Regulations and Firm Financing: Impact of Clause 49 in India[*]

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Abstract: This paper provides new evidence of the effect of corporate governance on corporate capital structure. Using the Clause49 regulations introduced by the Security and Board Exchange of India in 2000 as a potential exogenous natural experiment, we assess the impact of the introduction as well as the completion of the Clause49 reform on selected financial leverage measures of listed Indian firms. Difference-in-difference estimates using firm-level panel data for the period 1996-2014 suggest that the introduction and completion of Clause49 has led to a greater (lower) reliance on equity (debt) and also a reduction in reliance on bank loans among domestic listed (relative to cross-listed) Indian firms in our sample; these effects are more pronounced when we consider the completion rather than the introduction of the reform. We argue that these results can be attributed to the reduced information asymmetry between managers and investors and increased investor protection in the post-regulation years and provide some evidence in this respect. The paper also identifies heterogeneous impact of the reform among firms belonging to the business groups and also among those located in pro-business (as opposed to pro-worker) states, thus highlighting the role of supporting regulations guiding land as well as labour use across Indian states.

JEL classification: K2, G3

Keywords: Corporate Governance Reforms, Clause 49, Corporate Finance, Capital Structure, Bank loans, Causal impact; Difference-in-difference method, India.

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1. Introduction

Access to finance is the key to assist the formation of new firms, which allows firms, new and old, to take advantage of opportunities to invest and grow. Firms strategically choose a combination of debt and equity finance to maximise its firm value.

Recent literature has emphasized the role of firm's corporate governance measures including board composition, board size, outside directors, ownership concentration, CEO duality as possible determinants of firms' capital structure decisions, as opposed to traditional determinants such as size, age, growth, non-debt tax shield, liquidity, intangibility, profitability etc. (see Frank & Goyal, 2009 for a recent survey of the existing literature). Establishing a causal relation between corporate governance and firm financing is difficult. This is because a firm's corporate governance measures are chosen by the firm itself and as such are likely to be potentially endogenous, making the resultant estimates to be biased. In this paper, we try to redress this problem and exploit the exogenous variation in a firm's corporate governance standard arising from the introduction of a new law, namely, Clause 49 in India.

There has been enormous change in the Indian corporate governance framework over the past 15 years. Contributing to this change is India's rapid growth together with an increase in foreign direct investment, an increased presence of institutional investors, and a growing need of Indian companies to access capital markets. Clause49 was first introduced in 2000 and amended in 2004 while its implementation was completed in 2006. The law has various components pertaining to board composition necessitating the appointment of independent directors, transparency and disclosure of financial and operational information, related party transactions and also appointment of an independent audit committee[1]. But arguably the effectiveness of these regulations would remain unknown if transparency and disclosure rules were not in place and hence we consider this to be the key component of these regulations. As such, we expect the reform to reduce the asymmetry of information between controlling and non-controlling owners or other dispersed investors (later we also test this) with a view to assure the latter.

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[1] Further discussion in section 2.2

With the reduction of asymmetric information after the reform, we expect that equity becomes a cheaper source of financing relative to debt. We thus argue that the equity financing is likely to increase while debt financing is likely to decrease after the introduction of Clause49 which in turn is likely to lower financial leverage of listed firms. We also hypothesize that the reform that strengthened investor's protection through its various components discussed above is likely to enhance the relative attractiveness of public as opposed to private debt.

We use Orbis firm-level data for 1996-2014 to test these hypotheses. In this respect, we exploit the variation in corporate capital structure before and after the Clause 49 reform introduced in India at the turn of the millennium to identify the causal effect of the reform on corporate capital structure. We use the difference-in-difference method to compare the capital structure of treated domestic listed Indian firms with the cross-listed ones. We use the cross listed Indian firms as our control group because these firms, being regulated by foreign stock exchanges, are already subject to requirements similar to the ones in Clause49. Cross-listed firms are thus less likely to be subject to the changes in regulation.

Our empirical strategy has thus been to compare the capital structure of the treated domestic listed firms with the cross-listed firms (control group) before and after the introduction/implementation of the reform. The rationale for doing this is to exploit the variation in the effect of exogenous introduction of CG reform between treatment and control group before and after Clause 49 with a view to identify the causal impact of the reform on selected capital structure measures.

Results suggest that following the passage of the reform domestically listed Indian firms have lower leverage as compared to cross listed Indian firms. Arguably, this is consistent with our view that debt becomes suboptimal after the reform. We also find some indirect evidence of improvement in earnings quality in the post-2006 years in our sample, thus supporting our conjecture that the increase in equity after the reform is due to better information being available to all investors. Consistent with the decrease in information asymmetry between controlling owners and dispersed investors, we also find weak evidence of a greater reliance on public debt instead of private debt. We check the robustness of our results for various subsamples including larger firms, firms affiliated to business groups, and also firms located in states with different regulatory regimes including pro-land reform and pro-workers.

These results contribute to a sizeable literature on empirical capital structure that primarily focuses on the role of various firm characteristics (Frank and Goyal, 2009). However since the Asian Crisis of 1997, international and donor organisations have emphasized the role of various corporate governance reforms to promote growth. Using the case of Clause 49 we explore different channels through which this reform may impact different components of capital structure differently, which remains rather unexplored in the literature. It helps us not only to address the identification issue that the use of firm level corporate governance measures suffer from within the empirical capital structure literature, but also the differential effect of the reform for large firms, firms affiliated to business groups as well as firms located in different regulatory regimes. Although it is a case of India, results of this study have important implications beyond India's border and especially for countries undertaking similar reforms.

The paper is developed as follows. Section 2 discusses the literature, background and hypotheses while section 3 explains data and methodology. Section 4 discusses the results while the final section concludes.

2. Literature, background and hypotheses

2.1. Literature

The capital structure theory dates back the pioneering work of Modigliani and Miller (1958). According to their capital structure irrelevance theory, value of the firm is independent of how firms choose to invest their investments and what mix of debt and equity they maintain. However, unrealistic simplified assumptions raised concerns and in Modigliani and Miller (1963) the perfect market assumption was relaxed and corporate taxes were included. As a result, an increase in the level of debt led to an increase in the value of the firm since interest paid is tax- deductible.

However, Modigliani and Miller (1963) did not take into account bankruptcy-related costs. The findings in Modigliani and Miller (1958, 1963) encouraged many researchers to explore further the drivers of

corporate capital-structure decisions. Until now, there has been no general agreement about the capital-structure debate. As a result, it is still unclear as to what drives capital-structure decisions.

There are two competing theories of capital structure. The trade-off theory where various costs and benefits are evaluated to achieve the optimal debt equity ratio and pecking order theory, where firms prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a "last resort" (Myers, 1984). Myers (1984) examined various capital structure theories and called it the capital-structure puzzle as there was no general consensus to what drives financing decisions. Taxes, agency conflicts, transaction costs, bankruptcy costs, varying financial market opportunities are various elements used in various models to determine capital structure measures. (See Harris and Raviv (1991) for a survey of the development of this theory as of 1991).

Myers and Majluf (1984) then tried to explore the role of asymmetric information and capital structure decisions and found that leverage increases with the extent of the informational asymmetry and that cost of financing increases with asymmetric information and equity capital is more information sensitive than debt. Firm-level asymmetric information considerations are important determinants of the cross section of level and change in leverage of U.S. firms over the past three decades" (Sreedhar T. Bharath, Paolo Pasquariello & Guojun Wu 2008). R. Petacchi, 2015, display a positive relationship between information asymmetry and debt. This model of capital structure including the role information asymmetry in financing decisions in particularly important to us since the main aim of the corporate governance reform (Clause49) was to enhance investor protection via transparency and disclosure. Increase in transparency and disclosures is expected to reassure investors, who are then less hesitant which has makes debt financing sub-optimal and results in decreased corporate leverage.

La Porta et al (1998, 1999) initiated the law and finance literature that highlights the role of rules of law, investor protection and enforcement and show that countries with poorer investor protection (measured by both legal rules and the quality of enforcement) tend to have smaller and narrower capital markets. They also established the role of Sharholders' rights, antidirectors' rights on various measures of external finance.

Recently, growing amount of literature has focused on the possible roles of various corporate governance measures such as board size, outside directors, ownership concentration, CEO duality, remuneration of directors on capital-structure choice of a firms. For instance, Berger et al. (1997) found a significant and negative relationship between board size and leverage while Wiwattanakantang (1999) found a negative relation between board size and leverage although the relevant coefficient was statistically insignificant. Further Abor (2007) display a direct relationship between board size and capital structure while Wen et al. (2002) found a positive, but insignificant relationship between board size and leverage.

This ambiguity may arise from potential endogeneity of these corporate governance measures: a firm's corporate governance is likely to be potentially endogenous since these decisions are internally taken by the management of the firms themselves and hence the resultant estimates are likely to be biased. Banerjee, Masulis and Pal (2015) for example argue that firm-level corporate governance measures are likely to be potentially endogenous to determining firm performance. Accordingly they used the Russian transparency and disclosure reform to identify the causal effect of CG on various firm performance measures. In a similar way, we argue that firm-level corporate governance measures are potentially endogenous to firm's capital structure determination. This could be a reason for the ambiguity or insignificance of the causality of the relationship between corporate governance and leverage. We deviate from this literature with a view to exploit the variation in capital structure induced by the introduction of the Clause49, a recent corporate governance reform introduced by the regulatory authority in India for all listed Indian firms. The underlying argument is that the introduction of the reform Clause49 is plausibly exogenous to the financing policies of the firms and thus provides a natural experimental framework to the overcome the problem of endogeneity of firm specific corporate governance measures.

In this paper, we try to redress this problem and exploit the exogenous variation in a firm's corporate governance arising from the introduction of a new law, namely, Clause 49 in India. We differ from the previous literature as we use a plausible exogenous event to construct a natural experiment with a view to identify the causal effect of the corporate governance reform Clause49 on firm financing decisions,

after controlling for traditional firm characteristics, such as size, age, non-debt tax shield, and industry effects etc., that may also influence capital structure measures. This analysis enables us to identify the differential effects of the reform on different components of capital structure distinguishing between debt, equity as well as share of bank loans.

2.2. Background: Clause49 of the listing Agreement

Over the past two decades there has been a revolutionary change in the Indian corporate governance. The growing presence of institutional investors, the increasing number of cross listed Indian companies and growing access to global capital markets have all propelled the Indian regulatory authorities (the Securities Exchange Board of India, SEBI) to amend the corporate governance system. Corporate scandals further spurred the need for stricter law and its enforcement. In 2000 SEBI, on the persuasion of leading industrial groups and large firms introduced a set of rules and regulations via Clause49 for listed companies in India. With the prime objective of investor protection, the Clause49 laid a range of governance requirements.

In 1999, SEBI appointed a committee (the Birla Committee, under Shri Kumar Mangalam Birla), whose prime focus was to define the function and structure of the board and increase shareholder disclosure. Recommendations were also made regarding the role and composition of the audit committees, disclosure and transparency issues mainly amongst shareholders. This was to be stated in the company's annual report.

Birla Committee's proposals was implemented by SEBI in 2000, thereby revising the current Listing Agreement. Clause49 was thus incorporated as a new section in the previous Listing agreement. Initially, the reforms applied to newly listed and large companies, then to smaller companies, and ultimately to the vast majority of listed companies.

After the adoption of the Sarbanes-Oxley Act (As a consequence of the Enron Scandal in the United States), SEBI felt the need to evaluate the adequacy of the extant Clause49 and appointed the Narayana Murthy Committee to amend the Clause49 and further elevate transparency and insure compliance materialistically. Keeping the recent corporate governance frauds and irregular compliance with the

Clause49 in mind the Murthy Committee was compelled to recommend stricter reform. The committee investigated a variety of governance issues mainly related to Board structure and composition, Composition of the Audit committees and Disclosure to shareholders. Apart from what the previous committee emphasised on, the Murthy Committee also altered the definition of independent directors in the then-existing Clasue49, in the view to set up a code of conduct for insiders. Further additions that the committee recommended were regarding Nominee directors; financial literacy of the audit committee; and whistle-blowers.

Directors nominated by financial institutions i.e. Nominee directors were recommended to be excluded from the definition of independent directors. They had the same liabilities as any other director. Board members were also recommended to receive training on business risk management and the business model of the company. The committee gave considerable attention to the roles and responsibilities of the audit committees. All members of the audit committee were required to be "financially literate". Whistle-blowers were given access to the audit committee without first having to inform their supervisors. All this was to be disclosed in the annual report of the company along with the compliance report.

Clause 49, as currently in effect, includes the following key requirements:

1.1. Board Management

a) Board Composition:

- Optimum combination of executive and non-executive directors,
- at least 1/3rd of the board must comprise of independent director (if the chairman is a non-executive director) and at least half of the Board should comprise of independent directors (in case the chairman is an executive director)

b) Non-executive directors' compensation and disclosures:

- Fee and compensation shall be fixed by the Board of Directors and shall require previous approval of shareholders in general meeting.

c) Other provisions as to Board and Committees:

- board shall meet at least four times a year, with a maximum time gap of four months between any two meetings

d) Code of Conduct:

- The Board shall lay down a code of conduct for all Board members and senior management of the company.

- All Board members and senior management personnel shall affirm compliance with the code on an annual basis.

1.2. Transparency and disclosure clause in terms of

a) Listed companies must periodically make various disclosures regarding financial and other matters in their Annual reports to ensure transparency. Also disclose a compliance report in the Annual Reports

b) Related party transactions: placed before the audit committee.

c) Accounting treatments: true and fair accounting treatments as per the accounting standards, reporting any deviation.

d) Board Disclosures – Risk management: inform Board members about the risk assessment and minimization procedures.

e) Personal interest that may have a potential conflict with the interest of the company at large.

f) Monitoring and management.

g) Remuneration of Directors

1.3. Audit Committee:

a) Qualified and Independent Audit Committee

- Minimum three directors as members. Two-thirds of the members of audit committee shall be independent directors.

- All members should be "financial literate" and at least one financial expert.

b) Meeting of Audit Committee

- Should meet at least four times in a year each quarter.

- There should be a minimum of two independent members present.

c) Powers of Audit Committee:

- To investigate any activity within its terms of reference.

- To seek information from any employee.

- To obtain outside legal or other professional advice.

- To secure attendance of outsiders with relevant expertise, if it considers necessary.

d) Role of Audit Committee

e) Review of information by Audit Committee

1.4. CEO/CFO certification of internal controls The CEO and CFO of listed companies must (a) certify that the financial statements are fair and (b) accept responsibility for internal controls.

1.5. Optional "whistleblower policy "

SEBI further amended Clause 49 in response to the Murthy Committee's recommendations in 2004. However, implementation of these changes was delayed until January 1, 2006 due primarily to industry resistance and lack of preparedness to accept such wide-ranging reforms.

One might argue that the introduction (in 2000) and implementation (in 2006) of the reform happened years apart and is not a sudden change in the Indian Corporate governance. To distinguish between the introduction and implementation of the reform, we use two reform variables:

1) Clause49_00 is a dummy that takes a value 1 for $t \geq 2000$ when the reform was introduced and 0 otherwise.

2) Clause49_06 is a dummy which takes the value 1 for $t \geq 2006$ when the reform was implemented and 0 otherwise.

Clause49 reform: A timeline

| 1996 | 2000 | 2004 | 2006 | 2014 |

Introduction of Clause49   Amendments in the Clause49   Implementation of the clause49
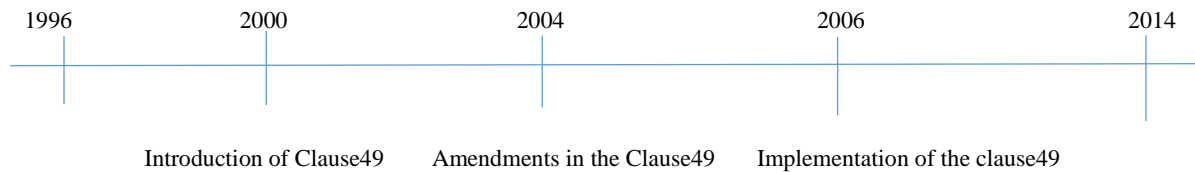
Without much loss of generality, one can argued that introduction of transparency and disclosure was the crucial component of the reform. This is because in the absence of transparency and disclosure, adoption of the different components of Clause 49 by Indian firms would not be known to investors. As such, our hypotheses is closely linked to the introduction of transparency and disclosure that helped reduce the information asymmetry between shareholders and investors.

2.3. Hypotheses

Debt is optimal in the presence of asymmetric information between managers and bondholders (Myers and Majluf, 1984). This is because the payoff on debt contracts is less information sensitive as compared to the payoff on equity finance. Moreover equity financing is generally expensive as stock prices are generally overpriced as good and bad firms are pooled in the capital market and it is expensive for firms as well as investors to distinguish the two types (Tirole, 2006). As argued above, the Indian reform in terms of clause49 was aimed at reducing the asymmetric information, thus making debt sub-optimal in the post reform years. Since equity financing is more information sensitive, we expect that the reform is likely to boost the equity finance.

Second, debt financing is a substitute mechanism to mitigate agency problems. As such debt serves as a disciplining device for mangers (Jensen 1986, Zwiebel, 1996). . Increased board independence and disclosure enacted through clause49 is likely to enhance monitoring of mangers and hence would reduce the value of debt as a disciplining device, which may further lead to a decrease in firm leverage. Taken together we hypothesize:

H1: Equity (debt) financing is likely to increase (decrease) after the reform. In other words, the financial leverage of the firm is likely to decrease after the implementation of Clause49.

An important aspect of the Clause49 has been to ensure investor protection. More transparency makes it easier to co-ordinate dispersed shareholders and assess risk that may encourage public debt. In particular, Perotti and Volpin (Year 2006) show that an increase in investor protection , increases access to finance. Claessens and Laeven (2013) too argued that firms that have better and stronger legal environment find it easier to obtain finance. Taken together, we hypothesize:

H2: The reform increases the relative attractiveness of public (as opposed to private) debt.

3. Data and Methodology

We gather firm level panel-data from Orbis available from Bureau van Djik from 1996 to 2014. We obtain ownership information for the same firms from Prowess database available from CMIE. We have a total of 1903 firms out of which 83 firms are internationally listed Indian firms mainly listed in London Stock Exchange, NYSE, Luxemburg and NASDAQ, while the rest are domestically listed Indian firms. We split our data into two subgroups i.e. domestically listed Indian firms and Cross listed Indian firms. All cross listed firms in our sample are either listed on or before 2000. We drop 2008 from our analysis to minimise the impact of the subprime crisis, if any.

1.1. Dependant variables for testing H1 : Leverage Measures

We construct several measures of financial leverage for each of the two samples. Rajan & zingles 1995, argue that the choice of the measure depends on the objectives of the analysis. We choose total liability/total assets as in case of a liquidation, which is used as a proxy to what shareholders get. Long-term debt/total assets is argued to be unaffected by trade credits and is therefore appropriate to measure financing decisions. Net debt/net assets where net assets are total assets minus accounts payable and other liabilities; as such it might be affected by factors not related to financing and hence it best represents past financing decisions. Shareholders' funds/total assets and Market capital/shareholder's funds relate to book value and market value of equity respectively. Table 1 provides definitions of these measures.

1.2. Dependant variable for H2: we construct the ratio of bank loan to total loan to test hypothesis 2.

1.3. Treatment and Control Groups

One of the challenging issues to carry out our analysis using the difference-in-difference approach is the identification of the treatment and control groups. During the last two decades growing number of Indian firms got listed in various international stock exchanges such as London Stock Exchange (LSE), Luxemburg Stock Exchange, and NYSE etc. mainly to get access to developed capital markets. These foreign exchanges have their own set of regulations (stricter) set up by their respective regulatory authorities. As such Indian companies listed there have to abide by these regulations and are not affected by the Clause 49 reform, therefore we define our control group as cross listed Indian firms.

We therefore exploit the variation between domestic and foreign listed firms by defining cross listed Indian firms as our control group and domestically listed firms as our treatment group to analyse the impact of the reform on capital structure decisions of the firm. Accordingly we constructed a dummy variable *Domestic* that takes a value 1 if a sample firms is domestically listed in the Indian stock exchange (treatment Group) and zero if it cross listed internationally (Control Group).

Another set of dummy variables that we created are Clause49_00 & Clause49_06 to distinguish between the introduction and the implementation of the reform Clause49 respectively. As discussed earlier the clause 49 was introduced in 2000 but completed in 2006 after a series of amendments, we therefore create two cut-off points and accordingly create two reform variables:

- Clause49_00 is a dummy that takes a value 1 for $t \geq 2000$ when the reform was introduced and 0 otherwise

- Clause49_06 is a dummy which takes the value 1 for $t \geq 2006$ when the reform was implemented/completed and 0 otherwise.

This allows us to use a difference-in-difference (DID) regression model to assess the impact of the Indian corporate governance codes on capital structure, by comparing capital structure of domestic and cross listed Indian companies before and after 2000 (introduction of the reform) & also before and after

2006 (completion of the reform). We do this because this distinction between introduction and implementation of the reform may bear important implications for testing our results. For one thing, it would suggest if there has been any differential response among sample firms in this respect.

Table 2 reports the summary statistics of key regression variables. On an average, firms in the treatment group are younger, smaller and also have lower level of Non-Debt Tax Shield as compared to those in the control group but otherwise show similar trend in terms of various measure of leverage created in this study.

Table 3 compares the leverage measures in the pre and post reform years for the treatment and control group. It seems to highlight that in the pre-reform years these measures were generally comparable between treatment and control groups (barring some like SFTA and BLTL for 2000 cut-off and net debt to net assets for 2006. However the reform seems to have a significant impact as the difference in these leverage measures becomes significant for the key leverage measures in the post reform years.

Note that our data sample includes the 2008 financial crisis. So the question naturally arises is whether it is likely to affect corporate leverage in the post 2006 years. Sinha (2010) in a report to the RBI crisis suggests that the impact of the global financial crisis on Indian banking system and the financial market was almost negligible due to restricted exposure to troubled assets, limited presence of foreign banks in the Indian banking system and judicious policies imposed by the reserve bank. The Indian financial markets, especially banks, have continued to operate normally. He further reports that any nominal effect settled largely by 2009. Although the impact of the crisis on the Indian financial system has been minimal, we drop the crisis year 2008 from our analysis to account for any possible effects. Nevertheless we test the robustness of our estimates by excluding the year 2008-09.

4. Methodology: Difference- in- Difference (DID) Model: Its essential components

The difference in difference method widely came into acceptance ever since Ashenfelter and Card (1985). The effect of the reform is observed for two groups for pre and post reform years. The DID estimation enables us to filter out influences on financing polices that cannot be attributed to the clause49 reform. As indicated earlier, we define domestically listed firms as the treatment group as it is exposed to the reform in the post reform years and cross-listed Indian (regulated by foreign exchanges) as the control group as it is not exposed to the reform in either (pre or post years) period and is comparable to treatment group. Comparability here means that the outcome variables of two groups followed a similar trend prior to the event.

The basic regression model for determining leverage is as follows:

$$Y_{ijt} = \beta_0 + \beta_1 Domestic_{ij} + \beta_2 clause49_t + \beta_3 (Domestic_{ij} * clause49_t) + \beta_x X_{ijt} + \varphi_j + \tau_t + u_{ijt} \quad (1)$$

Y is the set of selected leverage measures of firm i operating in sector j in the year t, t= 1996-2014. Among various subscripts, t denotes year, i denotes firm, j denotes sector and domestic is the dummy that takes the value 1 for treated domestically listed firms and 0 otherwise(cross listed). X_{ijt} is the set of control variables (please see below for further details). We do not consider firm-level fixed effects as our empirical strategy relies on a comparison between treatment and control group firms. But we include.φ_j , which refers to the sector dummies, accounting for unobserved industry level (time invariant factors) that may influence leverage choice; further τ_t captures unobserved year-specific factors that may also influence leverage.

As indicated in section 3, we use two reform variables to differentiate between the introduction (Clause49_00) and the implementation/completion (Clause49_06) of the reform.

Accordingly we have two comparable specification:

$$Y_{ijt} = \beta_0 + \beta_1 Domestic_{ij} + \beta_2 clause49_t\_00 + \beta_3 (Domestic_{ij} * clause49_t\_00) + \beta_x X_{ijt} + \varphi_j +$$
$$\tau_t + u_{ijt} \quad\quad\quad (2)$$

$$Y_{ijt} = \beta_0 + \beta_1 Domestic_{ij} + \beta_2 clause49_t\_06 + \beta_3(Domestic_{ij} * clause49_t\_06) + \beta_x X_{ijt} + \varphi_j +$$

$$\tau_t + u_{ijt} \tag{3}$$

The coefficient of the interaction term β_3 captures the average treatment effect of CG reform on financial leverage among domestic listed firms (relative to cross-listed firms which form our control group).

Control Characteristics X: We choose a set of firm characteristics conventionally used to determine a firm's leverage ratio choices in the previous literature. We start with the contemporaneous Y and X variables. However, given the likelihood of simultaneity bias between X and Y variables, later we also use lagged X variables (see further discussion in section 5.3).

Size for instance has an ambiguous effect on firm leverage. While size is positively related to leverage according to the trade-off theory, it is inversely related to leverage according to the pecking order theory (Frank & Goyal, 2009). Empirical evidence also provides mixed results. For example Rajan and Zingales (1995); Friend and Lang (1988) etc., find a positive relation between size and leverage, while others (Kester, 1986), (Kim – Sorensen, 1986) and (Titman – Wessels, 1988, report a negative relation. We use the natural logarithm of total assets as a proxy for firm size and explore the nature of this relationship in our sample.

Tangibility is expected to have a positive effect on leverage, simply because tangible assets can be used as collateral (Rajan & Zingales, 1995), (Friend & Lang, 1988) and (Titman & Wessels, 1988 provide evidence of this. Risk of the creditors decreases and value of the assets in case of bankruptcy increases as tangibility increases. Contrary to this, Booth et al. (2001) and Huang and Song (2002) encounter a negative relation between tangibility and leverage. We use the ratio intangible fixed assets over total assets which is a complement to the measure of tangible assets ratio with a view to explore its effect in our sample.

Non-Debt tax Shield: empirical evidence suggests a negative relationship between relationship between non-debt tax shield and leverage. Large non debt tax shield leads to a decrease in the value of interest tax savings and tax advantage of debt financing (T. W. Downs (1993) there analysis is supported by

(Huang & Song, 2002) and (Titman & Wessels, 1988). However, for example Bradley et al. (1984) and Chaplinsky and Niehaus (1993) observe a positive relationship between non-debt tax shields and leverage. We use depreciation divided by total assets to proxy for non-debt tax shields in this study.

Industry Classification: (Bradley et al., 1984), (Long & Malitz, 1985), and (Kester, 1986) provide empirical evidence on statistical significant relationship between industry classification and leverage. Harris and Raviv (1991) argue that different firms have different access to finance and so have different debt equity mix. Firms belonging to the same category say manufacturing tend to display similar leverage. Titman (1984) also provides evidence on the same. Table 1 provides a list of variable and their definitions used in this study. Considering the manufacturing sector, we include subsector dummies to account for unobserved industry-level heterogeneity, if any, within the manufacturing sector.

The consistent estimate of β_3 necessitates the satisfaction of the "parallel trend" assumption i.e. there is same average change in the outcome variable for both the treatment and Control Group in the absence of the reform. This condition is difficult to directly test since the counterfactuals are unobservable. We use the observed graphs of the average time trend of domestic (treated) & cross listed firms in our sample. Figure 1 graphs the trend in all the measures of leverage separately for treatment and control group firms over the sample years. The x line enables comparison in the pre and post cut off years. As is apparent from the figure, the mean leverage measures of the treatment and control firms have been following a fairly similar trend until 2000. Subsequently, the treatment firms decreased their leverage more heavily than the control firms. The change in more prominent after 2006.

Next we first use the two-period firm-level data to compare the pre and post-reform leverage measures (at the mean level) between firms in the treatment (domestically listed) and the control group (cross − listed firms). Table 4 compares various measures of leverage we generated between the firms in the treatment and control group.

As seen in Table 4, three out of five measures of leverage we generated namely, long-term debt ratio, market to book ratio and book value of equity ratio suggests that there was a differential negative

premium on average, among domestic listed Russian firms (relative to their foreign counterparts) after the reform.

5. Results:

This section reports and analyses the estimates of our regression equations (2) and (3) respectively using the two cut offs i.e. pre and post 2000 (the introduction of the clause49) and pre and post 2006 (the implementation/completion of the clause49). Section 5.1 discusses the difference-in-difference estimates of leverage with cut-off as reform introduction i.e. 2000 while section 5.2 discusses the difference-in-difference estimates of on leverage with cut-off as reform implementation/ completion i.e. 2006. Section 5.3 analysis results for robustness and section 5.4 checks for any heterogeneous effect of the reform.

5.1. Introduction of the reform (cut off 2000): Difference-in-difference estimates of leverage

Table 5 a) reports the regression results of equation (2). Holding other factors constant, we focus on the estimate of the interaction term β_3, which captures the average treatment effect of Clause49 on financial leverage among domestic listed firms (relative to cross-listed firms which form our control group). This coefficient is negative and significant for total liability ratio and long-term debt ratio, thus suggesting some reduced reliance on liability and long-term debt in the post-2000 years (relative to pre-2000 years). However, the same effect is not found for net debt to net assets: the estimate of the interaction term is positive and slightly significant here. We next consider if there is any evidence of increased reliance on equity financing. Note that the interaction term is insignificant for market to book ratio, but positive for book value of equity (see columns (1) and (5)). Although this evidence points towards a new trend towards lower liability and long-term debt, and higher book value of equity among domestic listed firms in the post reform years, it appears that the reform has not deepened far enough at this point. Later we shall consider the effect of the completion of the reform to explore if it yields stronger impact on capital structure measures along the lines we argued.

Next we consider the validity of our hypothesis 2 and to this end examine the coefficient estimate of the interaction term for the bank loan ratio variable column (6). Note that this estimate is positive and insignificant (column 6 of the Table). In other words, there is no significant change in bank loan ratio soon after the introduction of the reform.

In order to get stronger evidence in support of our hypotheses, we therefore focus on the impact of the completion of the reform in the post-2006 years.

5.2. Completion of the reform (cut off 2006): Difference-in-difference estimates of leverage

Table 5 b) reports the regression results of equation (3) to see if the completion of the reform in 2006 had a significant impact on the selected leverage measures. As before, we focus on the estimated coefficient of the interaction term β_3, which captures the average treatment effect of completion of Clause49 in our sample.

Considering the effect of the reform completion on measures using debt and liability, we find that the estimated coefficient is negative and significant for total liability ratio (column 1), long-term debt ratio (column 2) and net debt ratio (column 3), but the coefficient is only statistically significant for the total liability ratio. In contrast, the estimated coefficient is positive and statistically significant for market to book ratio (column 4) and also book value of equity ratio (column 5). Thus it follows that in the post 2006 years when the reform has deepened, there is an increasing reliance on equity finance among domestic listed Indian manufacturing firms (relative to those crosslisted ones). This is accompanied by reduced reliance on total liability; but reliance on long-term debt and net debt remained unchanged. Column (6) of the table reports the estimated β_3 coefficient for the bank loan ratio. Unlike the reform cut-off point at 2000, we now find that the estimated coefficient is negative and slightly significant. This suggests that share of bank loans (a measure of private debt) is lower among the domestic listed firms in the post 2006 years which in turn means a greater reliance on public debt after the completion of Clause 49 that enhanced investors' protection.

Although the regression results for cut off 2000 rejected our hypothesis 2, cut off 2006 has led to the acceptance of our hypothesis 2. Inferences: Our baseline regression provides support to our hypotheses 1 and 2 and the evidence is stronger only after the completion (rather than the introduction) of Clause 49 when all firms adopted these reform. We argue that the underlying mechanism that leads to this result is related to the adoption of transparency and disclosure requirement which was mandatory for all firms. Accordingly, there is likely to be a decline in the asymmetric information that makes debt suboptimal, but lowers the cost of equity, thus enhancing the firm's reliance on equity. While we do not have any direct evidence of reduced asymmetric information in the post-Clause 49 years, we consider some indirect evidence pertaining to measures of earnings quality among treated domestic listed firms in our sample; these results are summarised in Table 13. Considering the reform completion cul-off point of 2006, we find that there were no changes in EBIT/TA in the post-2006 years and this can be attributable to proportional increase in both EBIT and TA in the post-2006 years. In other words, there is evidence that firms were under-reporting EBIT in the pre-2006 years, which was no longer possible in post-2006 years when transparency and disclosure rules were mandatory and as a result EBIT increased. But total assets also increased in the post-2006 years and as such EBIT/TA remains unchanged, thus indicating a proportional increase in total assets. Among other possible measures considered, we find that both EM2=sd(EBIT)/sd(Cashflow) and EM3=sd(EBIT)/mean(Cashflow) dropped in the post-2006 years though the difference was statistically significant only for EM2.

Other results:

Both Table 5a) and 5b) also include controls for firm characteristics such as firm size, age and non-debt shield. As per table 5a), coefficient of firm size is positive but insignificant for market to book ratio, positive and significant for total liability ratio, negative and significant to long term debt ratio, positive and insignificant to net debt to net asset ratio and negative and significant for book value of equity ratio. We find similar results in table 5b where we consider the effect of the completion of the reform. This ambiguity of the relation between size and financial leverage is in line with the existing literature.

Age of the firm is, however, negative and significantly related to almost all measures of leverage suggesting that older and mature firms tend to have lower levels of leverage.

Non debt tax shield is expected to be negatively related to capital structure of a firm according to existing literature. While it is negative and significant for long term debt ratio, Net debt to net asset ratio and book value of equity ratio, it is positive and significant for market to book and total liability ratio (see Table 5a) in our sample.

5.3. Robustness tests

In order to test the robustness of our baseline estimates, we perform three tests. Each of these tests are done for the completion of the reform using cut-off 2006 primarily because the reform was completed in 2006 so that all domestic listed firms adopted the Clause49 regulations by the end of 2006. First, we consider the estimates of leverage as a function of lagged control variables. This is important as it would minimise the simultaneity bias in our estimates. Results are shown in table 6. We find that the coefficient signs are very similar to those in Table 5a), but significance levels are higher when we use the lagged explanatory variables. As before, we obtain negative and significant estimate of the interaction term β_3 for the total liability ratio and also the long term debt ratio, indicating reduced reliance on debt among domestic listed firms after 2006. Second, we obtain positive and significant estimate of this interaction term for market to book ratio and book value of equity ratio, thus suggesting increased reliance on equity finance. These two sets of results, one for debt variables and the other for the equity variables, lend support to H1. However, the interaction term although negative remains insignificant in the determination of the bank loan ratio, thus indicating bank loans share were similar for domestic and cross-listed firms after the completion of the reform in our sample.

Second, we augment our baseline specifications (2) and (3) by another widely accepted firm-level determinant of leverage in our list of controls, namely, profitability. We then re-estimate the leverage measures including lagged profitability within the set of other lagged X variables. Results as reported in table 7 are generally quite similar to those in Table 6 although the lagged profitability variable on its own is negative and significant for most leverage measures (except net debt to net assets).

Finally we exclude foreign firms from our sample because foreign firms are less likely to be regulated by the newly introduced Clause49 regulations. Table 8 reports the leverage results for this subsample of Indian firms only (both domestic and cross-listed) – estimates of the interaction term remain rather comparable to those in Table 7. Also, for this subsample, the estimate of the interaction term for the bank loan ratio turns out to be weakly significant.

Overall these results lend support to our hypotheses, especially after the completion of the reform in 2006, supposedly because the mandatory implementation of the regulation forced firms to adhere to these changes.

5.4. Heterogeneous impact of the reform

In this section, we explore if the overall effect of the reform was weaker/stronger for some groups of firms. To this end, we carry out three additional tests. First, we consider the subsample of large firms who are in the top quartile of the distribution of total assets of the sample firms. As discussed earlier the effect size of the firms on capital structure is ambiguous. We re-estimate equation (3) for the largest group of firms only and summarise the results in Table 9. As before, the estimate of the interaction tern is negative and significant for total liability ratio and long term debt ratio negative, indicating reduced dependence of domestic listed Indian firms on debt/liability; the corresponding effect is, however, positive and significant of the market to book ratio and book value of equity ratio. However the absolute size of the estimated interaction term is somewhat smaller for the largest sample firms. These two sets of results together tend to support that the reform was successful to lower (increase) reliance of debt (equity). There is however no significant indication that the reliance on bank loans was lower in the post-2006 years even among larger sample firms.

Second, we re-estimate the measure of leverage for firms belonging to a business group. Khanna and Rivkin (2001) define a business group as "a set of firms which, though legally independent, are bound together by a constellation of formal and informal ties and are accustomed to taking coordinated action." There is an extensive literature on business groups (e.g., see Granovetter (2005), Khanna and Yafeh (2007) . In particular, Khanna and Yafeh (2007) highlight the advantages and disadvantages of business

groups in emerging markets. On one hand, it is argued that an economic benefit of a business group is that it serves as an internal financial market and capital can be allocated amongst affiliated firms through it. Easy access to finance is particularly important where external finance is difficult. Affiliates of the most highly diversified Indian business groups outperform stand-alone firms as pointed out by Khanna and Palepu (2000a). He et. all (2013) argue that the formation of an internal capital market within business groups can somewhat replace the capital allocation function of external market. Business affiliates can pool funds and reallocates them within the group, creating value in this way. Risk sharing is another important role of business groups according to Khanna and Yafeh (2005). On the other hand, business groups can also destroy value through tunnelling resources. Agency issues arising in business groups are hard to monitor by outside investors as they find it hard to monitor related party transactions. Therefore, it is hard to draw a clear-cut conclusion regarding the net advantage of group affiliation for the operation and performance of members of business groups. In this respect, we try to identify if leverage estimates are different for the business group firms relative to all firms in our sample.

Table 10 reports the difference-in-difference estimates of firms which are connected to a business network. The estimate of the interaction term here are somewhat different from those shown in Table 7, for example. Evidently, the coefficient estimate of the interaction term for total liability ratio and long term debt ratio are positive and significant, indicating increased reliance on debt after the reform completion. While the interaction coefficient for the book value of equity is negative and significant, that for market-to-book ratio turns out to be positive and significant. In other words, these results lend limited support to our hypothesis H1 for business group firms: while the treated domestic business group firms continue to rely more on loans after the reform, they tend to have significantly higher reliance on market finance. Greater reliance of these firms on the debt even after the reform tends to highlight the persistence of the internal capital market within business groups.

Finally, we explore the nature of inter-state variation in the effect of the new Clause 49 regulations in our sample. To this end, we classify the Indian states into pro-business and pro-worker. This is done by using two sets of existing measures initiated to regulate the use of land and labour in the Indian states.

First we consider the state-level land reform legislation measures available from Besley and Burgess (2002). In particular, states with more land-reform legislations tend to have smaller plots of land which in turn may pose greater burden for acquiring land for industrialisation. This is because acquisition of new land for industrialisation would require permission from larger number of landholders, which may pose more challenges relative to that in states with less land reform legislations. Second, we use the labour regulations indices developed by Besley and Burgess (2003). The labour regulation variable comes from specific text amendments to the Industrial Disputes Act 1947. The variable was coded as follows in Besley and Burgess (2003): 1 denotes a change that is pro-labour or anti-employer, 0 denotes a change that we judged not to affect the bargaining power of either workers or employers and -1 denotes a change which we regard to be anti-worker or pro-employer.

We combine these two measures to define a state as pro-business and pro-worker as follows: a state is treated pro-business if it has lower land-reform legislations and also lower labour legislations; otherwise it is a pro-worker state.

Unfortunately, we do not have enough observations for the pro-worker states like Andhra, Kerala, Tripura and West Bengal, which is an evidence in itself that these states are unable to attract enough listed companies. Table 11 and 12 reports the effects of the completion of the reform on measures of leverage for Maharashtra and both Maharashtra and Gujarat taken together respectively. The estimates of the interaction term are highly significant for all the measures of leverage. There is evidence that the completion of the Clause 49 reform had very strong effects on most measures of capital structure among treated firms in our sample and the size of these effects has been much bigger than those shown in Table 7 for the full sample. In other words, these results show that the effect of the reform may differ across the Indian states characterized by pro-business regulations.

6. Conclusion

Firm financing is central to firm growth. This paper provides new evidence of the casual effect of corporate governance reforms on corporate capital structure. Using the Clause49 regulations introduced

by the Security and Board Exchange of India in 2000 as a potential exogenous natural experiment, we assess the impact of the introduction as well as the completion of the Clause49 reform on selected financial leverage measures of listed Indian firms. Difference-in-difference estimates using firm-level panel data for the period 1996-2014 suggest that the introduction and completion of Clause49 has led to a greater (lower) reliance on equity (debt) and also a reduction in reliance on bank loans among domestic listed (relative to cross-listed) Indian firms in our sample and these effects are more pronounced when we consider the completion rather than the introduction of the reform. We argue that these results can be attributed to the reduced information asymmetry between managers and investors and increased investor protection in the post-regulation years. The paper also identifies heterogeneous impact of the reform among larger firms, firms belonging to the business groups with internal capital market and also those located in pro-business (as opposed to pro-worker) states, thus highlighting the possible role of supporting regulations guiding land as well as labour use in the Indian states. The fact that the impact of the reform varies across different subsamples considered has important implications for policy makers in their bid to improving the effectiveness of these regulations.

Ours is the first study to assess the causal impact of Clause49 on corporate financing in India. Enhancing corporate growth is key to boosting India's economic growth. While there is suggestion that these reforms generally worked in an expected way for average firms, there are some cause for concern, especially for the firms belonging to the Business Groups and also firms operating in pro-worker states. We hope future policies will help addressing these bottlenecks.

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Tables

Table 1: Definition of Variables

This table defines the variables used in the empirical analysis.

Abbreviation	Definitions
Measures of Leverage :	
TLR	Total Liability Ratio, TLR= total Liabilities/ Total assets
LTDR	Long Term Debt Ratio, LTDR= Long Term Debt/ Total Assets
netdebt_netassets	Net Debt Ratio, = Net Debt / Net Assets
Mkt_bk	Market to Book Ratio
SFTA	Book Value of equity ratio. SFTA=Shareholders' Funds/ Total Assets
BLTL	Bank Loan Ratio:Bank Loans/ Total Loans
Firm-Specific Controls:	
Fsize	Ln (total assets)
Age	Age is measured by the number of years since the firm's establishment. Age= current year- date of incorporation.
NonDebtTaxShield	Depreciation / Total Assets
Profitability	EBIT/Total Assets
Treatment & Control Group Dummies:	
Domestic	Dummy which takes the value 1 if it is a domestic listed firms and 0 for cross listed firms.
Cross listed	Dummy which takes the value 1 if it is a cross listed firm and 0 for otherwise. The control group.
Clause49_00	Dummy that takes the value 1 for the years 2000 to 2014 and 0 otherwise
Clause49_06	Dummy that takes the value 1 for the years 2006 to 2014 and 0 otherwise

Table 2: Summary Statistics

This table provides and compares the summary statistics and the measures of leverage for the treatment and control group.

Variables	Obs.	Mean	Std. dev.
TLTA	35788	.6052553	.3011837
LTDTA	29266	.3287867	.306385
netDebt_netAssets	35783	1.196491	3.009549
Mkt_book	1078	.219623	.2607811
SFTA	35788	.3948106	.3014106
BLTL	2127	.5353525	.6121704
Firmsize	35788	8.308156	2.159445
Age	35767	30.02052	16.2353
NonDebtTaxShield	35719	.0263529	.0325489

Variables	Obs.	Mean	Std. dev.
TLTA	507	.6220712	.2498128
LTDTA	497	.3159809	.1972514
netDebt_netAssets	507	1.067162	1.449358
Mkt_bk	75	.1941877	.1921693
SFTA	507	.3779284	.249813
BLTL	104	.8792611	.7052346
Firmsize	507	13.58328	1.796414
Age	507	39.97239	25.41916
NonDebtTaxSheild	506	.0323566	.020978

Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio.

Table 3: Comparisons of leverage measures between treatment and control groups before and after introduction/completion of Clause49

Variable	Pre-2000 Treatment Group	Control Group	t-stat	Post-2000 Treatment Group	Control Group	t-stat
TLTA	.5580379	.4983326	-1.9613	.6040632	.6345412	1.6935**
LTDTA	.2959154	.324647	0.9302	.3086211	.2827286	1.7148**
netDebt_netAssets	.9201505	.9838975	0.4001	.7822341	1.087069	3.9705***
Mkt_bk	.3734227	.317912	-0.9441	.2056594	.172842	-0.9214
SFTA	.4419687	.5016676	1.9611**	.3959267	.3654583	-1.6930
BLTL	.4808646	.8380442	2.1002***	.5354693	.883548	5.2637***

Variable	Pre-2006 Treatment Group	Control Group	t-stat	Post-2006 Treatment Group	Control Group	t-stat
TLTA	.6166597	.5868016	-1.2359	.5956314	.6446242	2.1311***
LTDTA	.3626322	.3407043	-1.0056	.2397572	.2821518	2.3709***
netDebt_netAssets	.8529098	1.161129	3.0320***	.7542924	.9934465	2.4112***
Mkt_bk	.2843778	.2929979	0.2330	.1671968	.0531955	-2.1747
SFTA	.3833503	.4131977	1.2354	.4043494	.3553757	-2.1304
BLTL	.6015193	.6081508	0.0503	.5264793	.9784756	6.3298***

Table 4: Comparison of treatment and control groups before and after 2006

Variable	Treatment Group (Domestic)	Control Group (Cross- listed)	Difference (Treatment-Control)
Total Liability Ratio			
Pre-Clause49	0.5954267	0.5868016	0.0086251
Post-Clause49	0.5911089	0.6446242	-0.0535153
Difference(Pre-Post)	0.0043208	-0.0578226	**0.0621404**
Long Term Debt Ratio			
Pre-Clause49	0.3267478	0.3407043	-0.0139565
Post-Clause49	0.2713441	0.2821518	-0.0108077
Difference(Pre-Post)	0.0554037	0.0585525	**-0.0031488**
netDebt/netAssets Ratio			
Pre-Clause49	0.919188	1.161129	-0.241941
Post-Clause49	0.6058957	0.9934465	-0.3875508
Difference(Pre-Post)	0.3132923	0.1676825	**0.1456098**
Market-to-Book Ratio			
Pre-Clause49	0.2843778	0.2929979	-0.0086202
Post-Clause49	0.1671968	0.0531955	0.1140013
Difference(Pre-Post)	0.117181	0.2398024	**-0.1226214**
Book value of Equity			
Pre-Clause49	0.4043124	0.4131977	-0.0088853
Post-Clause49	0.4093062	0.3553757	0.0539305
Difference(Pre-Post)	-0.0049938	0.057822	**-0.0628158**
Bank Loan Ratio			
Pre-Clause49	0.6015193	0.6081508	-0.0066315
Post-Clause49	0.5299109	0.9784756	-0.4485647
Difference(Pre-Post)	0.0716084	-0.3703248	**0.4419332**

Note: The table compares means of various measures of leverage we generated between the firms in the treatment and control group. The table reports mean values. The sample period is 1996-2014. The cut-off is 2006 which is when the implementation of the reform was completed. The variables are defined in table 1.

Table 5a: Difference-in-difference estimates of leverage with cut-off as reform introduction i.e. 2000. Variables are defined in Table 1. Sample period is 1996 to 2014.

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:Domestic	0.245***	-0.189***	-1.029***	0.152***	-0.245***	-0.304
	(0.0278)	(0.0325)	(0.183)	(0.0395)	(0.0278)	(0.278)
β_2:Clause49_00	0.120***	-0.0148	0.161	-0.141***	-0.120***	-0.102
	(0.0290)	(0.0299)	(0.182)	(0.0338)	(0.0290)	(0.278)
β_3:domestic_clause49_00	-0.240***	0.0829**	0.388*	-0.0389	0.240***	0.190
	(0.0293)	(0.0358)	(0.212)	(0.0397)	(0.0293)	(0.286)
Firmsize	0.0251***	-0.00560***	0.0206	0.00415	-0.0252***	0.0964***
	(0.00142)	(0.00192)	(0.0166)	(0.00592)	(0.00142)	(0.00864)
Age	-0.00151***	-0.00343***	-0.0284***	-0.000204	0.00152***	-0.00147**
	(0.000156)	(0.000178)	(0.000926)	(0.000407)	(0.000156)	(0.000747)
NonDebtTaxShield	0.253***	-1.626**	-14.99***	1.046**	-0.256***	4.973***
	(0.0767)	(0.677)	(5.774)	(0.419)	(0.0773)	(0.886)
Industry fixed effects	Yes	yes	Yes	Yes	Yes	Yes
Constant	0.189***	0.686***	2.557***	0.0973	0.811***	0.112
	(0.0395)	(0.0487)	(0.244)	(0.0853)	(0.0395)	(0.408)
Observations	32,080	25,766	32,077	1,053	32,080	2,138
R-squared	0.239	0.293	0.348	0.342	0.238	0.185

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 5b: Difference-in-difference estimates of leverage with cut-off as reform implementation/ completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014.

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1: Domestic	0.121***	-0.0873***	-0.731***	0.109***	-0.122***	0.102
	(0.0162)	(0.0178)	(0.126)	(0.0373)	(0.0162)	(0.150)
β_2: clause49_06	0.0270	-0.0626***	-0.109	-0.256***	-0.0269	0.291*
	(0.0217)	(0.0201)	(0.156)	(0.0375)	(0.0217)	(0.161)
β_3: domestic_clause49_06	-0.111***	-0.000198	0.112	0.110***	0.112***	-0.320*
	(0.0220)	(0.0223)	(0.162)	(0.0394)	(0.0220)	(0.172)
Firmsize	0.0323***	0.000713	0.0132	0.0156***	-0.0324***	0.0936***
	(0.00153)	(0.00166)	(0.0135)	(0.00597)	(0.00153)	(0.00874)
Age	-0.00142***	-0.00337***	-0.0270***	3.14e-05	0.00142***	-0.00158**
	(0.000156)	(0.000177)	(0.000961)	(0.000386)	(0.000156)	(0.000739)
NonDebtTaxShield	0.0603	-1.332**	-13.76***	0.642	-0.0634	4.826***
	(0.0751)	(0.535)	(5.122)	(0.444)	(0.0747)	(0.904)
Industry fixed effects	yes	Yes	Yes	Yes	yes	Yes
Constant	0.183***	0.610***	2.792***	-0.0748	0.818***	-0.135
	(0.0328)	(0.0429)	(0.226)	(0.0833)	(0.0328)	(0.340)
Observations	32,080	25,766	32,077	1,053	32,080	2,138
R-squared	0.237	0.295	0.341	0.383	0.236	0.187

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 6. Robustness: Difference-in-difference estimates of leverage with lagged control variables and cut-off as reform completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014.

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:domestic	0.0368**	-0.0101	-0.0820	0.113***	-0.0366**	0.116
	(0.0155)	(0.0151)	(0.109)	(0.0420)	(0.0155)	(0.178)
β_2:Clause49_06	0.0602***	-0.0444**	-0.162	-0.250***	-0.0603***	0.211
	(0.0204)	(0.0173)	(0.138)	(0.0380)	(0.0204)	(0.185)
β_3:domestic_clause49_06	-0.0832***	-0.0732***	0.0220	0.109***	0.0832***	-0.299
	(0.0216)	(0.0185)	(0.141)	(0.0406)	(0.0216)	(0.195)
Lagged.firmsize	0.00270	-0.00291	0.0961***	0.0118*	-0.00266	0.0873***
	(0.00218)	(0.00185)	(0.00725)	(0.00647)	(0.00218)	(0.00846)
Lagged.age	-0.000154	-0.00144***	-0.00787***	-0.000159	0.000154	-0.00129*
	(0.000167)	(0.000139)	(0.000739)	(0.000420)	(0.000167)	(0.000692)
Lagged.NonDebtTaxShield	0.511	0.251	-0.926*	0.288	-0.512	3.905***
	(0.399)	(0.213)	(0.506)	(0.401)	(0.399)	(0.912)
Industry fixed effects	yes	yes	yes	Yes	yes	Yes
Constant	0.505***	0.536***	0.441**	-0.121	0.495***	-0.0645
	(0.0430)	(0.0464)	(0.185)	(0.136)	(0.0430)	(0.376)
Observations	11,328	10,114	11,327	916	11,328	1,955
R-squared	0.077	0.114	0.074	0.402	0.077	0.191

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio; See Table 1 for variable definitions.

Table 7. Robustness: Difference-in-difference estimates of leverage with lagged control variables, including lagged profitability and cut-off as reform completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014.

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:domestic	0.0423***	-0.00444	-0.0722	0.135***	-0.0422***	0.108
	(0.0153)	(0.0148)	(0.108)	(0.0415)	(0.0153)	(0.177)
β_2:Clause49_06	0.0584***	-0.0464***	-0.165	-0.232***	-0.0585***	0.219
	(0.0201)	(0.0168)	(0.137)	(0.0363)	(0.0201)	(0.185)
β_3:domestic_clause49_06	-0.0829***	-0.0727***	0.0225	0.0865**	0.0829***	-0.293
	(0.0213)	(0.0180)	(0.141)	(0.0386)	(0.0213)	(0.195)
Lagged.firmsize	0.00481**	-0.000683	0.0998***	0.0204***	-0.00477**	0.0866***
	(0.00223)	(0.00196)	(0.00737)	(0.00658)	(0.00223)	(0.00849)
Lagged.age	-0.000106	-0.00138***	-0.00779***	-0.000153	0.000105	-0.00129*
	(0.000167)	(0.000138)	(0.000737)	(0.000416)	(0.000167)	(0.000691)
Lagged.NonDebtTaxShield	0.390	0.0855	-1.139**	0.447	-0.390	3.962***
	(0.434)	(0.265)	(0.461)	(0.386)	(0.434)	(0.909)
Lagged.profitability	-0.141***	-0.178***	-0.247**	-0.663***	0.141***	0.197
	(0.0483)	(0.0579)	(0.0988)	(0.134)	(0.0483)	(0.125)
Industry fixed effects	yes	yes	yes	Yes	yes	Yes
Constant	0.503***	0.536***	0.439**	-0.283	0.496***	-0.0920
	(0.0416)	(0.0444)	(0.181)	(0.193)	(0.0416)	(0.377)
Observations	11,328	10,114	11,327	916	11,328	1,955
R-squared	0.087	0.128	0.076	0.438	0.087	0.192

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 8. Robustness: Difference-in-difference estimates of leverage with a sub-sample excluding foreign firms and cut-off as reform completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014.

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:domestic	0.0452***	-0.00242	-0.0611	0.120***	-0.0451***	0.106
	(0.0153)	(0.0148)	(0.108)	(0.0403)	(0.0153)	(0.178)
β_2:Clause49_06	0.0579***	-0.0467***	-0.168	-0.228***	-0.0579***	0.220
	(0.0201)	(0.0168)	(0.138)	(0.0359)	(0.0201)	(0.185)
β_3:domestic_clause49_06	-0.0838***	-0.0739***	0.0218	0.0835**	0.0838***	-0.294
	(0.0213)	(0.0180)	(0.141)	(0.0384)	(0.0213)	(0.195)
Lagged.firmsize	0.00526**	-0.000323	0.102***	0.0117*	-0.00521**	0.0859***
	(0.00224)	(0.00196)	(0.00740)	(0.00697)	(0.00224)	(0.00847)
Lagged.age	-6.86e-05	-0.00136***	-0.00772***	-0.000537	6.81e-05	-0.00141**
	(0.000168)	(0.000138)	(0.000741)	(0.000408)	(0.000168)	(0.000682)
Lagged.NonDebtTaxShield	0.391	0.0908	-1.130**	0.174	-0.392	3.972***
	(0.434)	(0.267)	(0.463)	(0.393)	(0.434)	(0.910)
Lagged.profitability	-0.140***	-0.177***	-0.243**	-0.538***	0.140***	0.185
	(0.0481)	(0.0577)	(0.0974)	(0.145)	(0.0481)	(0.125)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.496***	0.531***	0.400**	0.0779	0.504***	-0.0778
	(0.0417)	(0.0444)	(0.181)	(0.109)	(0.0417)	(0.376)
Observations	11,214	10,049	11,213	815	11,214	1,948
R-squared	0.086	0.128	0.076	0.431	0.086	0.194

Robust standard errors in parentheses;   *** p<0.01, ** p<0.05, * p<0.1.

Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 9. Robustness: Difference-in-difference estimates of leverage for large firms. The cut-off is reform completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014.

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:domestic	0.0363**	-0.0233	-0.0290	0.0960**	-0.0363**	0.00909
	(0.0150)	(0.0151)	(0.122)	(0.0404)	(0.0150)	(0.186)
β_2:Clause49_06	0.0215	-0.0536***	-0.251	-0.159***	-0.0215	0.288
	(0.0194)	(0.0161)	(0.155)	(0.0384)	(0.0194)	(0.194)
β_3:domestic_clause49_06	-0.0448**	-0.0472***	-0.0403	0.0223	0.0448**	-0.241
	(0.0204)	(0.0178)	(0.161)	(0.0407)	(0.0204)	(0.204)
Lagged.firmsize	0.0168***	-0.00566	0.0851***	-0.0290**	-0.0168***	0.0351
	(0.00514)	(0.00344)	(0.0325)	(0.0125)	(0.00514)	(0.0253)
Lagged.age	-0.000686***	-0.00157***	-0.00841***	-0.00125***	0.000686***	-5.44e-06
	(0.000150)	(0.000151)	(0.00101)	(0.000481)	(0.000150)	(0.00108)
Lagged.NonDebtTaxShield	0.661**	-0.0889	-1.524	0.232	-0.661**	2.463
	(0.269)	(0.244)	(1.467)	(0.743)	(0.269)	(1.846)
Lagged.profitability	-0.455***	-0.572***	-2.521***	-1.180***	0.455***	0.00151
	(0.138)	(0.105)	(0.797)	(0.255)	(0.138)	(0.550)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.502***	0.771***	1.689***	0.676***	0.498***	0.892
	(0.0724)	(0.0666)	(0.479)	(0.189)	(0.0724)	(0.597)
Observations	3,098	2,900	3,098	509	3,098	815
R-squared	0.267	0.357	0.193	0.552	0.267	0.165

Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 10. Robustness: Difference-in-difference estimates of leverage for firms belonging to a business group. The cut-off is reform completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014.

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:domestic	0.0739***	0.00758	-0.0290	0.125***	-0.0739***	0.405
	(0.0235)	(0.0268)	(0.122)	(0.0408)	(0.0235)	(0.363)
β_2:Clause49_06	-0.121***	-0.141***	-0.251	-0.210***	0.121***	-0.198
	(0.0283)	(0.0209)	(0.155)	(0.0364)	(0.0283)	(0.356)
β_3:domestic_clause49_06	0.0790***	0.0612***	-0.0403	0.0549	-0.0790***	0.435
	(0.0288)	(0.0227)	(0.161)	(0.0385)	(0.0288)	(0.367)
Lagged.firmsize	0.0151**	-0.00262	0.0851***	0.00263	-0.0151**	0.0863
	(0.00631)	(0.00565)	(0.0325)	(0.00778)	(0.00631)	(0.0528)
Lagged.age	0.000379	-0.000878***	-0.00841***	-0.000270	-0.000379	-0.0156**
	(0.000276)	(0.000334)	(0.00101)	(0.000427)	(0.000276)	(0.00689)
Lagged.NonDebtTaxShield	-0.235	0.644	-1.524	0.592	0.235	4.528
	(0.467)	(0.467)	(1.467)	(0.672)	(0.467)	(4.795)
Lagged.profitability	-0.491***	-0.541***	-2.521***	-0.736***	0.491***	-0.0515
	(0.128)	(0.137)	(0.797)	(0.172)	(0.128)	(0.577)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.598***	0.260***	1.689***	0.533***	0.402***	0.198
	(0.0940)	(0.0831)	(0.479)	(0.152)	(0.0940)	(0.836)
Observations	692	653	3,098	692	692	122
R-squared	0.362	0.388	0.193	0.471	0.362	0.426

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 11. Difference-in-difference estimates of leverage for firms located in a pro-business state Maharashtra. The cut-off is reform completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:domestic	0.433***	0.243*	6.620***	0.318**	-0.433***	
	(0.0950)	(0.126)	(0.586)	(0.131)	(0.0950)	
β_2:Clause49_06	-0.103***	-0.121***	-0.525***	-0.307***	0.103***	-1.004**
	(0.0322)	(0.0375)	(0.152)	(0.0633)	(0.0322)	(0.358)
β_3:domestic_clause49_06	0.120***	0.0757*	0.224	0.210***	-0.120***	0.578
	(0.0364)	(0.0420)	(0.183)	(0.0671)	(0.0364)	(0.462)
Lagged.firmsize	0.0158	-0.00436	0.329***	0.0516***	-0.0158	-0.138
	(0.0134)	(0.0230)	(0.0918)	(0.0191)	(0.0134)	(0.169)
Lagged.age	-0.00298	-0.00286	-0.0467***	-0.00417	0.00298	0.0218
	(0.00222)	(0.00325)	(0.0146)	(0.00281)	(0.00222)	(0.0268)
Lagged.NonDebtTaxShield	0.214	0.654	-0.953	0.210	-0.214	-13.76
	(0.576)	(0.501)	(4.499)	(0.997)	(0.576)	(17.19)
Lagged.profitability	-0.629***	-0.661***	-2.992***	-0.661**	0.629***	-4.248
	(0.198)	(0.186)	(1.061)	(0.256)	(0.198)	(3.581)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.378**	0.526	-5.467***	-0.246	0.622***	4.601
	(0.154)	(0.323)	(1.098)	(0.246)	(0.154)	(2.979)
Observations	141	127	141	141	141	23
R-squared	0.696	0.591	0.729	0.714	0.696	0.752

Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 12. Difference-in-difference estimates of leverage for firms located in two pro-business states Maharashtra & Gujarat. The cut-off is reform completion i.e. 2006. Variables are defined in Table 1. Sample period is 1996 to 2014

VARIABLES	(1) TLTA	(2) LTDTA	(3) netDebt_netAssets	(4) mkt_bk	(5) SFTA	(6) BLTL
β_1:domestic	0.433***	0.243*	6.620***	0.318**	-0.433***	
	(0.0950)	(0.126)	(0.586)	(0.131)	(0.0950)	
β_2:Clause49_06	-0.103***	-0.121***	-0.525***	-0.307***	0.103***	-1.004**
	(0.0322)	(0.0375)	(0.152)	(0.0633)	(0.0322)	(0.358)
β_3:domestic_clause49_06	0.120***	0.0757*	0.224	0.210***	-0.120***	0.578
	(0.0364)	(0.0420)	(0.183)	(0.0671)	(0.0364)	(0.462)
Lagged.firmsize	0.0158	-0.00436	0.329***	0.0516***	-0.0158	-0.138
	(0.0134)	(0.0230)	(0.0918)	(0.0191)	(0.0134)	(0.169)
Lagged.age	-0.00298	-0.00286	-0.0467***	-0.00417	0.00298	0.0218
	(0.00222)	(0.00325)	(0.0146)	(0.00281)	(0.00222)	(0.0268)
Lagged.NonDebtTaxShield	0.214	0.654	-0.953	0.210	-0.214	-13.76
	(0.576)	(0.501)	(4.499)	(0.997)	(0.576)	(17.19)
Lagged.profitability	-0.629***	-0.661***	-2.992***	-0.661**	0.629***	-4.248
	(0.198)	(0.186)	(1.061)	(0.256)	(0.198)	(3.581)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.378**	0.526	-5.467***	-0.246	0.622***	4.601
	(0.154)	(0.323)	(1.098)	(0.246)	(0.154)	(2.979)
Observations	141	127	141	141	141	23
R-squared	0.696	0.591	0.729	0.714	0.696	0.752

Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
Note: TLTA: Total liability ratio; LTDTA: Long-term debt ratio; netDebt_netAssets: Net debt ratio; mkt_bk: market to book equity ratio; SFTA: book equity ratio; BLTL: Bank loan ratio. See Table 1 for variable definitions.

Table 13. Comparison of Earnings Quality Before/After Introduction/Completion of Clause 49

Variable	Domestic			Domestic		
	Pre-2000	Post-2000	t-stat	Pre-2006	Post-2006	t-stat
EM1= EBIT/ Cash flow	.8861644	1.217082	-0.0438	.8269185	1.344724	-0.3263
EM2= sd (EBIT) /sd (cash flow)	1.40087	1.176155	1.4389	1.248728	1.154218	1.6453*
EM3=sd (EBIT) / mean cash flow	7.946633	2.000294	2.5886**	3.131418	1.763493	1.6109
EBIT	16898.7	18083.51	-0.2257	10829.57	21156.89	-5.2982***
TA	142051.1	193546.4	-0.8604	100665.2	231377.9	-5.8840***
EBIT/TA	.1252811	.0676451	4.9864***	.0739126	.0674173	1.5106

*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Trend in Leverage measures: comparison of treatment and control groups before and after the introduction/completion of Clause49

This figure shows the trend of average leverage ratios for firms in the treatment and control group over the period 1996 to 2014.