4.6. The results are stable with additional firm controls and the inclusion of macroeconomic factors. Models [1] to [7] show that higher risk-taking in the post period is associated with a higher firm value in the subsequent year, thus implying a positive value effect of risk-taking. Therefore, increased risk-taking documented in my study is a reflection of firms' engagement in value-enhancing investments and not in value-destroying overinvestment or short-termism.

4.8. Limitation of empirical chapter 3.

In my third empirical chapter, I ask an important open question of whether the market for corporate control encourages or deters firm risk-taking. Employing two different measures of risk-taking, and robust to an array of robustness tests, I show that the market for corporate control positively affects firm-risk taking. However, there are a few limitations which could be interesting to address in future research.

First, to gauge the variation in the market for corporate control I rely on the staggered enactment of takeover laws across countries. I have further tested the validity of the use of staggered initiation of M&A laws as a credible takeover threat, I have tested and documented an affirmative result (Appendix table 4.2). While this method is popular in academic research and the cross-country variations in M&A laws initiation have been employed in previous studies like Lel and Miller (2015) and Glendening et al. (2016) as a proxy of intertemporal variation in the market for corporate control it would be important to see if my results hold when employing continuous measures of takeover threats (like overall takeover intensity and hostile takeover intensity) as a source of variation in the market for corporate control.

The second important limitation in this chapter emerges from my categorization of firms into the developed and the developing markets to gauge the heterogeneity in enforcement environment and investor protection regimes. While previous studies highlight the distinction between developed and developing countries on their enforcement environment and investor protection regimes is substantial and consistent (Claessens and Yurtoglu, 2013; Dharmapala and Khanna, 2013), there can be other distinction between developed and developing markets (like growth opportunities and protection of intellectual property rights, etc). Further, the enforcement environment and investor protection regime change over time. My static categorization may not capture this time-varying effects of enforcement environment and investor protection regime further limiting the generalizability of my results. Going forward, it is imperative to examine the effect of the market for corporate control on firm risk-taking based on the heterogeneity of time-varying indices of enforcement environment and investor protection regimes.

4.9. Conclusion.

Does the market for corporate control encourage or deter firm risk-taking? This is an important policy question the policy-makers face. Corporate practitioners and the academic community are both inconclusive in the literature regarding the prediction of the effect. I answer this question using plausibly exogenous shocks to the threat of takeover with the staggered initiation of country-level merger and acquisition (M&A) laws and show that the market for corporate control has a positive effect on firm risk-taking appetite.

I further show that higher risk-taking is associated with a higher valuation in the lead-period. Additionally, my subsample investigation of developed and emerging economies documents that the effect of M&A laws are weaker in stimulating risk-taking in emerging economies when compared to their developed counterparts, thus suggesting the market for corporate control complements other forms of governance in stimulating firm risk-taking. My results suggest that improvement in the market for corporate control positively catalyse corporate risk-taking.

Table 4.1: Descriptive Statistics:

Table 4.1 presents descriptive statistics of the sample and data. Panel A presents no. of observation of data of 31 countries with 20 countries without M&A laws and 11 countries with M&A laws during the study period. Panel A also presents a column on the year of enforcements for the subsample of countries with M&A law. Panel B presents sample distribution over 29 industries based on FF-30 industry-classification excluding banking, insurance and financial institutions. Panel C provides the descriptive statistics of the variables used in this study. $\sigma(ROA)_{ind-adjusted}$ is industry adjusted 3-year rolling standard deviation of ROA where *ROA* is income before earnings, interest, taxes, depreciation and amortisation (EBITDA) scaled by total assets. *R&D/TA* is R&D expenditure scaled by total assets. *Leverage* is computed as total debt by total assets. *Capex* is capital expenditure as a fraction of total assets. Sales growth is addition to net sales as a fraction of previous year's net sales. *MB* is the market to book value of equity. Study period ranges from 1995 to 2007.

Panel A: Sample Countries with and without M&A Laws

Sample Countries without M&A Law			Sample Countries with M&A Law			
Country Name	Obs.	Freq (%)	Country Name	Obs.	Freq (%)	Yr of Enf.
Argentina	1,094	1.01	Austria	1,412	2.19	1998
Brazil	4,550	4.21	Chile	2,167	3.36	2000
Colombia	539	0.5	Germany	11,967	18.57	2002
Czech Republic	866	0.8	India	13,515	20.97	1997
Denmark	2,312	2.14	Indonesia	3,523	5.47	1998
France	12,776	11.83	Ireland	1,236	1.92	1997
Greece	3,733	3.46	Malaysia	9,857	15.3	1998
Hungary	502	0.46	New Zealand	1,557	2.42	2001
Israel	2,991	2.77	Pakistan	1,873	2.91	2000
Japan	45,832	42.43	Philippines	1,818	2.82	1998
Luxemburg	466	0.43	Taiwan	15,519	24.08	2002
Mexico	1,848	1.71				
Norway	3,344	3.1				
Peru	1,163	1.08				
Poland	2,664	2.47				
Portugal	1,135	1.05				
South Korea	14,309	13.25				
Thailand	5,009	4.64				
Turkey	2,553	2.36				
Venezuela	333	0.31				
Total	108,019	100	Total	64,444	100	

Panel B: Industry Classification of Sample

Industries (Fama-French 30)	No. of firms	No of Obs.
Aircraft, ships, and railroad equipment	82	749
Apparel	258	2,331
Automobiles and Trucks	581	5,343
Beer & Liquor	139	1,379
Business Equipment	2,218	18,311
Business Supplies and Shipping Containers	454	4,250
Chemicals	858	7,716
Coal	53	327

Table 4.1 contd…

Table 4.1 contd…

Industries (Fama-French 30)	No. of firms	No of Obs.
Communication	442	3,820
Construction and Construction Materials	2,074	18,879
Consumer Goods	461	4,045
Electrical Equipment	397	3,334
Fabricated Products and Machinery	1,031	9,174
Food Products	1,125	10,089
Healthcare, Medical Equipment, Pharmaceutical Products	787	6,281
Others	431	3,536
Personal and Business Services	2,217	17,435
Petroleum and Natural Gas	322	2,570
Precious Metals, Non-Metallic, and Industrial Metal Mining	178	1,481
Printing and Publishing	220	2,006
Recreation	503	4,449
Restaurants, Hotels, Motels	458	3,488
Retail	935	8,828
Steel Works Etc	743	6,412
Textiles	618	4,840
Tobacco Products	26	283
Transportation	665	6,181
Utilities	459	4,125
Wholesale	1,157	10,801
Total	19,892	172,463

Panel C: Descriptive Statistics

	count	mean	P50	SD	P25	P75
$\sigma(ROA)_{ind-adjusted}$	172463	0.0142	-0.0000	0.0489	-0.0097	0.0190
R&D	50107	0.0246	0.0091	0.0412	0.0017	0.0285
Leverage	172409	0.2646	0.2275	0.2395	0.0672	0.3965
Size	172458	11.62	11.53	1.91	10.36	12.78
Capex	168157	0.0585	0.0345	0.0728	0.0127	0.0740
Sales growth	170739	.0764	0.0000	0.2099	-0.0013	0.1559
Cash	172248	0.1427	0.0911	0.1549	0.3462	0.1937

Panel D: bivariate t-tests on the variables between countries without and with M&A Laws

	Without M&A [a]	With M&A [b]	Diff [a-b]	t-stat	p-value
$\sigma(\mathrm{ROA})_{\mathrm{ind-adjusted}}$	0.0126	0.0170	-0.0045***	-18.40	0.000
No. of Obs.	108,019	64,444			
R&D	0.0229	0.0277	-0.0047***	-12.27	0.000
No. of Obs.	32,861	17,246			
Leverage	0.2630	0.2674	-0.0044***	-3.66	0.000
No. of Obs.	107,981	64,428			
Size	11.90	11.14	0.76***	81.69	0.000
No. of Obs.	108,015	64,443			
Capex	0.0537	0.0661	-0.0124***	-33.95	0.000
No. of Obs.	104,009	64,148			
Sales-growth	0.0869	0.1211	-0.0342***	-19.36	0.000
No. of Obs.	107381	63358			
Cash	0.1534	0.1248	0.0286***	37.23	0.000
No. of Obs.	107,916	64,405			

Table 4.2. Baseline Results

The table reports the results of regression equation:

$$Risk_{i,t} = \alpha + \beta.ENACT\_POST_{c,t} + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{i,t},$$

where $Risk_{i,t}$ is $\sigma(ROA)_{ind-adjusted}$ defined as industry adjusted 3-year rolling standard deviation of *ROA* which is computed as EBITDA as a proportion of total assets. Column 3 presents *R&D/TA* as an alternative measure of risk-taking computed as R&D expenditure as a fraction of total assets. Model [4] reports results with $\sigma(ROA)_{ind-adjusted}$ as the dependent variable for sub-sample with non-missing *R&D*. $ENACT\_POST$ takes the value of one for year following the introduction of M&A and zero otherwise. Control variables are one year lagged and include *Size*, *Capex Leverage*, *Sales growth* and *Cash*, where variables are defined in notes to table 4.1. **FE** represents the vector of fixed effects dummies that include firm fixed effect and year fixed effect for specifications with $\sigma(ROA)_{ind-adjusted}$ as dependent variable; and firm fixed effect, year fixed effect and interaction of industry and year for specifications with *R&D*. Industries are identified as 29 industries based on Fama French (FF)-30 industry-classification excluding banking, insurance and financial institutions. Standard errors are clustered at firm level. *,**, and *** indicates significance level at 10%, 5%, and 1% respectively. Sample period 1995-2007.

	$\sigma(ROA)_{ind-adjusted}$				R&D/TA		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Treatment $[ENACT\_POST_t]$	0.0068*** (0.0010)	0.0052*** (0.0010)	0.0028*** (0.0011)	0.0040*** (0.0009)	0.0022*** (0.0004)	0.0029*** (0.0004)	0.0126*** (0.0007)
Leverage		0.0084*** (0.0024)	0.0084*** (0.0024)	0.0182*** (0.0016)		-0.0108*** (0.0012)	-0.0092*** (0.0011)
Size		-0.0004 (0.0044)	-0.0008 (0.0044)	-0.0291*** (0.0044)		-0.0077*** (0.0029)	-0.0151*** (0.0028)
Capex		0.0016** (0.0007)	0.0014** (0.0007)	0.0048*** (0.0002)		0.0019*** (0.0001)	0.0028*** (0.0001)
Sales growth		0.0000* (0.0000)	0.0000* (0.0000)	0.0000* (0.0000)		-0.0000*** (0.0000)	-0.0000*** (0.0000)
Cash Holding		0.0219*** (0.0034)	0.0202*** (0.0034)	0.0553*** (0.0024)		0.0862*** (0.0021)	0.0773*** (0.0020)
Ln(GDP per Capita)			0.0079*** (0.0013)	0.0030*** (0.0003)			0.0071*** (0.0002)
GDP growth			0.0575*** (0.0073)	0.0256*** (0.0091)			0.1031*** (0.0070)
Trade Openness			0.0113 (0.0171)	0.2510*** (0.0122)			0.2956*** (0.0107)
Unemployment Rate			-0.0121*** (0.0008)	-0.0193*** (0.0010)			-0.0065*** (0.0008)
Market Capitalization			0.0239*** (0.0035)	0.0198*** (0.0008)			-0.0001 (0.0005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE*Year FE	No	No	No	No	Yes	Yes	Yes
Adj. R^2	0.40	0.42	0.42	0.15	0.01	0.14	0.20
No. of Firms	19,742	19,187	19,187	9,240	9,242	9,240	9,240
No. of Obs.	171360.00	162821.00	162821.00	49,120.00	50,107.00	49,285.00	49,285.00

Table 4.3: Placebo Experiments

The table reports the results of regression equation:

$$Risk_{i,t} = \alpha + \beta_1.Placebo_{c,t-1} + \beta_2.Placebo_{c,t-2} + \beta_3.Placebo_{c,t-3} + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{i,t},$$

where $Risk_{it}$ for models [1] to [7] in Panel A is computed as $\sigma(ROA)_{ind-adjusted}$ defined as industry adjusted 3-year rolling standard deviation of *ROA* computed as EBITDA as a proportion of total assets. Models [8] to [14] in Panel B presents *R&D/TA* as an alternative measure of risk-taking computed as R&D expenditure as a fraction of total assets. Column 4 reports the results with $\sigma(ROA)_{ind-adjusted}$ as the dependent variable for sub-sample with non-missing *R&D*. $Placebo_{c,t-1}$, $Placebo_{c,t-2}$, and $Placebo_{c,t-3}$ that are equal to 1 in the first, second and third year before the M&A law introduction in country c, 0 otherwise. Control variables are one year lagged and include *Size*, *Capex Leverage*, *Sales growth* and *Cash*, where variables are defined in notes to table 4.1 **FE** represent vector of fixed effects dummies that includes firm fixed effect and year fixed effect for specifications with $\sigma(ROA)_{ind-adjusted}$ as dependent variable; and firm fixed effect, year fixed effect and interaction of industry and year for specifications with *R&D*. Standard errors are clustered at firm level. *,**, and *** indicates significance level at 10%, 5%, and 1% respectively. Sample period 1995-2007.

Panel A. Dependent variable: $\sigma(ROA)_{ind-adjusted}$

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
$Placebo_{c,t-1}$	-0.0017	0.0002					-0.0002
	(0.0032)	(0.0010)					(0.0016)
$Placebo_{c,t-2}$			-0.0018	0.0004			-0.0030
			(0.0062)	(0.0014)			(0.0025)
$Placebo_{c,t-3}$					-0.0016	0.0034	0.0056
					(0.0080)	(0.0050)	(0.0049)
Leverage		0.0092**		0.0092**		0.0093*	0.0092*
		(0.0031)		(0.0031)		(0.0046)	(0.0050)
Size		-0.0027		-0.0027		-0.0027	-0.0027
		(0.0023)		(0.0023)		(0.0029)	(0.0030)
Capex		0.0174***		0.0174***		0.0173	0.0172
		(0.0050)		(0.0051)		(0.0116)	(0.0131)
Sales growth		0.0136***		0.0136***		0.0136***	0.0136***
		(0.0012)		(0.0012)		(0.0022)	(0.0027)
Cash Holding		0.0208***		0.0208***		0.0208**	0.0208**
		(0.0054)		(0.0054)		(0.0086)	(0.0081)
Ln(GDP per Capita)		0.0072**		0.0072**		0.0081	0.0082*
		(0.0027)		(0.0026)		(0.0048)	(0.0044)
GDP growth		0.0426*		0.0425*		0.0438	0.0451
		(0.0234)		(0.0235)		(0.0287)	(0.0280)
Trade Openness		0.0282**		0.0283**		0.0307*	0.0305*
		(0.0095)		(0.0094)		(0.0150)	(0.0147)
Unemployment Rate		0.0187		0.0196		0.0296	0.0275
		(0.0387)		(0.0409)		(0.0629)	(0.0637)
Market Capitalization		0.0103**		0.0102**		0.0100**	0.0103**
		(0.0044)		(0.0044)		(0.0044)	(0.0041)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE*Year FE	No	No	No	No	No	No	No
Adj. R^2	0.40	0.43	0.40	0.43	0.40	0.43	0.43
No. of Countries	31	31	31	31	31	31	31
No. of Obs.	171360	165272	171360	165272	171360	165272	165272

Panel B. Dependent Variable: *R&D/TA*

	[8]	[9]	[10]	[11]	[12]	[13]	[14]
$Placebo_{c,t-1}$	0.0009	0.0001					0.0011
	(0.0007)	(0.0006)					(0.0011)
$Placebo_{c,t-2}$			-0.0001	-0.0010			-0.0032
			(0.0010)	(0.0009)			(0.0023)
$Placebo_{c,t-3}$					0.0010	0.0001	0.0020
					(0.0012)	(0.0011)	(0.0013)
Leverage		-0.0050***		-0.0050***		-0.0050***	-0.0050***
		(0.0013)		(0.0013)		(0.0016)	(0.0017)
Size		-0.0030***		-0.0030***		-0.0030***	-0.0030**
		(0.0005)		(0.0005)		(0.0011)	(0.0011)
Capex		0.0116***		0.0117***		0.0116	0.0116
		(0.0035)		(0.0036)		(0.0071)	(0.0071)
Sales growth		-0.0036***		-0.0036***		-0.0036***	-0.0036***
		(0.0004)		(0.0004)		(0.0009)	(0.0009)
Cash Holding		0.0095***		0.0096***		0.0095***	0.0095***
		(0.0030)		(0.0030)		(0.0034)	(0.0034)
Ln(GDP per Capita)		0.0029*		0.0027*		0.0030**	0.0029*
		(0.0014)		(0.0014)		(0.0014)	(0.0015)
GDP growth		-0.0113		-0.0114		-0.0112	-0.0108
		(0.0115)		(0.0116)		(0.0087)	(0.0086)
Trade Openness		0.0098*		0.0106**		0.0097	0.0097
		(0.0045)		(0.0048)		(0.0067)	(0.0065)
Unemployment Rate		0.0335		0.0302		0.0338	0.0331
		(0.0267)		(0.0262)		(0.0331)	(0.0337)
Market Capitalization		-0.0013		-0.0012		-0.0013	-0.0012
		(0.0008)		(0.0007)		(0.0013)	(0.0014)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.84	0.84	0.84	0.85	0.84	0.85	0.85
No. of Countries	31	31	31	31	31	31	31
No. of Obs.	48,910.00	48,385.00	48,910	48,385	48,910	48,385	48,385

Table 4.4: Firm Heterogeneity and Corporate Risk-taking.

The table reports the results of regression equation:

$$Risk_{it} = \alpha + \omega.\boldsymbol{X_{i,t-1}}.ENACT\_POST_{c,t} + \beta.ENACT\_POST_t + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{i,t},$$

where $Risk_{it}$ is (i) $\sigma(ROA)_{ind-adjusted}$ calculated as industry adjusted 3-year rolling standard deviation of industry adjusted *ROA* computed as EBITDA as a proportion of total assets for Panel A; and (ii) *R&D/TA* computed as R&D expenditure as a fraction of total assets in Panel B. Control variables are one year lagged and include *Size*, *Capex Leverage*, *Sales growth* and *Cash*, where variables are defined in notes to table 4.1. **FE** represents the vector of fixed effects dummies that include firm fixed effect and year fixed effect for specifications with $\sigma(ROA)_{ind-adjusted}$ as a dependent variable; and firm fixed effect, year fixed effect and interaction of industry and year for specifications with *R&D* dependent variable. Standard errors are clustered at firm level. *,**, and *** indicates significance level at 10%, 5%, and 1% respectively. Sample period 1995-2007.

Panel A: Dependent Variable: $\sigma(ROA)_{ind-adjusted}$

	[1]	[2]	[3]	[4]	[5]	[6]
Interaction Leverage $Leverage_{it} \times ENACT\_POST_t$	0.0123*** (0.0030)					0.0184*** (0.0039)
Interaction Size $Size_{it} \times ENACT\_POST_t$		-0.0002*** (0.0001)				-0.0083*** (0.0005)
Interaction Capex $Capex_{it} \times ENACT\_POST_t$			0.0040 (0.0073)			0.0012 (0.0080)
Interaction Sales-growth $Sales-growth_{it} \times ENACT\_POST_t$				-0.0056*** (0.0011)		-0.0034*** (0.0011)
Interaction Cash $Cash_{it} \times ENACT\_POST_t$					0.0268*** (0.0049)	0.0262*** (0.0055)
Treatment $ENACT\_POST_t$	0.0110*** (0.0075)	0.0201*** (0.0065)	0.0102*** (0.0066)	0.0211*** (0.0075)	0.0111*** (0.0075)	0.0911*** (0.0065)
Leverage	0.0057** (0.0024)	0.0091*** (0.0024)	0.0089*** (0.0024)	0.0091*** (0.0024)	0.0089*** (0.0024)	0.0046** (0.0023)
Size	-0.0038*** (0.0007)	-0.0039*** (0.0007)	-0.0038*** (0.0007)	-0.0039*** (0.0007)	-0.0037*** (0.0007)	-0.0060*** (0.0006)
Capex	0.0181*** (0.0044)	0.0183*** (0.0044)	0.0193*** (0.0052)	0.0179*** (0.0044)	0.0162*** (0.0044)	0.0150*** (0.0052)
Sales growth	0.0137*** (0.0006)	0.0136*** (0.0006)	0.0136*** (0.0006)	0.0158*** (0.0007)	0.0136*** (0.0006)	0.0160*** (0.0007)
Cash Holding	0.0220*** (0.0033)	0.0223*** (0.0033)	0.0221*** (0.0033)	0.0220*** (0.0033)	0.0171*** (0.0033)	0.0162*** (0.0032)
Ln(GDP per Capita)	0.0055*** (0.0012)	0.0076*** (0.0012)	0.0065*** (0.0011)	0.0069*** (0.0011)	0.0050*** (0.0012)	0.0073*** (0.0012)
GDP growth	0.0439*** (0.0072)	0.0405*** (0.0072)	0.0421*** (0.0072)	0.0412*** (0.0071)	0.0426*** (0.0071)	0.0440*** (0.0071)
Trade Openness	0.0218*** (0.0033)	0.0303*** (0.0034)	0.0261*** (0.0031)	0.0270*** (0.0031)	0.0202*** (0.0031)	0.0232*** (0.0034)
Unemployment Rate	-0.0169 (0.0170)	0.0028 (0.0170)	-0.0082 (0.0171)	0.0000 (0.0170)	-0.0223 (0.0171)	0.0056 (0.0169)
Market Capitalization	0.0108***	0.0096***	0.0102***	0.0101***	0.0108***	0.0104***

	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE*Year FE	No	No	No	No	No	No
Adj. R^2	0.42	0.42	0.42	0.42	0.42	0.43
No. of Obs.	165721.00	165721.00	165721.00	165721.00	165721.00	165721.00
Panel B: Dependent Variable: $R\&D_{i,t}$						
	[7]	[8]	[9]	[10]	[11]	[12]
Interaction Leverage $Leverage_{it} \times ENACT\_POST_t$	-0.0005 (0.0016)					0.0170*** (0.0030)
Interaction Size $Size_{it} \times ENACT\_POST_t$		-0.0002*** (0.0001)				-0.0019*** (0.0004)
Interaction Capex $Capex_{it} \times ENACT\_POST_t$			-0.0070 (0.0046)			-0.0053 (0.0051)
Interaction Sales-growth $Sales - growth_{it} \times ENACT\_POST_t$				-0.0003 (0.0007)		0.0003 (0.0007)
Interaction Cash $Cash_{it} \times ENACT\_POST_t$					0.0157*** (0.0040)	0.0181*** (0.0045)
Treatment $ENACT\_POST_t$	0.0116*** (0.0056)	0.0206*** (0.0057)	0.0240*** (0.0056)	0.0249*** (0.0058)	0.0236*** (0.0058)	0.0246*** (0.0053)
Leverage	-0.0049*** (0.0015)	-0.0048*** (0.0014)	-0.0049*** (0.0014)	-0.0049*** (0.0014)	-0.0050*** (0.0014)	0.0046** (0.0023)
Size	-0.0029*** (0.0006)	-0.0029*** (0.0006)	-0.0029*** (0.0006)	-0.0029*** (0.0006)	-0.0029*** (0.0006)	0.0060*** (0.0006)
Capex	0.0106*** (0.0033)	0.0101*** (0.0033)	0.0132*** (0.0041)	0.0106*** (0.0033)	0.0089*** (0.0032)	-0.0150*** (0.0052)
Sales growth	-0.0036*** (0.0004)	-0.0036*** (0.0004)	-0.0036*** (0.0004)	-0.0035*** (0.0005)	-0.0036*** (0.0004)	0.0160*** (0.0007)
Cash Holding	-0.0092*** (0.0027)	-0.0089*** (0.0027)	-0.0091*** (0.0027)	-0.0092*** (0.0027)	-0.0072*** (0.0027)	0.0162*** (0.0032)
Ln(GDP per Capita)	0.0032*** (0.0009)	0.0043*** (0.0009)	0.0033*** (0.0009)	0.0032*** (0.0009)	0.0042*** (0.0009)	0.0073*** (0.0012)
GDP growth	-0.0098* (0.0053)	-0.0102* (0.0053)	-0.0099* (0.0053)	-0.0101* (0.0054)	-0.0092* (0.0053)	0.0440*** (0.0071)
Trade Openness	-0.0079** (0.0032)	-0.0031 (0.0032)	-0.0073** (0.0031)	-0.0080*** (0.0031)	-0.0035 (0.0032)	0.0232*** (0.0034)
Unemployment Rate	0.0359** (0.0175)	0.0430** (0.0174)	0.0372** (0.0175)	0.0362** (0.0175)	0.0448*** (0.0171)	0.0056 (0.0169)
Market Capitalization	-0.0018*** (0.0007)	-0.0022*** (0.0007)	-0.0018*** (0.0007)	-0.0018*** (0.0007)	-0.0020*** (0.0007)	0.0104*** (0.0008)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE*Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.85	0.85	0.85	0.85	0.85	0.85
No. of Obs.	48,552.00	48,552.00	48,552.00	48,552.00	48,552.00	48,552.00

Table 4.5: Developed Vs Developing Markets

The table reports the results of the regression equation:

$$Risk_{it} = \alpha + \beta.ENACT\_POST_{c,t} + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{it};$$ for models [1] to [8] &

$$Risk_{it} = \alpha + \omega.ENACT_{POST} \times DevelopingCountry + \beta.ENACT\_POST_{c,t} + \boldsymbol{\lambda_k X_{i,t-1}} + \boldsymbol{FE} + e_{it}$$; for models [9] and [10],

where $Risk_{it}$ in models[1],[2] [5], [6] and [9] is $\sigma(ROA)_{ind-adjusted}$ computed as industry adjusted 3-year rolling standard deviation of *ROA* computed as EBITDA as a proportion of total assets. Models [3],[4] [7], [8] and [10] present the results with *R&D/TA* as an alternative measure of risk-taking computed as R&D expenditure as a fraction of total assets. $ENACT\_POST$ represents the DiD coefficient which takes the value of one for treated countries with enactments of M&A laws following the year of enforcement and zero otherwise. Control variables are one year lagged and include *Size*, *Capex Leverage*, *Sales growth* and *Cash*, where variables are defined in notes to table 4.1. In model [9] and [10], I present a triple difference specifications where $DevelopingCountry$ dummy takes the value of one for developing countries and zero otherwise. **FE** represents the vector of fixed effects dummies that include firm fixed effect and year fixed effect for specifications with $\sigma(ROA)_{ind-adjusted}$ as a dependent variable; and firm fixed effect, year fixed effect and interaction of industry and year for specifications with *R&D* dependent variable. Standard errors are clustered at firm level. *,**, and *** indicates significance level at 10%, 5%, and 1% respectively. Sample period 1995-2007.

	Developed Markets				Developing Markets					
	$\sigma(ROA)_{ind-adjusted}$		R&D/TA		$\sigma(ROA)_{ind-adjusted}$		R&D/TA		$\sigma(ROA)_{ind-adjusted}$	R&D/TA
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
DiDiD [$ENACT\_POST_{c,t} \times Developing\ Country$]									-0.0021***	-0.0190***
									(0.0008)	(0.0008)
DiD	0.0109***	0.0027***	0.0139***	0.0148***	0.0057***	0.0066***	0.0004	0.0059***	0.0031***	0.0251***
[$ENACT\_POST_t$]	(0.0012)	(0.0009)	(0.0013)	(0.0009)	(0.0015)	(0.0010)	(0.0015)	(0.0017)	(0.0008)	(0.0007)
Leverage		0.0025		-0.0082***		0.0183***		0.0034	0.0088***	-0.0075***
		(0.0020)		(0.0012)		(0.0026)		(0.0021)	(0.0016)	(0.0011)
Size		-0.0060***		-0.0021***		-0.0062***		-0.0034***	-0.0178***	0.0056*
		(0.0005)		(0.0001)		(0.0008)		(0.0003)	(0.0028)	(0.0029)
Capex		0.0257***		0.0090**		0.0080*		-0.0071	0.0037***	-0.0029***
		(0.0036)		(0.0038)		(0.0042)		(0.0046)	(0.0004)	(0.0001)
Sales growth		0.0172***		-0.0026***		0.0057***		-0.0033**	0.0136***	-0.0021***
		(0.0006)		(0.0008)		(0.0007)		(0.0013)	(0.0005)	(0.0007)
Cash Holding		0.0218***		0.0585***		0.0011		0.0764***	0.0219***	0.0743***
		(0.0026)		(0.0023)		(0.0038)		(0.0048)	(0.0022)	(0.0020)
Ln(GDP per Capita)		0.0059***		0.0011***		-0.0085***		0.0159***	0.0053***	0.0026***
		(0.0009)		(0.0003)		(0.0016)		(0.0009)	(0.0007)	(0.0003)
GDP growth		0.0005		0.0673***		0.0123		0.0299**	0.0425***	-0.0043
		(0.0081)		(0.0097)		(0.0086)		(0.0142)	(0.0057)	(0.0076)
Trade Openness		0.0640***		0.0074***		0.0011		-0.0253***	-0.0158	0.3079***
		(0.0032)		(0.0010)		(0.0037)		(0.0013)	(0.0104)	(0.0107)
Unemployment Rate		-0.1104***		-0.3150***		-0.0838***		-0.1473***	0.0108***	0.0061***
		(0.0139)		(0.0144)		(0.0174)		(0.0173)	(0.0007)	(0.0010)
Market Capitalization		0.0119***		0.0025*		0.0111***		0.0168***	0.0220***	0.0013**
		(0.0009)		(0.0014)		(0.0014)		(0.0015)	(0.0022)	(0.0005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE*Year FE	No	No	No	No	Yes	Yes	Yes	Yes	No	Yes
Adj. R^2	0.41	0.44	0.81	0.86	0.40	0.42	0.86	0.88	0.42	0.84
No. of Obs.	123965	119077	41,378	40,953	47,353	46,157	7,981	8,321	165721	49,559

Table 4.6. Value Relevance of risk-taking

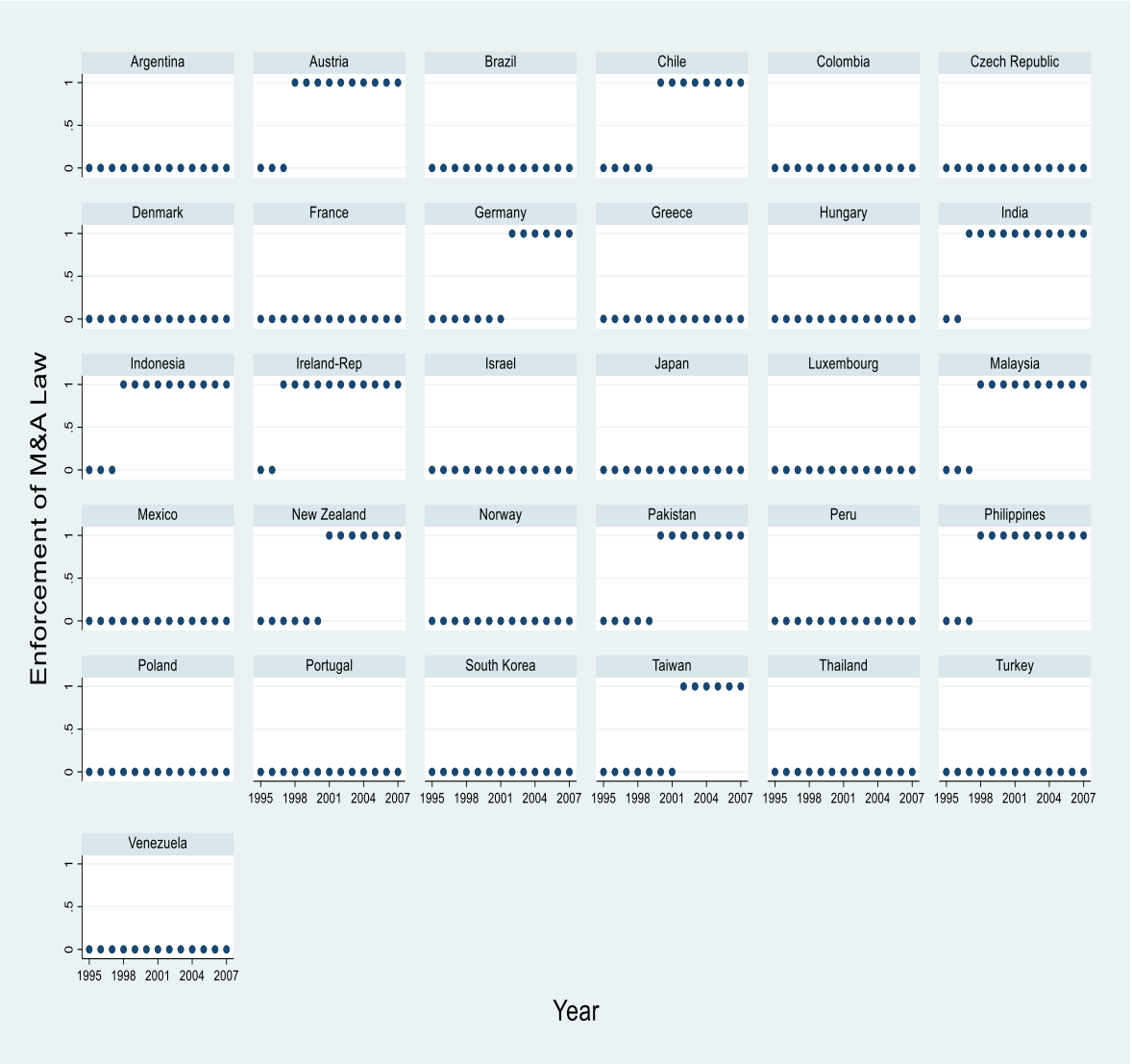
The table reports the results of the regression equation:

$ln(Tobin's\ Q_{i,t+1}) = \alpha + \theta.Risk_{it} \times ENACT\_POST_t + \boldsymbol{\lambda_k X_{i,t-1}} + \gamma_i + \tau_t + \vartheta_j \times \tau_t + e_{it},$

Where $Tobin's\ Q_{it}$ is gauged by Market to book value of equity. $Risk_{it}$ is $\sigma(ROA)_{i,t,ind-adj}$ in models [1] to [3] is gauged as industry adjusted 3-year rolling standard deviation of *ROA* computed as EBITDA as a proportion of total assets. Models [4] to [6] present *R&D/TA* as an alternative measure of risk-taking computed as R&D expenditure as a fraction of total assets. Model 7 presents as horse-race imposing both measures of risk-taking in a single model. Control variables are one year lagged and include *Leverage*, *Size*, *Capex*, *Sales growth* and *Cash*, where variables are defined in notes to table 4.1. γ_i, τ_t and $\vartheta_j \times \tau_t$ represent firm fixed effect, year fixed effect and interaction of industry and year FEs. Standard errors are clustered at the firm-level. *,**, and *** indicates significance level at 10%, 5%, and 1% respectively. Sample period 1995-2007.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Triple-Interaction-Risk-taking	1.6848***	1.6181***	1.2603***				0.2876*
$[\sigma(ROA)_{i,t,ind-adj} \times ENACT\_POST_t]$	(0.1986)	(0.1962)	(0.1971)				(0.1552)
Triple-Interaction-R&D Expenditure				2.8256***	2.1401***	2.8480***	1.8857***
$[R\&D \times ENACT\_POST_t]$				(0.2991)	(0.2944)	(0.3249)	(0.2004)
Treatment		0.2153***	0.2053***		0.2143***	0.2503***	0.2153***
$[ENACT\_POST_t]$		(0.0169)	(0.0157)		(0.0141)	(0.0158)	(0.0159)
Leverage		-0.6386***	-0.5937***		-0.3632***	-0.3234***	-0.3247***
		(0.0398)	(0.0397)		(0.0546)	(0.0549)	(0.0220)
Size		0.0936***	0.0778***		0.0197***	0.0227***	0.0195***
		(0.0114)	(0.0115)		(0.0047)	(0.0049)	(0.0026)
Capex		0.6153***	0.5622***		1.5779***	1.6139***	1.6303***
		(0.0701)	(0.0693)		(0.1124)	(0.1124)	(0.0748)
Sales growth		0.1660***	0.1581***		0.3270***	0.3317***	0.3306***
		(0.0084)	(0.0084)		(0.0157)	(0.0157)	(0.0121)
Cash Holding		0.2572***	0.2645***		0.6681***	0.7106***	0.7294***
		(0.0451)	(0.0448)		(0.0545)	(0.0542)	(0.0324)
Ln(GDP per Capita)			-0.1289***			-0.0432***	-0.0046
			(0.0274)			(0.0104)	(0.0055)
GDP growth			1.8003***			1.9077***	1.8812***
			(0.1320)			(0.3276)	(0.2041)
Trade Openness			-0.0175			0.2048***	0.2480***
			(0.0607)			(0.0300)	(0.0155)
Unemployment Rate			.07650			0.4146	0.0229
			(0.0672)			(0.3838)	(0.0919)
Market Capitalization			0.6688***			0.5928***	0.5947***
			(0.0221)			(0.0407)	(0.0238)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.62	0.63	0.64	0.82	0.85	0.85	0.86
No. of Obs.	139835	135024	135024	41,353	40,896	40,896	40,896

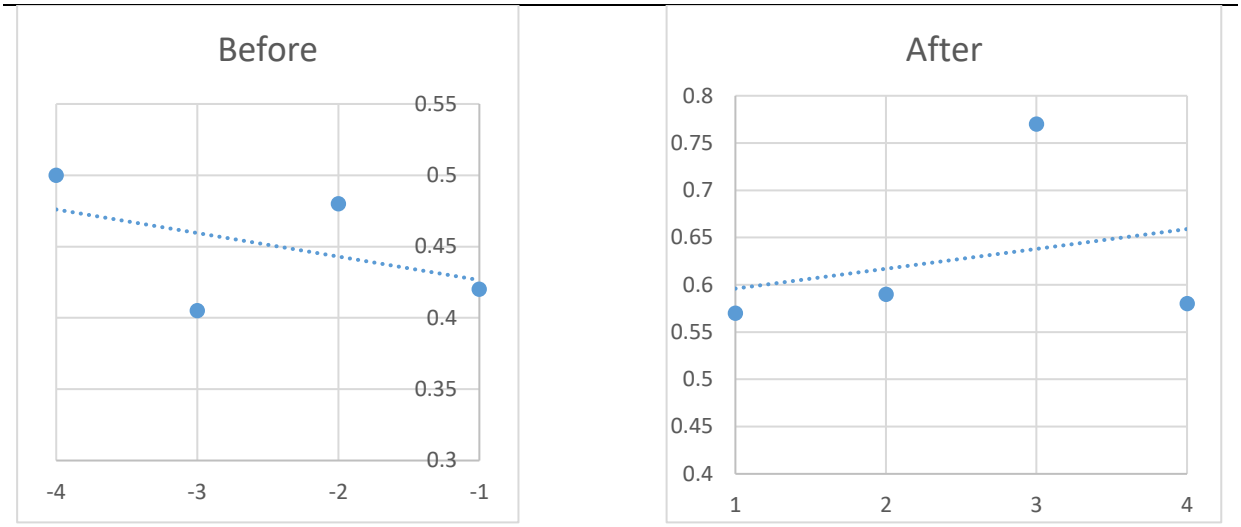
Figure 4.1. M&A Reform Across the Sample Countries



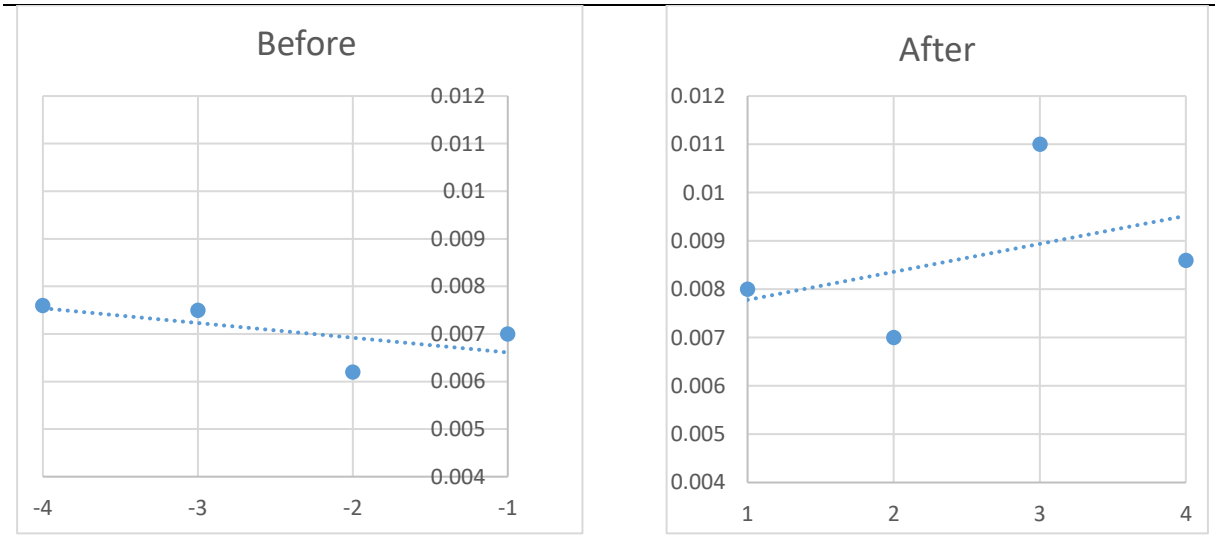
Note. Figure 4.1 presents the M&A reforms treatment variable across countries. The treatment takes the value of one in the years following M&A law enforcement. Study period includes 1995-2007.

Figure 4.2. Takeover intensity and hostile takeover before and after the M&A enactments.

Panel A. Overall M&A Intensity four years of before and four years after M&A enactments

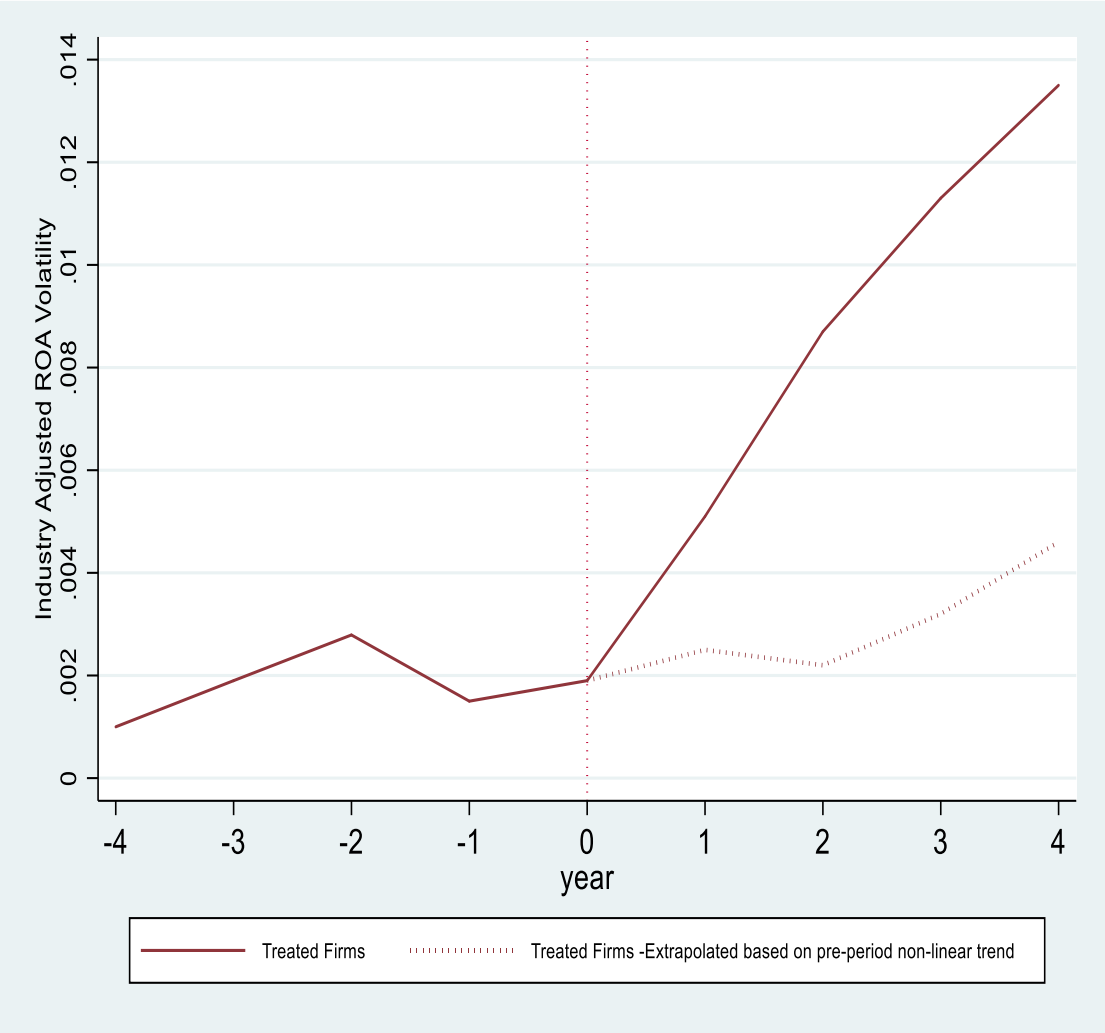


Panel B. Hostile takeover intensity four years of before and four years after M&A enactments



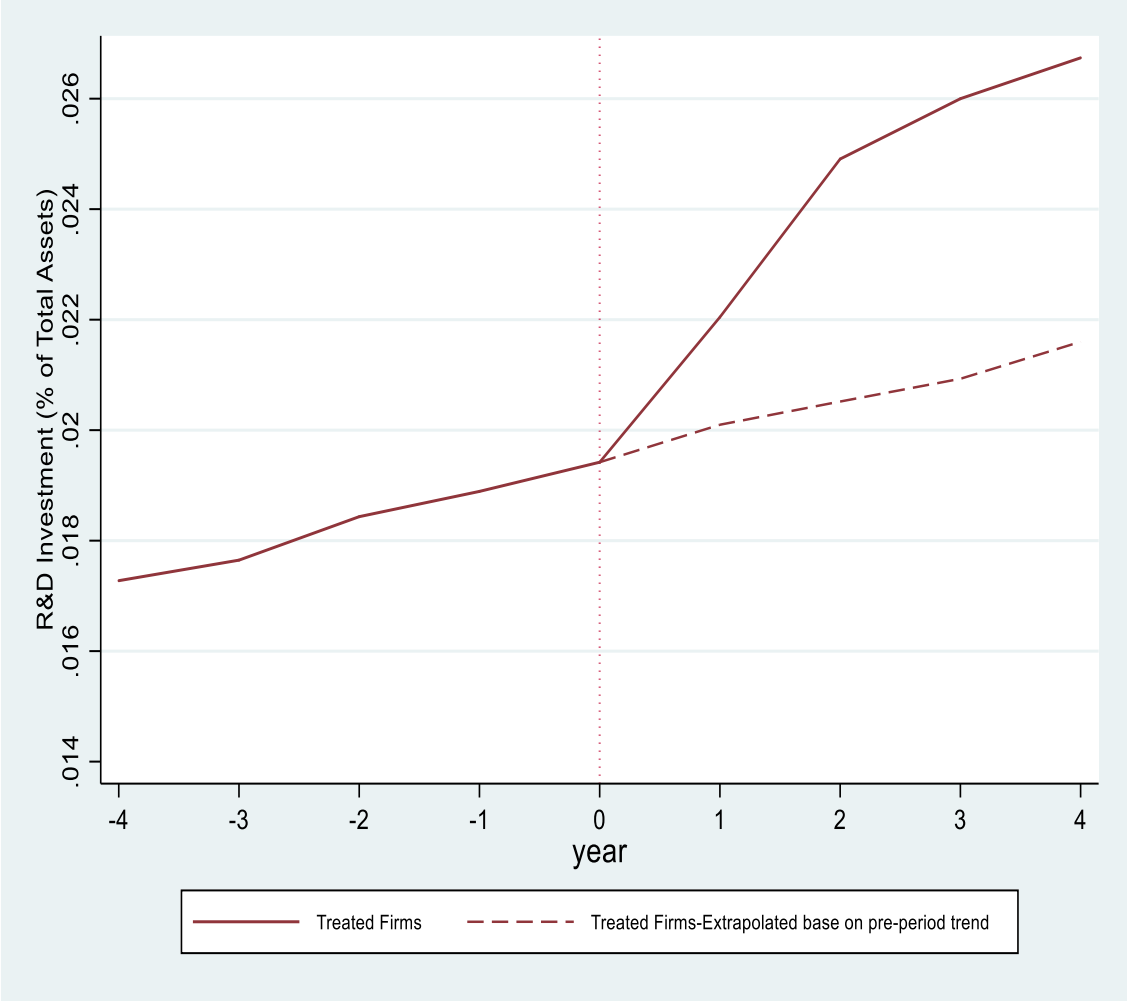
Note. Here I present the overall M&A intensity in Panel A and hostile takeover intensity in Panel B of countries with M&A enactments four years surrounding the enactments.

Figure. 4.3. Time Series Plot of Industry Adjusted ROA Volatility of the Treated Firms around the M&A Enforcement



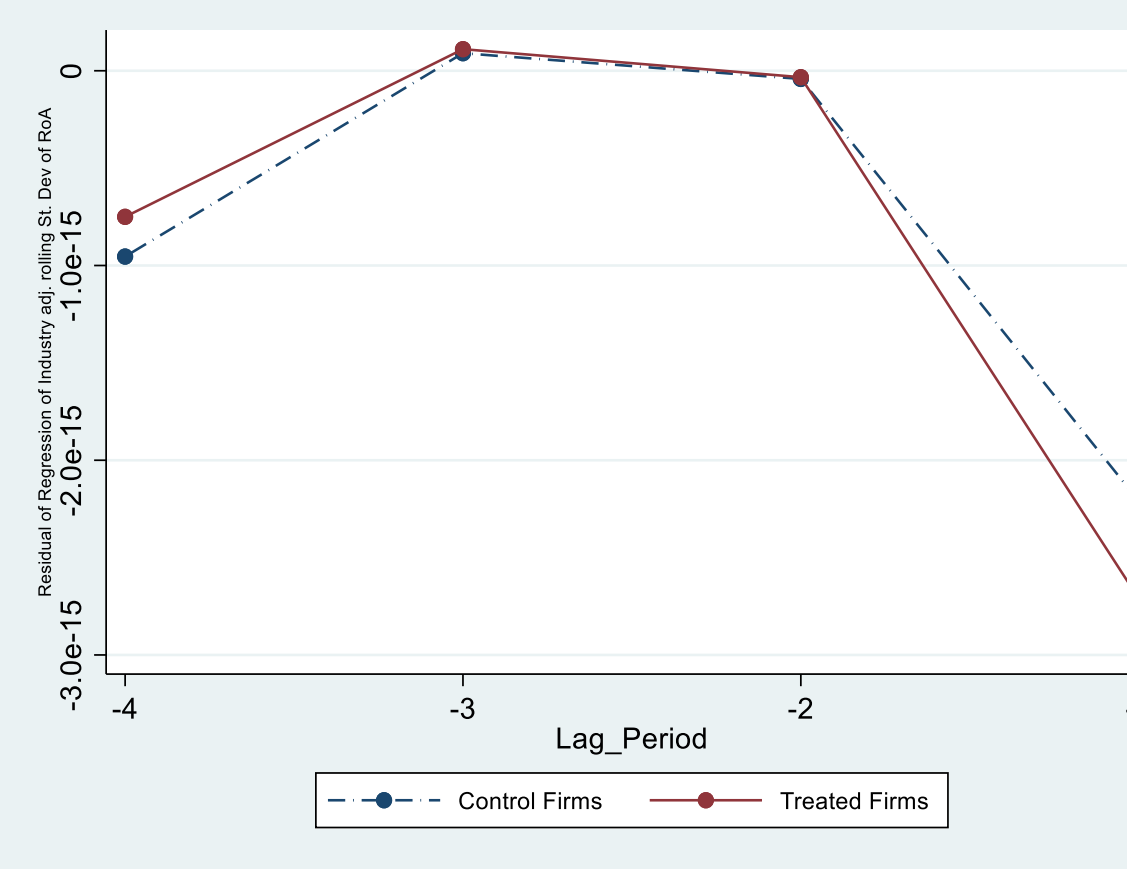
Note: The figure plots the time series of Industry adjusted *ROA volatility* of treated Firms control firms for four years before and four years after M&A enactments. I also present the extrapolated values of *ROA volatility* of the treated firms based on pre-M&A enforcement period (non-linear) trend (dotted line).

Figure. 4.4. Time Series Plot of R&D Investment of the Treated Firms around the M&A Enforcement



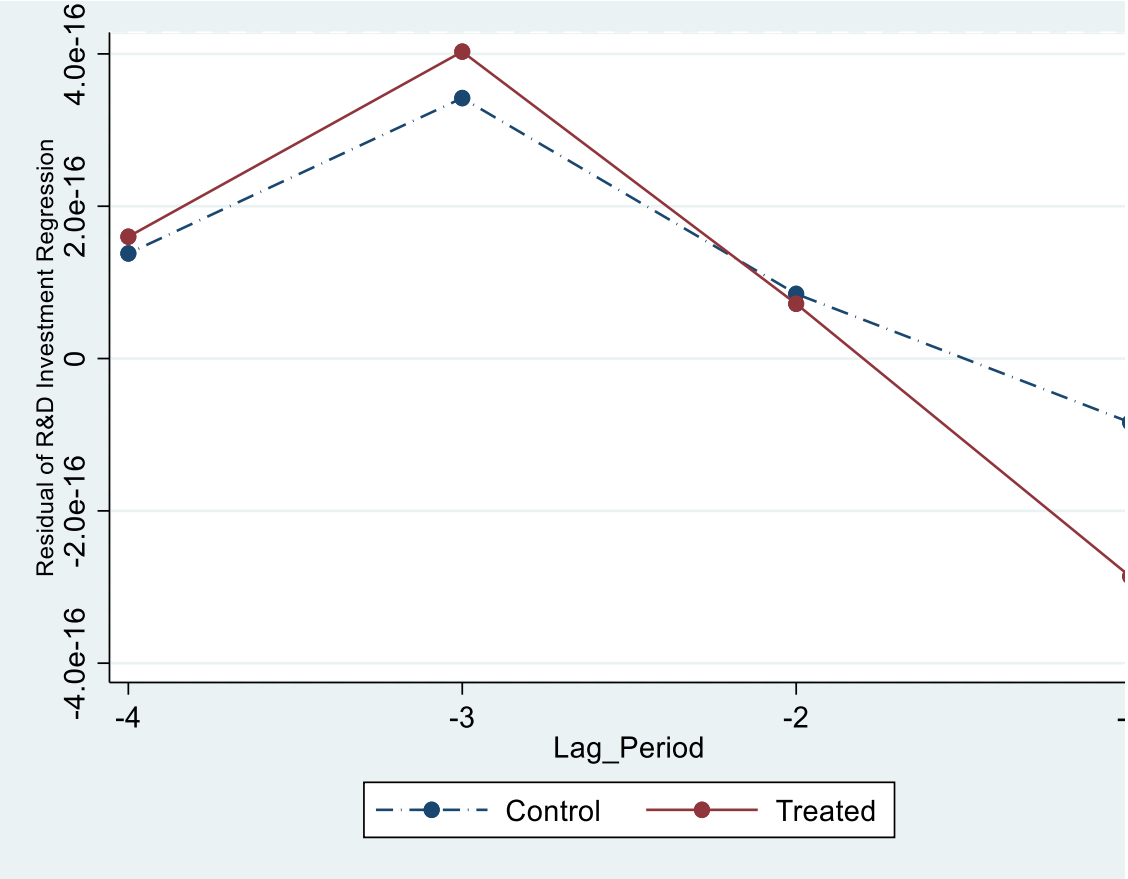
Note: The figure plots the time series of R&D Investment (scaled by total assets) of treated firms four years before and four years after M&A enactments. I also present the extrapolated values of R&D investments of the treated firms based on pre-M&A enforcement period (non-linear) trend (dotted line).

Figure. 4.5. Residual Plot of Regression from ROA Volatility before treatment



Note: The figure plots the residual of regression of $\sigma(ROA)_{ind-adjusted}$ in equation 4.1 for treated and control firms for 4 lag periods before M&A law treatments. The dotted blue line represent residuals of control firms and the red line is for the residuals of treated firms.

Figure. 4.6. Residual Plot of Regression from *R&D/TA* before treatment



Note: The figure plots the residual of regression of *R&D/TA* in equation 4.1 for treated and control firms for 4 lag periods before M&A law treatments. The dotted blue line represents residuals of control firms and the red line is for the residuals of treated firms.

Appendix Table A4.1. List of countries and M&A Laws

	Country	Year	Takeover Law	Source of Data
1	Argentina	none	-	IBA and Mazer, P. 2010. Executive view – Argentina: minority shareholders rights in mergers. http://executiveview.com/knowledge_centre.php?id=11735.
2	Australia	1975	Foreign Acquisitions and Takeovers Act	http://www.takeovers.gov.au/about.aspx, and http://www.comlaw.gov.au/ComLaw/Legislation/.
3	Austria	1998	Takeover Act	IFLR, September 1998 and the 2008 M&A yearbook, and eStandards Forum.
4	Belgium	1989	Royal Decree of 11/8/1989	Nenova (2006) and http://www.cbfa.be/nl/oa/oaa/wg/oaa_wg.asp.
5	Brazil	none	–	ICLG.
6	Canada	1966	Ontario Securities Act (1966)	ICLG. Investment Vanada Act (1975) regulates large investments and takeovers for foreign buyers.
7	Chile	2000	Tender Offer Act	Nenova (2006) and IBA.
8	Colombia	none	–	ICLG and IBA.
9	Czech Republic	none	–	IBA and eStandards Forum.

10	Denmark	none	–	ICLG and Christensen, S. and A. Westenholz. 1999. Boards of directors as strategists in an enacted world – the Danish case. *Journal of Management and Governance* 3: 261–86.
11	Finland	1989	Takeovers panel established by the Securities Markets Act of 1989	ICLG.
12	France	none	–	Simmons & Simmons, EU Takeovers Directive European Implementation Proposals (available at http://www.simmons-simmons.com).
13	Germany	2002	Takeover Act	Gordon (2002); Baum (2006); Odenius (2008); Mondaq Business Briefing June 2002 (The M&A transactions were governed by the voluntary takeover code before 2002.).
14	Greece	none	–	IBA.
15	Hong Kong	1975	Code on takeovers and mergers	Nenova (2006) and http://www.sfc.hk/sfcPressRelease/EN/,
16	Hungary	none	–	Budai, Judit. 2007. Hungary: The public takeover bid – assessment and risks. http://www.mondaq.com/article.asp?articleid=47136.
17	India	1997	Substantial Acquisition of Shares and Takeovers	IBA, ICLG, and Securities and Exchange Board of India.

18	Indonesia	1998	M&A Regulations (Government regulation No. 27/1998 and Presidential Decree No. 96 and No. 118)	Haeys Associates, Indonesian Acquisition Law in a nutshell (available at http://www.bakermckenzie.com), and www.haeys.com/uploadedfiles/library/file_01183020030415.pdf.
19	Ireland	1997	Takeover Panel Act	IFLR, 2007 M&A yearbook, and Given, J. and C. McCourt. 2005. Ireland. In *Mergers and acquisitions*: 2005/06, London: Practical Law Co.
20	Israel	none	–	Nenova (2006).
21	Italy	1992	Public Tender Offer	ICLG and Simmons & Simmons. EU Takeovers Directive European Implementation Proposals.
22	Japan	none	–	IBA.
23	Korea	none	–	ICLG.
24	Luxembourg	none	–	http://www.legilux.public.lu/leg.
25	Malaysia	1998	Code on takeovers and mergers	Nenova (2006) and ILFR 2002 M&A yearbook.
26	Mexico	none	–	http://www.worldbank.org/ifa/rosc_cg_mex.pdf p53.
27	Netherlands	1970	Merger Code of the Social Economic Council	http://www.ser.nl/~media/Files/Internet/.

28	New Zealand	2001	Takeovers Code	http://www.bellgully.com/resources/resource.00063.asp. http://www.legislation.govt.nz/act/public/1993/0107/latest/DLM325810.html#DLM325810. In addition, New Zealand passed a legislation on Takeovers Panel Advisory Committee in 1991.
29	Norway	none	–	Sjåfjell, B. 2006. Country report from Norway: The new takeover regime (2), *European Company Law* 3: 202–06; Ibanet and ICLG.
30	Pakistan	2000	Ordinance on substantial acquisition of shares and takeovers of listed companies	Nenova 2006, Ibrahim, A. 2006. Corporate governance in Pakistan: Analysis of current challenges and recommendations for future reforms. *Washington University Global Studies Law Review* 5: 323–32; Khan & Associates.
31	Peru	none	–	IBA.
32	Philippines	1998	Tender Offer Rules	IFLR, November 1998.
33	Poland	none	–	IBA.
34	Portugal	none	–	Simmons & Simmons, EU Takeovers Directive European Implementation Proposals (available at http://www.simmons-simmons.com).
35	Singapore	1974	Code on Takeovers and Mergers	Consultation paper on revisions of the Singapore Code n takeovers and mergers," Securities Industry Council, November 1999.
36	South Africa	1991	Code on Takeovers and Mergers	Nenova (2006) and http://www.gt.co.za/Publications/Effective-directors-guide/takeovers.asp.

37	Spain	1991	Public Takeover Offerings (Royal Decree 1197/1991)	http://www.bde.es/informes/be/boleco/2007oct/art6.pdf. http://www.perezllorca.com/include_mav/getfile.asp?IdFileImage=1926.
38	Sri Lanka	1995	Company Takeovers and Mergers Code	Nenova (2006); IBA; Marsoof, Saleem, "Takeover offers and their ramifications," *Corporate Law: Issues in Focus*, available at http://www.lawnet.lk/docs/articles/sri_lankan/HTML/CV40.html.
39	Sweden	1991	Industry and Commerce Stock Exchange Committee Takeover Standard, Financial Instruments Trading Act	Nenova (2006).
40	Switzerland	2004	Federal Act on Merger, Demerger, Transformation, and Transfer of Assets (The Merger Ac4t)	IFLR and IBA. The Swiss Takeover Board was established under the Federal Act on Stock Exchanges and Securities Trading in 1995, but it had no legal authority (using 1995 as the M&A law for Switzerland does not alter my conclusions).
41	Taiwan	2002	Business Mergers and Acquisitions Act	IFLR, 2005 and 2007 M&A yearbook, Legal Media Group's 2005 edition of Taiwan.
42	Thailand	none	–	Nenova (2006) and eStandards Forum.
43	Turkey	none	–	ICGL, and Turkey, takeover guide.
44	United Kingdom	1968	City Code on Takeovers and Mergers	http://www.thetakeoverpanel.org.uk.

45	United States	1968	Williams Act	Malatesta, P., and R. Thompson. 1993. Government regulation and structural change in the corporate acquisitions market: The impact of the Williams Act. *Journal of Financial and Quantitative Analysis* 28: 363–79.
46	Venezuela	None	–	eStandards Forum.
47	Zimbabwe	None	–	http://www.worldbank.org/ifa/rosc_cg_zimbabwe.html.

Appendix Table A4.2. The market for Corporate Control and Takeover Intensities

The table reports overall takeover intensity (Column (1)) and hostile takeover intensity (Column (2) of 31 sample countries for a study period of 1995-2007.

$$Takeover\text{-}Intensity_{i,t} = \alpha + \beta.ENACT\_POST_{c,t} + \boldsymbol{\gamma X_{c,t-1}} + \boldsymbol{FE} + e_{i,t}$$

where $Takeover\text{-}Intensity_{i,t}$ is Overall Merger Intensity in column (1) and Hostile Takeover Intensity in column (2). Overall Merger Intensity is defined as the number of takeovers, which includes both hostile and friendly takeovers, divided by the total number of publicly listed firms. Hostile Takeover Intensity is defined as the number of hostile takeovers plus tender offers divided by the total number of publicly listed firms. $ENACT\_POST_{c,t}$ represents the DiD coefficient which takes the value of one for treated countries with enactments of M&A laws following the year of enforcement and zero otherwise. $\boldsymbol{X_{c,t-1}}$ represents a vector of time-varying country-controls. $\boldsymbol{FE}$ includes country and year fixed effects. M&A data are obtained from SDC platinum. Country controls are from the world bank database. Standard error are clustered at country-level are reported in the parenthesis. *,**, and *** indicates significance level at 10%, 5%, and 1% respectively.

	Overall Merger Intensity (1)	Hostile Takeover Intensity (2)
$ENACT\_POST_t$	0.2234***	0.0028**
	(0.000)	(0.0191)
Ln(GDP per Capita)	0.2142***	0.0061***
	(0.0003)	(0.0001)
GDP growth	−0.0886***	−0.015*
	(0.0014)	(0.062)
Trade Openness	−0.0164**	−0.007***
	(0.0433)	(0.0002)
Unemployment Rate	0.077	0.004**
	(0.273)	(0.019)
Market Capitalization	0.0442	0.010***
	(0.768)	(0.006)
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	403	403
Adj. R-squared	0.244	0.216

5. Concluding Remarks

Whether regulatory intervention aiming to improve corporate discipline encourage or deter value-enhancing risk-taking forms an important question facing finance literature. Regulators across the globe are working for improvements in corporate governance environment through regulatory reforms to bring about positive investment outcomes. Similarly, studies have documented an explicit concern expressed by regulators and policymakers on whether the corporate discipline encourages value-driven long term risky investment undertakings or encourage firms toward short-termism, delivering immediate returns to shareholders at the expense of long-term potentially risky however positive NPV investments. However, empirical evidence on the effect of corporate discipline on corporate risk-taking and investment behaviour is mixed making this an open question of empirical interest.

Similarly, corporate discipline and dividend payout both could work as important corporate signals of investor protection thereby lowering agency and adverse-selection cost of the outside investors. A firm would maintain higher payout to credibly signal to the investors' that their stakes are protected. Regulatory intervention on corporate governance aims to improve this signal by increasing corporate disciplining and reducing managerial opportunism. Therefore, regulations that improve corporate discipline could substitute the need to maintain higher dividend payout. However, recent studies doubt the credibility of regulatory reforms to attain desired policy outcomes in the wake of a weaker enforcement regime. My thesis addresses this important gap in the literature.

In the following paragraphs, I briefly summarise the conclusions of each

empirical chapter.

5.1.Conclusion of the first empirical chapter

My first empirical is motivated by the fact that debate on the effect of CGR on corporate investment decisions is a matter of concern for policymakers. The literature, however, provides two different theoretical perspectives on the effect of CGR on a firm's corporate risk-taking.

One argument is that stricter CGR sanctions, which expand the financial and personal liability of corporate insiders for corporate affairs, increase the compliance burden and discourage insiders from undertaking value-enhancing risky investment decisions.

On the other hand, expected utility from private benefits of the dominant insiders could favour investment conservatism to the extent of passing up positive NPV risky investments. CGR limits expected private benefits of the insiders through independent scrutiny and transparency, thereby encouraging these insiders to pursue value-enhancing risk-taking.

The possibility that either of the two opposing economic views could explain the relationship between CGR and firm risk-taking motivates me to empirically examine the effect of CGR intervention in an emerging market set-up where weaker market forces of corporate scrutiny make mandatory CGR an important policy tool to improve corporate governance practices.

Employing a major CGR in India, my main result, supported by a series of robustness checks, provides strong evidence in support of the argument that stricter CGR intervention increases corporate risk-taking. I maintain that, contrary to recent evidence around SOX, stricter CGR in a set-up facing a weaker investor protection

regime and the prevalence of dominant insiders could reduce the private benefits of dominant insiders, thereby expanding a firm's appetite for risk-taking.

The results on the heterogeneity of ownership concentration show that increased risk-taking among firms with higher ownership concentration, suggesting that CGR increases the risk-taking of otherwise investment conservative firms. I also show that risk-taking is an important channel through which CGR harnesses a higher valuation for firms.

These findings imply that in a set-up with a weaker market mechanism of corporate governance, CGR substitutes weaker market forces of corporate scrutiny to stimulate value-enhancing risk-taking and corporate investments. This evidence supports the view that stricter corporate governance interventions can bring about positive investment outcomes in the evolving regulatory environment of emerging markets.

5.2.Conclusion of the second empirical chapter

In my second chapter, I examine the relationship between CGR and firm dividend policy. CGR and dividend payout both serve as powerful corporate signals of alignment of interest and lower information friction between decision making insiders and outside investors. As such higher payout and corporate discipline both could act as substitutes for each other in reducing the agency costs of free cash flow and also through a signal to lower adverse selection cost.

However, the literature also suggests that in the face of inadequate penalties, particularly in emerging markets, CGR with reputational penalties alone may not convince external stakeholders that there has been an improvement in corporate governance.

I link both of these arguments and suggest that the substitution effect on dividend payout could manifest itself only after the expansion of the personal liability of corporate insiders/managers in the form of harsher criminal and financial penalties that would adequately induce higher CGR compliance. I test the substitution effect of CGR on dividend policy by exploiting two corporate governance regulatory reform in the emerging Indian market. The first regulatory reform in the year 2000 relates to the introduction of mandatory provisions of greater disclosure and board independence in their stock market listing agreement, popularly known as and called Clause-49. Since the penalty for non-compliance was delisting, this imposed a reputational penalty when introduced. However, in the year 2004, the regulators further introduced Section-23E which imposed additional severe financial and criminal penalties for corporate insiders for violating Clause-49.

I use the DiD approach by exploiting both the regulatory reforms that generate treated and control firms. Using a sample of all listed firms spanning 1997-2007, my study shows that the introduction of Clause-49, which imposed reputational and collective penalties in the year 2000, does not have any impact on the treated firms' dividend policies, rejecting the substitution effect. However, the imposition of severe personal penalties on the corporate insiders, in the form of economically large monetary fines and criminal charges, in 2004 led to a material fall in the DP of the treated firms. These findings are robust to a series of robustness checks. Therefore, my results support the dividend substitution hypothesis, indicating that firms replace their dividend policies as governance tools but importantly only after additional adequate penalties for deterring non-compliance are imposed and therefore convince outside investors of an improvement in corporate governance.

I further show that in the post CGR period, the reduction in DP is associated with higher real investments, enhanced risk-taking behaviour and firm valuation. My study supports the view that expanding personal accountability to corporate decision-makers is central to improving the effectiveness of CGR enforcement in an emerging market context.

5.3.Conclusion of the third empirical chapter

In my third chapter, I examine the role of the market for corporate control on firm risk-taking.

The literature presents two opposing predictions related to the effect of the market for corporate control on firm risk-taking. The first economic view is the negative association between the market for corporate control and a firm's risk-taking behaviour emerging either from the sub-optimality of external monitoring on risky and innovative endeavours or from managerial myopia created by too much short-term performance pressure as a result of takeover threats.

On the contrary, the alternative possibility of positive causation between the market for corporate control and risk-taking may arise through managerial discipline that lowers the magnitude and importance of the private benefits of managers/insiders thereby discouraging investment conservatism or lowering managerial slack which would otherwise encourage him to pursue quiet-life. In the existence of these seemingly opposing economic predictions, I exploit regulatory reforms that changes the threat of takeover significantly. With the employment of staggering changes in M&A laws across 31 countries as a plausible source of variation in the market for corporate control, I find three important results.

First, by employing industry adjusted *3-year rolling standard deviation* of *ROA* and *R&D Expenditure* as two proxies of risk-taking in my cross-country specification shows a positive link between the market for corporate control and corporate risk-taking.

Second, my investigation of the subsamples of developed and developing economies has a marked revelation. While the positive effect of the market for corporate control is evident in both subsamples, the magnitude of this effect is lower in developing countries. To the extent the distinction between developed and developing economies could be attributed to the differences in enforcement environment and investor protection regimes, my finding implies that the market for corporate control could act as a compliment to the other forms of country-level governance.

Finally, I enquire the value relevance of risk-taking and show that firms with higher risk-taking in the post-M&A enactment fetch higher firm valuation in the subsequent period. The results imply that risk-taking in the post-M&A enactment period is a reflection of value-relevant risk-taking and is not a manifestation of over-investment or short-termism. As such, this finding suggests risk-taking could be an important channel through which regulatory reforms supply higher valuation.

5.4. Overall conclusion

In the existence of inconclusive effects of regulatory reforms on corporate decisions, my PhD thesis is focused on the effect of regulatory reforms that improve corporate discipline on firm risk-taking and dividend policy and is divided into three empirical studies. My first and second studies focus on the emerging market context of India and

investigate the role of mandated CGR on firm risk-taking and dividend policy respectively. Similarly, my third chapter employs cross-country setup and enquires the effect of exogenous variation in the market for corporate control on firm risk-taking.

Supported by a battery of robustness test and employing research design to lend credible causal inference, the findings of my thesis reveal that regulatory interventions aiming to improve corporate discipline encourage firm risk-taking and corporate investments.

It further finds that corporate governance reform in an emerging market context plays a substitutive role in dividend policy of a firm. However, this substitution would materialise only when the regulatory interventions are accompanied by adequate sanctions and expansion of personal liability to induce sufficient deterrence. As such, my thesis makes an important contribution to the literature on the merit of adequacy of sanctions for interventions to translate to desired outcomes.

5.5. Implication and Future Direction

The effect of corporate discipline on firm risk-taking and dividend payout are of significant interest to the corporate practitioners and policy makers. In the existence of competing theoretical arguments on the effect of corporate discipline on corporate decisions, my thesis enquires the relationship between two important categories of regulatory reforms that are aimed at improving corporate discipline on corporate risk-taking and payout decisions and document a positive effect on investment and risk-taking and substitutive effect on the payout policy. The finding are in line with the positive effect argument of corporate outcomes.

5.5.1. Implication

The findings of my thesis that regulatory reforms that improve corporate discipline bring about positive outcomes on corporate risk-taking and substitutive effect on payout decisions should help regulators and policymakers in devising effective policies to bring positive investment outcomes.

In this regard, my first empirical study on CGR of India underscores the merit of introducing stringent governance reform in an emerging market context to stimulate value-relevant corporate risk-taking and investment. The findings can be important policy suggestion to the regulators specifically of emerging markets. My first empirical chapter hints these regulators that evidence from the developed market may not be particularly relevant to the idiosyncrasies of emerging markets. While stringent CGR could discourage corporate risk-taking as evident by previous studies, the findings of my first chapter indicate that stricter CGR could induce positive risk-taking and investment outcomes. Similarly, the findings of my study could be important to investors and more specifically to the foreign investors who are at an informational disadvantage when compared to their domestic counterparts. To this class of investors, stricter CGR could be important as documented by my study as it expands value relevant risk-taking and improves the investment efficiency of the firms.

In my second chapter, I show the stricter CGR have a substitutive effect on dividend payout, however, only when reform is accompanied by adequate personal penalty. This result provides an important implication to the investors on the effect of CGR in lowering agency and adverse-selection related costs. I show that CGR could substitute DPR as a signal of reduced agency and information related signal. However, this could be achieved when regulators in emerging markets incorporate

accompanying provisions that expand personal liability and private punishment in the event of non-compliance.

Taken together, my first two empirical chapters show the expansion of personal liability improves the effectiveness of CGR to have positive investment outcomes and substitutive effect on dividend payout.

Similarly, my third empirical chapter documents the significant positive effect of this external discipline on corporate risk-taking. This finding is important for investors and practitioners as extant research offers inconclusive prediction on the effect. The results suggest investors would benefit from the improved external discipline through the expansion of firm risk-taking. The results are important as earlier results have hinted the dark side of takeover threats as this could because it leads to managerial short-termism and could deter appetite of managers to could encourage the firms to chase hot money in search of short-term profits, with little concern for long-term firm prospects. My results show that takeover threats as a form of external monitoring encourage firms to take value-enhancing long term and risky undertakings.

The findings are also pertinent to the policy-makers in the wake of some doubt posed by previous studies on the possible corporate myopia because of the takeover threat and pressure to perform on the insiders. To this end, the result provides a piece of evidence that the takeover threat improves market-based corporate discipline that induces corporate appetite to pursue value-positive and potentially risky investment endeavors.

Similarly, to the extent the distinction between developed and developing markets is attributed to the quality of country-level investor protection and

enforcement environment, the results on the heterogeneity of developed and developing economies imply that one form of governance may complement rather than substitute other forms of governance and therefore call for policy coordination among different policy-makers especially, in developing economies. However, I acknowledge the limitation of the of this implication which calls for more investigations in this direction.

5.5.2. Future Direction

While the three empirical chapters provide some non-trivial contributions to the literature, there are few important limitation of my empirical study which should guide interesting research investigation going forward.

First, as like any other study that employs policy changes to test economic theories, my empirical chapters are limited by the fact that regulatory shocks may not be truly exogenous (Dharmapala and Khanna, 2013). There is a degree of anticipation of legal reforms as the law takes some time from initiation to enforcement, firms may respond or adapt to these stimuli even before they are enforced, thereby limiting researcher to estimate the true treatment effect.

In my first chapter, while I attempt to reduce the potential bias that could undermine my estimation through a battery of robustness tests and reducing some of the alternative explanations, the possibility remains that CGR could be a reactionary regulatory response to the corporate practice facing an economy and thus could be endogenous to corporate behavior arising from the difference (Atanasov and Black, 2016). To the extent corporate governance affects risk-taking, it should differently affect to the early-compliers vis-à-vis late-compliers (or compliers vis-à-vis non-compliers). As such, it is imperative to study the effect of CGR on risk-taking taking

into account of heterogeneity of firm-level corporate governance practices in the future. While availability of granular data on the firm-level governance could pose a challenge in this pursuit, this endeavor should be rewarding.

With regard to my second empirical chapter, while I have attempted to reduce the possible sources of endogeneity in my empirical strategy to measure, there are still few important sources of bias not addressed by the current study. Examples include Competition Act 2002 and the introduction of Dividend Distribution Tax (DDT) in the year 1997 followed by few episodes of changes in the DDT in 2001 and 2004 (Bagchi, 2007).

There remains a possibility that increased competition following Competition reform in 2004 can lower profitability thereby driving the dividend down. Similarly, I make an implicit assumption that the episodes of other confounding events would affect treated and control firm systematically. However, there is merit in employing estimation model that incorporates the differential effect of these contemporaneous laws going forward.

Similarly, the substitution argument to hold in my setup, I implicitly assume that treated and control firms do not systematically differ in their firm-level governance. However, the documented effect can be biased if there are other firm-level governance mechanism built by firms to substitute country-level governance (Bebchuck et al, 2009). It is therefore imperative to direct future enquiry in this direction.

Specific to my third empirical chapter, there are a few key limitations. First, to gauge the variation in the market for corporate control I rely on the staggered enactment of takeover laws across countries. It would be important to see if the results hold when employing continuous measures of takeover threats (like overall takeover

intensity and hostile takeover intensity) as a source of variation in the market for corporate control.

Second important limitation stems from my classification of economies into developed and developing markets to gauge the heterogeneity in the enforcement environment and investor protection regimes. While previous studies highlight the distinction between developed and developing countries are substantial and consistent in their enforcement environment and investor protection regimes there can be other distinctions between these two markets (Claessens and Yurtoglu, 2013). Further, the enforcement environment and investor protection regime changes over time. This limits the generalizability of my results on the heterogeneity between treated countries in enforcement environment and investor protection regimes. Going forward, it would be imperative to examine the effect of the market for corporate control on the heterogeneity of time-varying indices of enforcement environment and investor protection.

Besides these limitations, there is an imperative future to direct empirical investigation in the following directions.

One. As corporate decisions like risk-taking and payout policy could be largely influenced by managerial/insiders' compensation structure, my thesis has not explored the link between insiders' compensation and governance interplay in determining the optimal risk-taking appetite of a firm or optimal payout policy. It would be imperative to extend the current literature in this direction.

Second, behavioural dynamics like culture, religion and other managerial behavioural factors (Adhikari and Agrawal, 2016; Bernile et al., 2017) have been identified in literature to impact risk-taking and payout policies. In this regard, the

question of whether national laws and behavioural factors complement or substitute each other in influencing corporate in their effect on firm risk-taking and payout policy could be an interesting question to explore, which I leave as a future agenda.

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