Do foreign institutional investors improve board monitoring?

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Abstract

Manuscript type: Empirical

Research Question/Issue: Do foreign institutional investors (FIIs) improve firm monitoring at the board level?

Research Findings/Insights: Exploiting the global financial crisis of 2007-08 as an exogenous shock that resulted in a significant decline of FIIs' ownership in the Indian market, we find evidence of a causal link between FIIs' ownership and different dimensions of board monitoring. Specifically, the empirical results suggest that FIIs reduce board size, busyness, network size, CEO power, and CEO pay, and improve board diligence. However, we also document a negative link between FIIs' ownership and board independence, indicating FIIs do not view independent directors as effective monitors in this market. In terms of implications of our results we find that improved board monitoring, induced by higher FIIs' ownership, has positive impact on the relation between FIIs and firm performance (firm value and innovation activities).

Theoretical/Academic Implications: Our findings support the argument that FIIs could generate positive externalities in emerging markets through their board monitoring activities.

Practitioner/Policy Implications: Our results suggest that opening-up an emerging market to FIIs can be an effective way to improve the effectiveness of board monitoring and potential agency problems. This, in turn, should benefit the minority/outside shareholders.

JEL Classification: G23, G3, G32, O3

Keywords: Board monitoring, foreign institutional investors, financial crisis, firm value, innovation.

1. Introduction

Although it is well established that boards are a powerful internal corporate governance mechanism, their effectiveness has been shown to vary greatly (Adams et al., 2010; Tung, 2011).[1] This variation in effectiveness has motivated academic research that investigates what are the reasons for differences and, more importantly, how board effectiveness can be improved. Our study adds to this growing area of literature by examining whether foreign institutional investors (denoted as FIIs), improve board effectiveness by influencing monitoring activities. Board monitoring by shareholders is important in reducing agency costs and linked to more effective decisions making by directors, ultimately on the performance of the firm. Gillan and Starks (2003) offer a theoretical argument that a growth in FIIs' ownership should result in better monitoring and governance. [2] In this paper we empirically examine the link between FIIs' ownership and different dimensions of board monitoring.

Despite convincing theoretical arguments, to the best of our knowledge, there is no empirical study that uses board level data investigating the link between FIIs' ownership and different facets of board monitoring. Further, the empirical constraint of overcoming the endogeneity problem is a major challenge in establishing a causal link between FIIs and board monitoring (Gillan and Starks, 2003).[3] In this study, we overcome this identification challenge by exploiting the 2007-08 financial crisis as an exogenous shock that significantly diminishes the ownership of FIIs in the Indian market.[4] India, an emerging market, is typically challenged by the "twin agency" problems of controlling corporate insiders and state ruler discretion (Stulz, 2005).

The literature argues that large outside shareholders, such as FIIs, can contribute in mitigating the problem of agency costs by demanding higher managerial performance (Shleifer and Vishny, 1986, 1997; Claessens et al., 2002; Noe, 2002). Consistent with this view, empirical studies by Ferreira and Matos (2008), Aggarwal et al. (2011) and Huang and Zhu (2015) suggest that FIIs improve firm-level corporate governance to limit the expropriation by

[1] Board powers are large and wide ranging. They include initiating and approving all major corporate decisions (e.g. major investment, financing, acquisition, divestiture, and liquidation decisions), hiring and firing CEOs, determining CEO and senior officer compensation, nominating (re-nominating) directors, and advising senior management.

[2] Activist "outside" shareholders, particularly FIIs, are likely to perform arms-length monitoring to mitigate the expropriation by controlling shareholders, thereby benefiting minority shareholders (Huang and Zhu, 2015).

[3] For example, it is argued that firms make changes in corporate governance practices to attract and retain FIIs (Kim et al., 2010). On the other hand, FIIs themselves play a major role in prompting change in firm-level corporate governance practices (Aggarwal et al., 2011).

[4] The financial crisis has been extensively used an exogenous shock by studies including Puri et al. (2011), Kovner (2012), Lins et al. (2013), and Buchanan et al. (2018), among others.

controlling shareholders. However, what remains unanswered from these studies is how FIIs shape the governance of the firms they invest in, i.e. what are the specific channels through which FIIs improve firm-level governance. Our study attempts to address this void in the literature by associating exogenous changes in FIIs' ownership with variations in board monitoring.

The 2007-08 global financial crisis provides an ideal opportunity for establishing link between FIIs' ownership and the qualities of board monitoring. For instance, Blanchard et al. (2010) and Fratzscher (2012) show that the 2007-08 crisis triggered an outflow of foreign capital from emerging markets to advanced economies. In India, the financial crisis resulted in a substantial decline of FIIs' ownership.[5] This setting allows us to test two issues. First, we test whether the exogenous shock to FIIs' ownership causes any change in different features of board monitoring. Second, although existing evidence shows that FIIs' ownership affects firm performance, including both firm value (Ferreira and Matos, 2008) and firm innovation activities (Bena et al., 2017; Luoung et al., 2017), what is not empirically shown in the literature is whether these positive outcomes are associated due to improved board monitoring driven by changes in FII's ownership.[6] Therefore, we test the implications of any change in board monitoring due to changes in FII ownership on firm value and innovation activities.

Our empirical investigation identifies seven different board level proxies that capture differing features of board monitoring. These characteristics include board size, board independence, board busyness, board diligence, network size, CEO power, and CEO pay level.[7] Although these characteristics proxy board monitoring the results on whether variation in these proxies affects board effectiveness has been empirically challenging. Consequently, we consider the effect of FIIs' ownership on these proxies that capture board monitoring as an empirical question. For identification strategy, we use a matched sample of treatment and control firms (based on the FIIs' level of ownership prior to the onset of the 2007-08 financial crisis) and take account of other factors that affect board monitoring (see Section 3.3 for the identification strategy). As such, we address the endogeneity by employing a difference-in-differences (DiD) approach in which we compare the level of board monitoring before and after the crisis as a function of firms' FIIs' ownership.

The results of our study strongly indicate changes in FIIs' ownership triggers changes

[5] See Section 3.3 for details.
[6] Corporate governance research on the Indian market finds a positive impact of corporate governance reforms, aimed at improving board monitoring, on firm valuation (Black and Khanna, 2007; Balasubramanian et al., 2010; Dharmapala and Khanna, 2012; Koirala et al., 2018).
[7] See section 3.2.1 for definition and discussions.

in different aspects of board monitoring. Specifically, our results present the following findings. First, the negative relation between FIIs and board size supports the view that FIIs can influence the size of the board to shrink the cost of monitoring associated with larger board (Raheja, 2005). Second, though conventional wisdom suggests that independent directors (IDs) improve board monitoring as they reduce agency costs, we find a negative influence of FIIs on board independence. This negative association suggests that FIIs do not view IDs as a way to improve board monitoring in an emerging market. This evidence is consistent with the argument that managers appoint directors who are independent according to regulatory definitions[8] but are nonetheless still sympathetic to management (Romano, 2005; Cohen et al., 2012).[9] Third, we find that the influence of FIIs is to reduce board busyness in the firms they invest in, a finding consistent with the argument that busyness of boards has an adverse effect on the quality of board's monitoring role (Core et al., 1999; Shivdasani and Yermack, 1999).

Fourth, we find evidence of a positive influence of FIIs on board diligence, reflecting FIIs' crucial role in enhancing the monitoring intensity of the board and CEO (Hermalin, 2005; Kolev et al., 2017). Fifth, we show that in firms FIIs invest in there is a reduction in the board's network size (the number of outside firms with whom the firm shares common directors). As large board network size is associated with lower monitoring and increased agency problems (Fich and White, 2003; Fich and Shivdasani, 2006; Bizjak et al., 2009), our results suggest that FIIs play an important role in the improvement of board monitoring by optimizing the network size of the board. Finally, we find that the pressure of FIIs in Indian firms reduces both the power as well as pay/incentives of the CEO, consistent with the theoretical prediction of the literature (Hermalin and Weisbach, 1998; Dah and Frye, 2017). Overall, our empirical evidence suggests that FIIs have a significant influence on the firm monitoring by improving the quality of the board's monitoring role. These findings are robust to a series of additional checks.

In terms of implications related to firm performance, our results show that the negative link observed between FIIs and board size, board busyness, network size, CEO power, and CEO pay, potentially enhances firm valuation and innovation activities. Similarly, we find that FIIs' positive link with board diligence is also likely to have a positive influence on firm value

[8] It is worth noting that we use the Indian regulatory definition (Clause 49) whereby "independent directors" is defined as a non-executive director who does not have any material pecuniary relationships or transactions with a company or its related persons/entities/promoters/subsidiaries. See Clause 49 for further details (http://indianboards.com/files/clause_49.pdf).

[9] "Indian Board Report 2015-16" prepared by Hunt Partners in collaboration with PwC India and AZB Partners find "*… almost 12 percent of the companies have directors related to the promoters and 25 percent have directors directly related to the CEO or the chairperson."* ("Most Indian Companies don't have lead independent director", *Forbes India*, November 30th, 2015)

and innovation. These findings suggest that firms in which FIIs have a positive role in board monitoring are also associated with higher firm valuation and increased innovation activities.

Our study contributes to two different strands of literature. First, we extend the literature that links FIIs' ownership and board monitoring of firms (Gillan and Starks, 2003; Aggarwal et al., 2011; Huang and Zhu, 2015). Gillan and Starks (2003) argue that the growth in FIIs' ownership should result in better monitoring and governance and Huang and Zhu (2015) provide evidence of how FIIs' involvement in corporate governance in China promotes the rule of market principles in corporate voting and governance practices.[10] Similarly, other studies have also noted that FIIs improve the overall *Governance Index* (Aggarwal et al. 2011).[11] However, these studies do not directly investigate the link between FIIs' ownership and different features of the effectiveness of board monitoring. As such, our study is different in the sense that we show how firm-level causality runs from FIIs' ownership to firm-level board monitoring. To the best of our knowledge this is the first study that credibly answers the question: whether FIIs play any influential role in improving monitoring at the board level. The result of our study shows that FIIs are effective monitors and are crucial in improving board effectiveness.

Second, our study also contributes to the literature that examines the impact of FIIs on firm performance and innovation activities. Theories on board monitoring suggest that efficient board monitoring enhances firm value and innovation (Fich and Shivdasani, 2006; Brick and Chidambaran, 2010; Black and Kim, 2012; Guo and Masulis, 2015; Liu et al., 2015). Ferreira and Matos (2008) and Aggarwal et al. (2011) find that FIIs are instrumental in improving firm valuations and operating performance by improving corporate governance. Abdallah and Ismail (2017) also show that the relation between better corporate governance and higher firm valuations is stronger for firms that have high foreign ownership. In terms of innovation activities Luoung et al. (2017) and Bena et al. (2017) show that FIIs acting as active firm monitors promote long-term tangible investments, such as patents and R&D. Our study differs from these studies as we show that the various board-level changes, induced by higher FIIs' ownership, strengthen the positive relation between FIIs and firm performance and innovation activities.

Overall, our results suggest that opening-up an emerging market to FIIs can be an

[10] They find that FIIs achieve shorter reform processes in split-share restructure reforms and that FIIs are less prone to political pressure, as firms with FIIs provide the highest compensation ratio offered by non-tradeable shareholders to tradeable shareholders.

[11] Aggarwal et al. (2011) note that though the Governance Index can capture the overall firm level governance, it may not capture specific aspects, such as board monitoring, that really matter to corporate governance.

effective way to improve the effectiveness of board monitoring and potential agency problems. This, in turn, should benefit the minority/outside shareholders. For emerging markets that are characterized as having poor corporate governance practices, higher informational inefficiencies, opaque markets and less stringent enforcement of regulations, our findings support the argument that FIIs could generate positive externalities in emerging markets through their board monitoring activities.

The remainder of the paper is organized as follows. We present the discussion of relevant literature and develop the testable hypotheses in Section 2. In Section 3 we discuss the data sources and all the variables used in this study, along with a discussion of the financial crisis as an exogenous shock and the identification strategy. Section 4 presents a discussion of empirical findings that include quasi-natural experiments, robustness tests and results on testable implications. Finally, Section 5 concludes the paper.

2. Related literature and hypotheses development

2.1. Main Hypothesis

The literature argues that FIIs, by the virtue of their large shareholding, have the ability (through voting rights) and the incentive (through cash-flow rights) to monitor the board and the management.[12] As FIIs' investment in emerging markets has increased[13], this can influence corporate governance either through direct intervention or through indirect supply and demand effects. It is argued that FIIs' monitoring is primarily targeted at enhancing firms' long-term performance (Bena et al., 2017). For instance, Ferreira and Matos (2008) find that FIIs' pressure can curtail a managers' incentives to (over)invest, providing evidence that FIIs can influence firm value through monitoring.[14] Similarly, Aggarwal et al. (2011) find that FIIs play a dominant role in improving firm-level governance located in countries with weak shareholder protection.[15] Finally, Huang and Zhu (2015) suggest that FIIs perform arms-length monitoring to limit expropriation by controlling shareholders by promoting the rule of market-based

[12] See Shleifer and Vishny (1986), Kaplan and Minton (1994), Kang and Shivdasani (1995), Maug (1998), Claessens et al. (2002), and Noe (2002).

[13] Net investment by FIIs in the Indian equity market has grown from INR 440 billion (approximately US$9.6 billion) in 2003-04 to INR 1,102 billion (approximately US$18.01 billion) in 2014-15 (Source: Reserve Bank of India). Also, see "India is the jewel in the emerging market crown", Financial Times, May 31, 2015; "Faster growing India confirmed as most dynamic emerging market", Financial Times, May 31, 2016.

[14] They find a positive relation of FIIs' ownership with return on assets and net profit margin, whereas they find a negative relation with capital expenditure.

[15] They also find that firms with high FIIs' ownership are more likely to terminate poor performing CEOs and experience improved firm value over time.

principles in corporate voting and governance practices.

Based on these arguments, we suggest that FIIs have incentives to influence the effectiveness of board monitoring in the firms they choose to invest for a number of reasons. First, by the virtue of being "foreign", these FIIs act as independent monitors as they are less prone to have links in business or ties to management with the host firms (Gillan and Starks, 2003; Aggarwal et al., 2011; Kim et al., 2016; Bena et al., 2017). As they are less burdened by ties to corporate insiders, FIIs can help reduce the agency cost by improving the quality of board monitoring. Second, as FIIs can "vote with their feet", firms with higher FIIs' ownership are likely to endorse better board monitoring of firm activities. For example, Leuz et al. (2009) argue that FIIs are likely to leave firms that do not improve their governance. Third, compared to the domestic institutional investors (DIIs), FIIs are less prone to local political pressure in emerging markets, hence they more likely to perform arms-length monitoring (Huang and Zhu, 2015). For instance, Kim et al. (2016) argue that without political pressure, FIIs are able to resist non-shareholder value-maximizing decisions of the firms.

Fourth, FIIs not only possess a deep understanding of best global corporate governance practices, they also have a wide range of experience in improving the monitoring of the firm (Kim et al., 2016). These knowledge, experiences, and skills set put them in a powerful position to ensure that firms adopt best governance practices, including better board monitoring (Aggarwal et al., 2011). Fifth, FIIs are equipped with innovative investment technology, cutting-edge analytical tools and a pool of talented fund managers that could help them improve the effectiveness and efficiency of board monitoring (Kim et al., 2016). Finally, a large body of empirical studies have agreed that FIIs are at a relative information disadvantage (higher in emerging markets) compared to their domestic counterparts because of distance, language barrier and higher cost of information acquisition (Coval and Moskowitz, 1999, 2001; Leuz et al., 2009; Baik et al., 2013). This relative disadvantage means FIIs are likely to demand higher information disclosure and higher transparency to ensure that they can function as better board monitors. Given these arguments on how FIIs can influence the effectiveness of board monitoring, we propose the following as our main hypothesis:

Main Hypothesis: Ceteris paribus, firms with greater FIIs' ownership have higher levels of board monitoring.

We test this main hypothesis using seven different proxies reflecting different qualities of board monitoring, which generates seven different sub-hypotheses as discussed below.

2.2. FIIs' ownership and board size

Board size refers to the number of directors on the firm's board. The effectiveness of board size in monitoring firms has been theoretically and empirically examined with no conclusive evidence. Agency-theory, based evidence provided by Lipton and Lorsch (1992) and Jensen (1993), argues that smaller boards are more cohesive, more productive and can monitor the firm more effectively, whereas larger boards may not be effective because of problems such as "social loafing", free-riding and high coordination costs. Yermack (1996) also suggests that the smaller boards are more effective in monitoring and advising. Similarly, Raheja (2005) and Harris and Raviv (2008) theoretically suggest that firms, where insiders' interests align to those of the shareholders, require smaller boards. They argue that larger boards become less effective in providing monitoring services due to free-riding problems. However, the resource dependence-theory, based on evidence provided by Dalton et al. (1999) and Lehn et al. (2009), suggests that larger boards have access to critical resources and possess greater collective information that is important in performing high-quality monitoring and an advising role. Sah and Stiglitz (1991) also suggest that the larger boards can make quality decisions as there are diverse opinions.

Boone et al. (2007) proposes two main hypotheses namely: scope of operation and monitoring hypothesis that determine the size of a board. They argue that the size of the board depends on the scope and complexity of operations of the business. Coles et al. (2008) also find that the complex firms require higher advising needs hence, they demand larger boards. In terms of monitoring, Boone et al. (2007) and Linck et al. (2008) argue that the firm that has higher free-riding problems and information asymmetry tend to have larger boards due to increased monitoring needs. Based on the mixed theoretical predictions and empirical evidence on the optimal size of the board and its effectiveness, the impact of FIIs' ownership on board size also remains an empirical issue. Hence, we develop our first sub-hypotheses as:

Sub-hypothesis 1a: Ceteris paribus, firms with greater FIIs' ownership are more likely to have smaller boards.

Sub-hypothesis 1b: Ceteris paribus, firms with greater FIIs' ownership are more likely to have larger boards.

2.3. FIIs' ownership and board independence

Board independence is measured by the proportion of IDs on the firm's board. The role of IDs in monitoring firms has been a topic of intense debate. Conventional wisdom dictates that IDs are effective monitors as they are less influenced by insiders and managers.[16] Despite governance codes and mandatory rules around the world that push for higher representation of IDs on the board, empirical evidence on its effectiveness is mixed. Theorists observe that although IDs are less affiliated to CEOs, they possess significantly poorer access to firm information and have weaker financial incentives to perform than do corporate officers. Raheja (2005) and Adams and Ferreira (2007) conjecture that the importance of independent boards depends on the nature of the firm. Firms with complex operations require a higher proportion of IDs on the board. Boone et al. (2007) refers to this as "scope of operation" hypothesis. Coles et al. (2008) contend that though "complex" firms require more independent boards due to higher advising needs, R&D intensive firms or high-tech firms require more insiders on the boards as they have vital specific knowledge about the firm and the industry. Interestingly, Linck et al. (2008) find the opposite result, i.e. that R&D intensive firms prefer more independent boards. Likewise, based on Boone et al. (2007)'s "monitoring hypothesis", an optimal board employs large number of IDs when the cost of monitoring is low and private benefits of managers are high. Boone et al. (2007) also argue that CEOs can influence the appointment of IDs by placing affiliated outsiders on the board, referred to as "negotiation hypothesis". Hermalin and Weisbach (1998) also argue that CEOs in profitable companies may use their power to influence the appointment of loyal IDs.

With respect to emerging markets, empirical studies indicate that IDs are generally ineffective board monitors. For example, Ma and Khanna (2015) show that IDs generally defer to the top managers as they feel obliged for having been appointed to a directorship position. As such, despite the theoretical prediction that IDs may improve firm monitoring, FIIs in emerging markets may not be very keen on promoting board independence.

Given the mixed evidence on the link between IDs and firm performance, and the evidence on the ineffectiveness of IDs in emerging markets, the influence of FIIs' ownership on board independence is an empirical question. As such, we develop the following two competing sub-hypotheses:

[16] Fama (1980) argues that IDs have an incentive to be an effective monitor in order to improve their reputational capital in the labour market. Fama and Jensen (1983) argue that IDs are better suited to perform monitoring tasks as they are free from economic interests.

Sub-hypothesis 2a: Ceteris paribus, firms with higher FIIs' ownership are more likely to improve board independence.
Sub-hypothesis 2b: Ceteris paribus, firms with higher FIIs' ownership are more likely to reduce board independence.

2.4. FIIs' ownership and board busyness

Board busyness is proxied by the number of members who also serve on the board of other firms (Col and Sen, 2018). Adams et al. (2010) propose a simple theory, which predicts that busier directors put less effort into their duties, which is counterproductive to firms' performance. However, Adams et al. (2010) also suggest busy directors can spend more effort per activity, implying that busy directors are relatively high-quality directors. Consistent with the quality view, earlier studies support a positive link between board busyness and firm performance (Kaplan and Reishus, 1990; Booth and Deli, 1996; Ferris et al., 2003). However, other studies find convincing evidence of the negative link between board busyness and firm performance, supporting the *less effort* theory. For example, Fich and Shivdasani (2006) and Falato et al. (2014) show that busy directors are less able to monitor effectively and advise management, which in turn negatively affects firm performance. Hauser (2018) also argues that the effectiveness of board members (be it insider or independent) depends on their ability to devote substantial effort and time to gather relevant information, provide adequate advising and assist deliberating decisions. Clearly, given the differing evidence on the monitoring ability of busy boards, whether FIIs should strive to reduce or increase the extent of board busyness, is reflected in the following two sub-hypotheses:

Sub-hypothesis 3a: Ceteris paribus, firms with higher FIIs' ownership are more likely to reduce board busyness.
Sub-hypothesis 3b: Ceteris paribus, firms with higher FIIs' ownership are more likely to increase board busyness.

2.5. FIIs' ownership and board diligence

Board diligence refers to the ability of board members to fulfill their responsibilities, measured as the average proportion of meetings attended by board members. Kolev et al. (2017) argue that diligent boards can constrain CEOs' opportunism, which depends on the frequency of their attendance at board meetings. Regular attendance at board meetings provides directors with

relevant and timely information that helps them to become active monitors. In a similar vein, Hermalin (2005) argues that board diligence improves board monitoring by making CEOs work harder and deliver higher CEO effort. Vafeas (1999) and Adams (2005) view the frequency of board meetings as an important monitoring proxy. They argue that firms with impaired financial performance meet more often as there is a need for increased board monitoring. Similarly, Chou et al. (2013) also find that the attendance at board meetings by the directors themselves, a proxy of better board monitoring, enhances firm value significantly (see Brick and Chidambaran (2010)). Sarkar et al. (2008) suggest that a diligent board reduces earnings management. Also, Col and Sen (2018) report that institutional ownership positively affects board diligence. Vafeas (1999) also finds that the number of board meetings is negatively related to insider ownership. As most literature suggest that diligent boards are an effective monitor, we expect a positive link between FIIs' ownership level and board diligence, as argued in the following hypothesis:

Sub-hypothesis 4: Firms with higher FIIs' ownership are more likely to improve board diligence.

2.6. FIIs' ownership and board networks

Board networks, also known as board interlocks, refer to the extent of board members' connections with other firms. This is measured as the number of firms with which the given firm shares common directors. The monitoring ability and effectiveness of boards with many networks, i.e. more interlocked directors, is questionable in the literature. A board network could be beneficial to firms if such a network facilitates information or knowledge transfer. For instance, Lynall et al. (2003) and Khanna and Thomas (2009) argue that director interlocks could facilitate coordination across firms due to joint resource allocation and information dissemination among them.

However, Fich and White (2003), and Fich and Shivdasani (2006) argue that boards comprised of directors with large outside networks are less likely to perform a better monitoring role and this could potentially reduce the independence of board members and exacerbate agency problems. Firms with higher director network connections are also related to higher CEO compensation and involvement in option backdating, potentially increasing agency problems (Bizjak et al., 2009; Hallock, 1997). Fich and White (2005) also report that board networks, especially CEOs' networks, benefit the directors themselves but not the firm's

shareholders.[17] Against the backdrop of conflicting prior evidence, the direction of the effect of FIIs on the board network size is an empirical question. As such, we propose the following two competing sub-hypotheses:

Sub-hypothesis 5a: Ceteris paribus, firms with higher FIIs' ownership are more likely to have smaller board networks.
Sub-hypothesis 5b: Ceteris paribus, firms with higher FIIs' ownership are more likely to have larger board networks.

2.7. FIIs' ownership and CEO power

CEO's power refers to the ability of the CEO to influence key decisions in a firm. The ability of the CEO to influence decision making is reduced when there is the presence of other relevant decision-makers. As such, we classify the CEO as powerful if the CEO is the promoter, the chair and the only executive member on the board (Adams et al., 2005). With regard to the effect of powerful CEOs on the board monitoring, agency theory argues that powerful CEOs can influence the effectiveness of outside directors, as they have access to the firm's resources and information (Combs et al., 2007). Hermalin and Weisbach (1998) argue that board monitoring and its efficiency decline over time as the power of the CEO increases. Increased CEO power also distorts the compensation contract, reducing the board efficiency (Bebchuk and Fried, 2003; Bebchuk et al., 2002; Ryan and Wiggins, 2004). Further, Onali et al. (2016) state that powerful CEOs may invest in non-value maximizing projects to fulfill their own managerial objectives, such as increasing perquisites, empire-building and expense preference behavior. In terms of its effectiveness, CEO power is found to be positively associated with increased cost of debt, increase level of executive compensation, lower accounting profitability and lower (negative) acquisition announcement returns (Adams et al., 2005; Bebchuk et al., 2011; Liu and Jiraporn, 2010; Jiraporn et al. 2012). Given the negative impact of CEO power on the board monitoring, as well as its effectiveness in terms of firm performance, we expect higher FIIs' ownership to lower the power of the CEO as reflected in the following sub-hypothesis:

Sub-hypothesis 6: The higher the FIIs' ownership in the firm, the less powerful the CEO is.

[17] Similarly, Falato et al. (2014) report a significant negative market reaction to an "attention shock" (measured as death of directors and CEOs) in board-interlocked firms. Fich and Shivdasani (2007) also report a valuation loss for interlocked firms at the time of a lawsuit filing.

2.8. FIIs' ownership and CEO pay

CEO pay denotes the total remuneration (such as salaries, bonuses, fees, and other benefits) received by the CEO in a year. Agency theory suggests that compensation is a primary tool to control CEO behavior and align the interest of shareholders and managers, thereby reducing agency costs (Jensen and Meckling, 1976; Nyberg and Fulmer, 2010). However, empirical evidence questions the validity of agency theory on the alignment of financial interest and managerial preferences (Dalton et al., 2007). Studies argue that CEOs are in fact paid for luck and performance beyond their control, and this behavior is strongest among poorly governed firms (Bertrand and Mullainathan (2001). Empirical evidence also suggests that CEOs are overpaid and these overcompensated CEOs exacerbate the agency problems as they are not focused on protecting shareholders' interests (Core et al., 1999; Dah and Frye, 2017). The evidence in relation to the effectiveness of CEO pay is also mixed. While Chang et al. (2010) argue that CEO pay reflects the ability of the CEO to positively affect firm performance, Brick et al. (2006) find that cronyism exists in determining the CEO compensation and such excess compensation leads to poor firm performance (also see Core et al., 1999). As the literature provides mixed evidence on the effect of CEO pay on board monitoring, we empirically examine whether FIIs reduce or increase the compensation of CEOs. Hence, our final sub-hypotheses are:

Sub-hypothesis 7a: Ceteris paribus, firms with higher FIIs' ownership are likely to have lower levels of CEO pay.
Sub-hypothesis 7b: Ceteris paribus, firms with higher FIIs' ownership are likely to have higher levels of CEO pay.

3. Data, variables and identification strategy

3.1. Data sources

We retrieve information for all the publicly listed companies in India (both in the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE)). Dooley and Hutchinson (2009) argue that the global financial crisis in emerging markets began towards the end of 2008, hence, we assign the onset of the crisis period from 2009. We restrict our sample to four years before (2005 to 2008) and four years after (2009 to 2012) the onset of the crisis period, i.e. eight fiscal

years in total.[18] The firm-year level data are gathered from the Prowess database maintained by the Centre for Monitoring Indian Economy (CMIE). Prowess provides detailed information on the ownership structure and other financial (stock market and non-market based) information of Indian firms.[19] Prowess also supplies comprehensive data on board members of each firm-year, such as name of the board members, committees they sit in, their designation (such as CEO, Managing Director), number of meetings attended, classification (such as promoter/non-promoter, executive/non-executive, independent/non-independent), salary and benefits, and directorships held in a number of other companies. Information on board meetings, along with its date and purpose, can also be accessed from Prowess. These details help us to develop our various board monitoring proxies.

For the innovation variable, we collect patent data from several sources. Our analysis focuses on the application date of a patent. First, we rely on the Indian and international patent data (until 2009) used by Helmers et al. (2017).[20] For additional periods, we collect data from two sources. First, the information on Indian patent applications is collected from the Indian Patent Advanced Search System (InPASS).[21] We extract all the relevant information from the search system, such as the name of the firm, date of application, and International Patent Classification (IPC) codes for a patent that has been filed by an Indian firm[22]. Second, following Helmers et al. (2017), the information on international patent filing with the US Patent and Trademark Office (USPTO) and the European Patent Office (EPO) is collected from EPO's PATSTAT database. We conduct an extensive manual search to ensure that the name of the firm from the search system matches the name of the company in the Prowess database. Appendix A provides a definition of all the variables used in this study, which we discuss below.

[18] In India, the fiscal year ends on the 31st of March of the subsequent year.
[19] This data source has been used by a number of studies, including Lilienfeld-Toal et al. (2012), Vig (2013), Gopalan et al. (2016), and Koirala et al. (2018).
[20] We thank Christian Helmers, Manasa Patnam and Raghavendra Rau for kindly sharing with us their patent data. Their data cover years between 1995 and 2009. We use their data from 2005-2009 and collect additional patent data.
[21] http://ipindiaservices.gov.in/publicsearch.
[22] We use "Inventor Country" as "INDIA".

3.2. Variable construction

3.2.1. Board monitoring variables

We define *Board size* as the log value of the number of board members. *Board independence* is defined as the ratio of the number of IDs to the board size.[23] In terms of the characteristics of board members, *Board busyness* is defined as the log of the number of directors who also serve on the board of another firm (Col and Sen, 2018). Following Col and Sen (2018), we define *Board diligence* as the mean value, across all board members, of the ratio of meetings attended to the total meetings held in a year. Similarly, *Network size* is defined as the number of other firms with whom the given firm shares common directors, following Helmers et al. (2017). *CEO power* is a binary variable that takes the value of 1 if the CEO is powerful and 0 otherwise. A powerful CEO is defined as one who is the chair, promoter and only executive member of the board (Adams et al., 2005; Cheng, 2008). Finally, *CEO pay* is the log of total compensation (sitting fees, salaries, contributions to provident fund, pension fund, bonus and commission, perquisites, and retirement benefits).

3.2.2. Control variables

Following the literature, we also include a set of control variables which could potentially be correlated with board monitoring. First, we control for factors that account for a firm's monitoring costs (Boone et al., 2007; Guest, 2008; Linck et al., 2008). The costs of monitoring increase with the specific monitoring requirements of firms. We use *Tobin's Q*, research and development expenses (*R&D*) and stock return variance (*STDDEV*) to proxy the firm's monitoring costs. *Tobin's Q* is defined as the ratio of the sum of the book value of debt, book value of preferred stock and market value of the stock to the book value of assets (Dharmapala and Khanna, 2012).[24] *Tobin's Q* reflects past performance, including growth prospects of the firm. *R&D* is defined as the total R&D expenses scaled by the total sales (missing R&D expenses are 0). *STDDEV* is the one-month standard deviation of daily stock return. Following the literature we expect *Tobin's Q, R&D* and *STDDEV* to have a negative effect on board size, board independence, board busyness, network size, CEO power and pay, but a positive effect on board diligence.

[23] The Prowess database provides details of the classification of each board member. Such classification is disclosed in the annual reports of the company. If not, Prowess follows Clause 49 of the Securities Exchange Board of India (SEBI) guidelines to classify the directors (Col and Sen, 2018).

[24] The book value of debt and book value of preferred stock is proxied using the Prowess variable "debt". The market value of stock is calculated as the 365-day average of the daily stock price multiplied by the number of shares outstanding at the end of each fiscal year.

Second, we control for factors that account for firm's complexity and scope of operation (Baker and Gompers, 2003; Boone et al., 2007; Guest, 2008; Linck et al., 2008). We proxy firm's complexity and scope of operation using *Firm size*, *Leverage* and *Firm age*. We use *Firm size* as the log of total assets, *Leverage* as the ratio of total debt to the shareholders' equity capital, and *Firm age* as the log of difference between the incorporation year and fiscal year. We expect *Firm size*, *Leverage* and *Firm age* to negatively affect board monitoring as larger and complex firms have greater agency problems (Boone et al., 2007).[25] Finally, we also include return on assets (*ROA*), defined as the net income divided by total assets, to control for the impact of firm's profitability on the board monitoring (Cheng, 2008; Banerjee and Homroy, 2018).

3.2.3. Firm performance and innovation variables

Among the measures of valuation and as defined in the preceding sub-section (3.2.1), we use return on assets (*ROA*) and *Tobin's Q*. We further incorporate earnings per share *(EPS)* as the ratio of net profit or (loss), after the deductions of preference dividend, to the weighted average number of equity shares outstanding during the period (scaled by average closing price). We also use profit before depreciation, interest, taxation and amortization scaled by total assets (*PBDITA*) and *Assets turnover ratio*, as the ratio of total sales to total assets.

We apply two proxies of innovation activities. These include *R&D* (scaled by total sales) and *Patent count*. Patents are the most widely used proxy of a firm's innovation activities as they are the measurable output from the process of innovation. We use *Patent count* as the proxy for innovation measured as the number of patent applications filed by a firm in a given fiscal year.[26]

3.2.4. Summary figures

Table 1 presents the firm-year descriptive statistics of the main variables, along with firm performance, innovation and other financial variables which we compare to other relevant Indian studies. All the potentially unbounded variables are winsorized at the 1% extreme. The monetary variables are denoted in million rupees (INR Million). Panel A shows the average board is comprised of around 9.3 members, which is similar to the 9.9 members reported by Banerjee and Homroy (2018). Given the enforcement of a mandatory reform in the year 2000,

[25] Leverage also proxies for change in a firm's capital structure and default risk.
[26] Similar to Helmers et al. (2017), we are only interested in application date patent filing, independent of whether it was eventually granted or not. Griliches et al. (1987) suggest the patent application year rather than the grant year better captures the actual time of innovation.

named Clause 49, we expect the average board independence to be close to 50%.[27] Banerjee and Homroy (2018) report an average board independence of around 51%, and we find an average board independence of around 47%. The summary figures further show that around 5.25 board members (almost 57% of the mean board size) serve on the board of another firm. On average, a board is connected to 25 other firms, as suggested by the mean *Network size.* The *CEO power* is relatively high at 0.16 in India, compared to 0.09 reported by Cheng (2008) for the US, and the mean CEO pay is around INR 6.67 million, which is higher than the INR 4.63 million reported by Banerjee and Homroy (2018).

[Insert Table 1 about here]

Panel B shows the FIIs' average ownership of around 11.62% and DIIs' average ownership of around 28.54%. Panel C shows that the average *ROA* of firms in our sample is 3.57%, *Tobin's Q* is approximately 1, and *EPS* is 8.1 *ROA* in our sample is similar to that of Srinivasan and Thampy (2017), and the values of *Tobin's Q* and *EPS* are similar to Dharmapala and Khanna (2012), Helmers et al. (2017), and Banerjee and Homroy (2018). In terms of innovation measures, Panel D shows the average *Patent count* is around 0.07, which is considerably smaller than the average *Patent count* of 0.38 reported by (Helmers et al., 2017).[28] Finally, Panel E shows that the firms in our sample have a mean asset size of INR 4,159 million, sales revenue of INR 4,721 million, average age of 33 years and leverage of 125% (overall our descriptive results are similar to other Indian studies, see Vig, 2013; Helmers et al., 2017; Banerjee and Homroy, 2018; Col and Sen, 2018).

3.3. Exogenous shock and identification strategy

We follow Patnaik and Shah (2013) and rescale the FIIs' and DIIs' ownership based on the number of freely floated shares. For example, if the promoter ownership in a firm is 50% and FIIs' ownership is 25%, we rescale FIIs' ownership to 50% as they own a half of the freely floated shares in the public market. Figure 1 shows the average FIIs' ownership and change in FIIs' ownership. The share of FIIs' ownership declines sharply after the crisis period from around 16.3% in 2008 to 14.4% in 2009 (a proportionate decline of approximately 13.2%). This sudden and unexpected decline provides us an ideal identification set-up to test the

[27] Clause 49 of SEBI requires all the firms to have at least one-third of the members of board to be independent if the Chairperson is a non-executive director and have at least half of the members to be independent if the Chair is an executive director.

[28] The variation is largely due to the difference in sample firms as well as the sample period.

implications of this decline on the different characteristics of board monitoring/effectiveness.

[Insert Figure 1 about here]

Although the shock is exogenous, we need a highly comparable group of firms that should be differentially affected by the global financial crisis. We construct the treatment and control group firms following Patnaik and Shah (2013), who find significant differences between FIIs' and DIIs' firm preferences along certain dimensions of firm characteristics in the Indian market. For instance, they find that FIIs favor younger, larger, lower risk, higher beta, more R&D intensive firms that have smaller inside ownership. In comparison DIIs favor older, smaller, less liquid, and less R&D intensive firms. Motivated by this uniqueness in the firm preferences of FIIs and DIIs, we construct our treatment and control groups in the following manner.

First, we calculate the mean ownership by FIIs and DIIs for each firm before 2008 (starting in 2002).[29] Then, we identify "High FIIs" firms as those in which FIIs' ownership is above the firm-year median FIIs' ownership and "High DIIs" firms as those in which DIIs' ownership is above the median DIIs' ownership. Next, among these two groups we drop firms who are categorized as both "High FIIs" and "High DIIs".[30] Thus, the remaining "High FIIs" firms, with significantly higher level of FIIs ownership relative to DIIs ownership, are categorized as *treatment* firms. Similarly, the remaining "High DIIs" firms, with significantly higher of DIIs ownership relative to FIIs ownership, are categorized as *control* firms. The treatment firms are essentially a set of firms that are chosen by FIIs for investment but generally ignored by DIIs, and the control firms are chosen for investment by DIIs but have low FIIs investment. We also identify alternate control firms as "None", where neither FIIs nor DIIs have high equity ownership.

Table 2 shows our sample selection of treatment and control groups. Out of 4,842 firms in the universe, we identify 2,932 firms as "High FIIs firms" and 2,102 firms as "High DIIs firms". We also identify 1,469 firms in the "None" category. After dropping common firms with "High FIIs" and "High DIIs", we are left with 689 firms with high FIIs' ownership and low DIIs' ownership, and 823 firms with high DIIs' ownership and low FIIs' ownership.

[Insert Table 2 about here]

To further eliminate the concern that the differential impact of FIIs on board monitoring

[29] Prowess provides ownership data with its classification starting in 2002.

[30] Since our distinction is based on the FIIs' and DIIs' ownership level, we need to drop these firms as the effect of the FIIs on board monitoring will not be cleanly identified in the firms where we observe the presence of both high FIIs' and high DIIs' ownership.

may be due to the differential firm preferences, we perform propensity score matching (PSM) to identify a matched set of treatment and control firms. To do so, we first estimate the probit model in which the dependent variable is equal to one if the firms belong to the treatment group (High FIIs) and zero otherwise. We use various firm-level characteristics, such as *Tobin's Q, Firm Size*, *Firm Age*, *ROA* and *Leverage* as the comparable factors (Col and Sen, 2018). In keeping with the literature, we expect that firms with higher FIIs' ownership exhibit higher market valuations, are larger in size, are younger in age, have higher *ROA* and have lower leverage (Douma et al., 2006; Ferreira and Matos, 2008; Patnaik and Shah, 2013). These variables are included to help satisfy the parallel trend assumptions as there should not be any firm-specific differences in characteristics between the treatment and the control group prior to the crisis that attracts FIIs. Model 1 of Table 3 (Panel A) presents the probit model estimates with industry fixed effects and standard error clustered at the industry level. The specification shows some of the independent variables are statistically significant, suggesting significant variation in firms' characteristics between the treatment and the control group. We then use the propensity scores from model 1 to perform nearest-neighbor PSM within a 0.01 caliper and end up with 390 unique pairs of matched firms.

[Insert Table 3 about here]

We conduct a few diagnostic tests to verify our matching process. First, we rerun the probit model with the matched sample of firms and find that none of the independent variables is statistically significant (as shown in model 2 of Table 3 Panel A). This suggests that there is no observable difference in firm characteristics between the treatment and the control group. Second, we examine the difference between the propensity scores of the treated group firms and those of the matched control group firms. Panel B of Table 3 shows a very small difference in the propensity scores. Finally, we report the univariate comparisons of firms' characteristics between the treatment and control group and their corresponding *t*-statistics in Panel C of Table 3. This shows that none of the mean differences in the firms' characteristics between the treatment group firms and the control group firms is significant. Overall, the diagnostic tests show that our approach of using the PSM process removes meaningful observable differences between firms with high FIIs' ownership and firms with high DIIs' ownership.

To examine the parallel trend, we follow Bertrand and Mullainathan (2003) and examine how the board monitoring changes over time. Specifically, we run following regression equation:

$$y_{it} = \beta_1 Treated_i \times Year_{05-06} + \beta_2 Treated_i \times Year_{07} + \beta_3 Treated_i \times Year_{08} + \beta_4 Treated_i \times Year_{09} + \beta_5 Treated_i \times Year_{10} + \beta_6 Treated_i \times Year_{11-12} + \gamma_t + \alpha_i + \varepsilon_{it} \quad (1)$$

where i indexes firms, t indexes time; y_{it} is the dependent variable of interest, which is the different proxies of board monitoring; γ_t and α_i are year and firm fixed effects respectively. $Treated_i$ is the dummy variable that takes the value of one if the firm is classified as a treated firm and zero if firms are classified as control firms. $Year_{05-06}$, $Year_{07}$, $Year_{08}$, $Year_{09}$, $Year_{10}$, and $Year_{11-12}$ indicate firm-year observations. For example, $Year_{05-06}$ is a dummy variable that takes value of 1 if a firm-year observation is from year 2005 or 2006. The results are presented in Panel D. The coefficient estimates on β_1, β_2, and β_3 are all insignificant. In contrast, the coefficient of β_4, β_5 and β_6 are all significant at either 1 percent or at 5% level. The difference in the significance of the before and after dummies show that there is an existence of parallel trend in the board monitoring between the treatment and control group prior to the crisis period. Further, it also highlights that the results are not driven by the reverse causality and the change in board monitoring is casually affected by the change in level of FIIs' ownership due to the crisis.

We also plot the average and change in FIIs' ownership for the treatment and the control groups in Figure 2.[31] The average FIIs' ownership increases in both the treatment and the control group prior to the crisis. However, the FIIs' ownership of the treatment group firms declines sharply from around 21.6% in 2008 to 15.4% in 2009 (a decline of 6.2% points) and decreases further to 13.3% in 2012. In contrast, the average FIIs' ownership for the control group remains relatively similar at 4.1% in 2008 to 4.2% in 2009 and increases to 6.5% in 2012. The key take away from this figure is that compared to the virtual parallel trend observed between treatment and control groups before the end of 2009, the treated group firms' FIIs' ownership significantly declines compared to that of control group firms. In the following sections, we examine the effect of this unexpected and non-parallel change on various board level characteristics.

[Insert Figure 2 about here]

[31] By definition, the treatment group comprises firms with high FIIs' ownership but low DIIs' ownership, and the average FIIs' ownership is higher for the treatment group compared to the control group. Our objective here is to examine the trend in FIIs' ownership, rather than the level of FIIs' ownership.

3.4. Pre and post-crisis summary figures

We conduct a univariate analysis comparing the firm-year summary statistics of the board and other firm-level characteristics before and after the crisis of 2008. The results of mean and median for the pre- (2005-2008) and the post-crisis (2009-2012) period are shown in panels A and B of Table 4 respectively. Table 4 shows that compared to pre-crisis, firms in the post-crisis period are larger in their board size and exhibit greater board independence. Board busyness also increases significantly following the crisis based on all definitions. However, relative to the pre-crisis period, board diligence seems to be worse and firms have a greater network connection in the post-crisis period. In summary, the general view from these results signals that the quality of board monitoring, except for board independence, seems to have fallen significantly in the post-crisis period compared to pre-crisis.

The performance of the firms post crisis in terms of *ROA, Tobin's Q, EPS, PBDITA* and *Asset turnover ratio* all decline significantly, which is expected given the impact of the crisis. However, the size of the firms in terms of assets and sales revenue increases significantly following the crisis. Variables related to firm innovation, i.e. average *Patent count* and *R&D* reduce significantly following the crisis period, again consistent with the impact of a financial shock.

[Insert Table 4 about here]

4. Empirical analysis

We begin our empirical investigation with a baseline difference-in-differences (DiD) regression followed by propensity score matched DiD regression. We also perform robustness tests on our main results followed by the examination of the implications of board monitoring by FIIs.

4.1. Univariate difference-in-differences results

In Panel A of Table 5, we first present the summary figures for the average and changes in FIIs' ownership. Columns (2) and (3) report the average change in FIIs' ownership post and pre crisis period, (i.e. post – pre) for the treatment firms and control firms respectively. Column (4) reports the mean DiD estimation, which is the difference in FIIs' ownership and change in ownership between the treatment firms and control firms pre and post crisis period. Corresponding *t*-statistics testing the null hypothesis that the DiD estimators are zero are presented in parentheses.

[Insert Table 5 about here]

The average FIIs' ownership for the treatment group decreases significantly post crisis, whereas, the FIIs' ownership for the control group increases, but not significantly, post crisis. There is also a significant decline in change in FIIs' ownership post crisis for the treatment group compared to control group. The magnitude of the DiD estimator suggests that, on average, the exogenous shock leads to significant decrease in FIIs' ownership of about 5.1% in the four-year period post crisis relative to the four-year period before the crisis for the treatment firms than for the control firms. The mean DiD for the changes in FIIs' ownership is also statistically significant at -1.4% points.

The results in the Panel B of Table 5 show a significant increase in the board size of treated firms (firms with high FIIs' ownership) in the post-crisis period compared to the control firms, which is not statistically significant. Importantly, the mean DiD estimation is statistically significant. Since the increase in board size is associated with a decline in FIIs' ownership in the post-crisis period, the result suggests that a decline in FIIs could have triggered larger boards in the post-crisis period compared to smaller boards in the pre-crisis period.

We find the average value of the board independence of the treated firms increases significantly in the post-crisis period compared to the control firms. This indicates that FIIs' decline in ownership is associated with an increase in the regulatory defined, higher board independence. This could indicate that board independence is not as significant to FIIs as may have been expected. We interpret this result cautiously as there is credible evidence to suggest that incumbent managers in emerging markets can appoint directors who are independent according to regulatory definitions, but nonetheless can still be overly sympathetic to management (Romano, 2005; Cohen et al., 2012). This implies that the less pressure from FIIs in the post-crisis period could have motivated managers to increase the so-called regulatory defined IDs, but they may not be very effective in monitoring, but sympathetic to the managerial decisions.

The mean DiD estimate for board busyness is significantly positive, indicating higher FIIs' ownership is associated with lower board busyness in the pre-crisis period, i.e. higher presence of FIIs seems to lessen board busyness, thereby potentially improving its effectiveness. The DiD for board diligence is significantly negative, indicating a significant decline in board diligence following the reduction in FIIs' ownership during the post-crisis period. This suggests that higher FIIs' ownership implies higher board diligence.

The network size is higher for the treated firms, compared to the control firms, in the post-crisis period when FIIs' ownership falls. This supports the conjecture that a higher level of FIIs' ownership appears to lower the network size of the board to render it more effective.

Similarly, the power and pay of the CEO increase significantly for the treated firms compared to our control firms. This suggests that the CEO's influence significantly increases with the decline of FIIs' ownership, potentially driven by lower pressure from influential outside investors such as FIIs.

Taken together, these DiD univariate results provide an initial indication that firms with high FIIs' ownership have better board monitoring compared to firms with high DIIs' ownership.

4.2. Effect of FIIs' ownership on board monitoring: propensity score matched DiD result

In the multivariate regression framework, we control for several variables that are understood to affect the various board monitoring measures. Specifically, we investigate the following regression model:

$$y_{it} = \beta\, Treated_i \times Crisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it} \qquad (2)$$

where $Crisis_t$ is also a dummy variable that takes the value of one in the post-crisis years (2009 to 2012) and zero for pre-crisis years (2005 to 2008); X_{it} are control variables as defined and discussed in subsection 3.2.2 and γ_t and α_i are year and firm fixed effects respectively. ε_{it} is the error term. Standard errors are clustered at the firm level. The main variable of interest is β that captures the DiD effect.

A couple of points are worth noting before discussing the results of equation (2) reported in Table 6. First, the coefficient of β reflects the marginal effect of a decline in FIIs' ownership on the board monitoring variables of the treated firms compared to control firms during the post-crisis period. As the financial crisis is a negative shock that results in a decline in FIIs, we need to interpret the β coefficient inversely. For example, the positive coefficient of β on board size (as dependent variable) would suggest a higher board size for the treated firms, compared to control firms, after the shock when there is significant fall in FIIs' ownership. This signifies a negative link between FIIs' ownership and board size, suggesting that the higher FIIs' ownership (prior to the crisis) is associated with lower board size.

Second, motivated by the technically credible explanation offered by the existing literature (Puri et al., 2011; Guo and Masulis, 2015), we chose the linear probability model, as opposed to the non-linear (logit or probit) model, despite the binary nature of one of our dependent variables (*CEO power*) and other alternative dummy variables, for two reasons. First, non-linear models suffer from incidental parameter problems: i.e. fixed effects cannot be easily included in logit or probit model with large but narrow panels, which results in an

inconsistent coefficient estimate of the DiD coefficient and the control variables. Second, as our main interest is the analysis of marginal effect, assessing the statistical significance of the marginal effect is less straightforward when the main variable of interest is in the interaction term. On the other hand, linear models provide consistent marginal estimates of our main explanatory variables and therefore provide an economically meaningful effect of the link between decline in FIIs' ownership due to the financial crisis and the board monitoring variables. Although our model choice is consistent with Puri et al. (2011) and Guo and Masulis (2015), we nevertheless, also estimate the results using the probit model and calculate the size and statistical significance of the marginal effect using the delta method. We find the probit estimates are of similar size to our linear probability model (the results are presented in Appendix B).

[Insert Table 6 about here]

In model (1) of Table 6, we report the results for the board size. The DiD estimator, β, is positive and statistically significant, suggesting that, compared to control firms, treatment firms increased the board size in the post-crisis period when the FIIs' ownership declined. Our finding is consistent with the sub-hypothesis 1a and the theoretical intuition offered by Raheja (2005) and Harris and Raviv (2008).

Next, in model (2), we include board independence as our main dependent variable. The DiD estimator is positive and statistically significant, providing support for sub-hypothesis 2b, suggesting that FIIs in emerging markets do not seem to think that IDs improve board monitoring. As noted earlier, this result may suggest that FIIs hold the view that corporate managers in emerging markets could possibly appoint directors who may appear independent from a regulatory definitions point of view but may still be highly sympathetic to management (Romano, 2005; Cohen et al., 2012).

In model (3), the DiD coefficient of board busyness is positive and statistically significant, signifying FIIs' preference for reducing board busyness to improve the monitoring role of the board. This finding is consistent with our sub-hypothesis 3a and is in line with Falato et al. (2014) who find that busyness of boards has an adverse effect on the effectiveness of board monitoring (Core et al., 1999; Shivdasani and Yermack, 1999).

The DiD estimation of board diligence, as reported in model (4), is negative and significant, offering credible backing to sub-hypothesis 4. This suggests that the treatment firms seem to have improved board diligence compared to the control firms in the years before

the crisis period when FIIs' ownership is higher compared to the post-crisis period. Our result is consistent with the theoretical implications of Hermalin (2005) and Kolev et al. (2017) who propose that better board diligence improves board monitoring.

With respect to network size, as presented in model (5), the significant and positive DiD coefficient endorses sub-hypothesis 5a. This signals that when contrasted with control firms, the network size of treated firms increased in the post-crisis period, which further signifies that FIIs tend to pressurize boards to reduce their network size with the aim of improving the effectiveness of their monitoring role. This result is consistent with the predictions of Fich and White (2003), Fich and Shivdasani (2006) and Bizjak et al. (2009) who argue that boards with a smaller network size can perform better monitoring roles and reduce agency problems.

Similarly, we also examine the power of the CEO in model (6). The DiD estimation is positive and statistically significant, lending support for sub-hypothesis 6. The result suggests that compared to the control firms, the treatment firms have powerful CEOs in the post-crisis period. This finding lends support to the agency theory, which argues that increased CEO power negatively affects the board monitoring of firms as they have access to useful firm resources and are inclined towards fulfilling their own managerial objectives (Bebchuk and Fried, 2003; Ryan and Wiggins, 2004; Combs et al., 2007; Onali et al., 2016). Finally, the β coefficient of CEO pay in model (7) is also positive and statistically consistent with the prediction of sub-hypothesis 7a. The finding suggests that the treatment firms experience a significant increase in the pay of CEOs in the post-crisis period compared to the control firms. The evidence is in line with the literature that finds (excessive) CEO compensation exacerbates the agency problems rather than aligning the financial interests (Core et al., 1999; Bertrand and Mullainathan, 2001; Dah and Frye, 2017).

Taken together, the above results provide strong evidence of a causal link between FIIs and effective board monitoring. Though we find that FIIs condense board size, they also seem to reduce board independence in India. This indicates that FIIs do not have confidence in the true independence of IDs, casting doubt on the ability of the IDs to effectively monitor the board. As a substitute, we find that FIIs improve board monitoring through more direct channels, such as by improving board diligence and reducing board busyness, network size, power and pay of CEOs.

4.3. Robustness tests

To test the robustness of our baseline results, we conduct several additional tests. We use shock-based estimations, employ alternative definitions of board monitoring, followed by alternative identification strategy, and finally, conduct a series of false experiments.

4.3.1. FIIs' ownership level, instrumental variable approach and board monitoring

Our identification strategy relies on the assumption that the post-crisis period and its interaction with the treated firms capture the significant and exogenous shift in the ownership level of FIIs. However, this interaction term may be capturing other events, such as global risk aversion and not the exogeneity of changes in FIIs' ownership. To capture the specific effect of FIIs' ownership, we estimate the following regression equation:

$$\begin{aligned} y_{it} = {} & \beta_1 \, Treated_i \times Crisis_t \times \Delta FII_{it} + \beta_2 \, Treated_i \times Crisis_t \\ & + \beta_3 \, Treated_i \times \Delta FII_{it} + \beta_4 \, Crisis_t \times \Delta FII_{it} + \beta_5 \Delta FII_{it} + X_{it} \\ & + \gamma_t + \alpha_i + \varepsilon_{it} \end{aligned} \tag{3}$$

In equation (3), ΔFII_{it} is the change in FIIs' ownership in firm *i* in the year *t*. Here, we have now interacted the DiD variable with actual time-varying change in FIIs' ownership variable. The $Treated_i \times Crisis_t \times \Delta FII_{it}$ term not only captures the DiD effect but the actual exogenous change in FIIs' ownership driven by the crisis. All other variables are as previously defined. Firm and time fixed effects are included in the regression and standards are corrected for clustering at the firm level.

The results are presented in Panel A of Table 7. We find evidence consistent with our main results reported in Table 6. The level of FIIs' ownership is negatively and significantly related to the board size, board busyness, network size, CEO power and CEO pay, and positively related to board diligence. However, we do not find any significant impact on board independence, which is not surprising given our main result suggesting FIIs' lack of confidence in the ability of IDs to perform a monitoring function in emerging markets.

[Insert Table 7 about here]

The use of crisis as an exogenous shock and level of FIIs' ownership for the identification of treatment and control groups could be a problem, as the change in FIIs' ownership could be related to other external factors, such as change in firms' performance or lower market performance, that may not be captured by our existing control variables. To further mitigate the reverse causality or potential omitted variable biases, we perform an instrumental variable (IV) analysis. In this approach, we identify an IV that is correlated with

the FIIs' ownership but not correlated with the error term in the regression. Following Desender et al. (2016), we generate an instrument by calculating the change in FIIs' ownership (except the focal firm) within the same industry and in similar size.[32] We argue that the change in FIIs' ownership within the same industry and similar size is likely to influence a firms' FIIs' ownership, but is unlikely to affect board level monitoring. To conduct the two-stage least squares (2SLS) regression, we replace ΔFII_{it} in equation (2) with instrumented FIIs' predicted value from the first stage regression.

The results are presented in Panel B of Table 7.[33] The coefficient estimates on the interaction term among the treatment/control group, crisis and the instrumented FIIs' ownership' and the board monitoring variables, are consistent with the results reported in our main Table 6. Thus, our findings that a high level of FIIs' ownership is associated with improved board monitoring appears to be robust to these additional tests.

4.3.2. Alternative proxies of board monitoring

In this section, we use alternative definitions of board monitoring. First, we use the level of board size and board independence as opposed to board size (log) and board independence (ratio). Ferreira et al. (2018) argue that level, rather than the ratio of independence (or size), is more informative. More importantly, the ratios and the percentage do not show what happens to the number of board members and independent members when there is a high level of FIIs' ownership prior to the crisis. Second, we use two alternative definitions of board busyness based on Core et al. (1999) and Fich and Shivdasani (2006).[34] Third, we use an alternative definition of CEO power (*Alternative CEO Power*) which is a dummy variable that takes the value of one if the CEO is chair as well as the promoter and zero otherwise. Again, the results based on the probit model are presented in Appendix B. Finally, as an alternative definition for our CEO pay, we use a fraction of variable pay/total pay as the dependent variable (Banerjee and Homroy, 2018). The results using all these alternative measures of board monitoring are presented in Table 8. Consistent with the results reported in Table 6, we find that, on average, firms in the treatment group have 0.50 higher board members in the post-crisis period compared to the control group. Also, on average, compared to the firms in the control group, firms in the

[32] We use the two-digit National Industry Classification code of India and four quartiles of firm size based on total assets. Since we exclude the focal firm in the calculation, the instrument varies across firm and time.

[33] For brevity, we do not report the first-stage regression results. In the first-stage regression, we find the instrument change in FIIs' ownership is positively and significantly related to the focal firms' change in FIIs' ownership.

[34] Refer to Appendix A for the definition.

treatment group have 0.39 more IDs in the post-crisis era. The direction of the DiD coefficient for the alternative definition of board busyness, alternative CEO power and CEO variable pay is consistent with our main findings in Table 6.

[Insert Table 8 about here]

4.3.3. Alternative identification and false experiments

The causal interpretation of an exogenous shock depends on the valid identification of the control group relative to those firms that are highly affected by the crisis. In our main analysis, the control group consists of firms with high DIIs' ownership but low FIIs' ownership. We rerun our main analysis with firms in the "None" category as control firms.[35] As discussed in Section 3.3, the "None" group consists of firms that are shunned by both FIIs and DIIs, i.e. these firms have lower FIIs' and DIIs' ownership. Like our main identification strategy, we follow the same PSM procedure and identify 538 matched pairs of treatment and control firms. We rerun Equation (2) by replacing $Treated_i$ with $Alt\_Treated_i$, as shown in the following regression equation:

$$y_{it} = \beta\ Alt\_Treated_i \times Crisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it} \qquad (4)$$

$Alt\_Treated_i$ is the dummy variable that takes the value of one for the firms in the "High FIIs" category and zero for the firms in the "None" category. All other variables are identical, as previously defined. For brevity, we do not report the outcomes of the control variables. From these results reported in Table 9, except for board independence, the findings are consistent with our main results, as reported in Tables 6 and 7. Again, the insignificance of this variable suggests that FIIs are indifferent about board independence in the Indian firms that they invest.

[Insert Table 9 about here]

An additional concern with our DiD estimates is that the changes we observe in board monitoring measures and FIIs could simply be capturing the continuation of a pre-existing regular trend, repeating itself on a regular basis. This concern is partly mitigated by the non-parallel trends observed in Figure 2 and by the inclusion of year fixed effects. Nonetheless, to further address this concern, we supplement the analysis by running a series of false

[35] This approach follows Patnaik and Shah (2013) who use "None" as their main control firms.

experiments to hone in on the effect of the unexpected crisis-driven decline in FIIs' ownership. The basic idea is that the underlying DiD effect (as shown in Table 6) should not be detected in periods other than the exogenous crisis event. Specifically, we run the following regression specification:

$$y_{it} = \beta\, Treated_i \times False\ Crisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it} \quad (5)$$

$False\ Crisis_t$ is the dummy variable that takes the value of zero for four years pre-false crisis year (*t*) and one for four years post-false crisis year respectively for each value of *t* (2005, 2006, 2012, and 2013). All other variables are as defined previously. We present only the DiD estimates, i.e. β in Table 10. Most of the DiD estimates for the false experiments are not significant. The sign of the board diligence is reversed in the false experiments and the statistical significance of CEO power is relatively low compared to our main results. Overall, the results from the false experiments provide some assurance that our main results in Table 6 are attributable to the change in FIIs' ownership as a result of the financial crisis, rather than to some other confounding event or pre-existing trend factors.

[Insert Table 10 about here]

4.4. FIIs' board monitoring role and firm performance – firm value and innovation activities

Our results so far are suggestive of FIIs in India improving board monitoring. Since the principal objective of the board is to improve the performance of the firm through its monitoring and advising functions, it follows that the FIIs' improvement of board monitoring should have an impact on firm performance. However, it remains an empirical issue whether or not firms benefit from improved monitoring by FIIs. To assess the improvement in board monitoring, we study the effect on two dimensions of firm performance: firm value and innovation.

4.4.1. Firm value

In this subsection, we examine how improvement in board monitoring through FIIs investment influences firm value. If FIIs facilitate better board monitoring, to the extent that this improved monitoring translates into better firm value, we should expect that the value of firms with higher FIIs' ownership in the post-crisis period should be higher than the control group firms. Accordingly, we run the following general regression specification:

$$Value_{it} = \beta_1\, Treated_i \times Crisis_t \times\ y_{it} + \beta_2\ Treated_i \times Crisis_t + \beta_3\ Treated_i \times\ y_{ijt} + \beta_4\, Crisis_t \times\ y_{it} + X_{it} + \gamma_t + \alpha_i + \varepsilon_{ijt} \quad (6)$$

where i indexes firms, t indexes time. $Value_{it}$ is the continuous variable that captures different features of firm value and is in the form of *Tobin's Q, ROA, EPS, PBDITA,* and *Asset turnover ratio*. y_{it} represents the board monitoring variables, as defined in earlier sections (also see Appendix A). X_{it} is a vector of control variables discussed in the following paragraph. All the firm-value and board monitoring-related variables, along with γ_t and α_i, are defined earlier in section 3.2. Our main interest lies in β_1, a difference-in-difference-in-differences (DiDiD) estimator that captures the post crisis effect of FIIs' relationship with board monitoring on firm value for treatment firms compared to control firms prior to the crisis period.

We include various competing factors (X_{it}) that might affect the firm value. Prior studies find firm size, age, leverage, research and development expenses, capital expenses, sales and export sales to be associated with firm value (Cheng, 2008; Coles et al., 2008; Brick and Chidambaran, 2010; Liu et al., 2015). As such, we use log of firm's total assets to control (*Firm size*), log of age of the firm (*Firm age*), the *Leverage* measured as total debt to shareholders' equity, research and development expenses scaled by total assets (*R&D*), capital expenditure scaled by total assets (*Capital expenses*), log of sales revenue (*Sales*) and export sales revenue scaled by sales revenue (*Export Sales*). For brevity we do not report the results for control variables; however, the results on controls are consistent with prior literature (and available from the authors on request). The results of different specifications of Equation (6) are presented in Table 11.

[Insert Table 11 about here]

Panel A, where *Tobin's Q* is the dependent variable, shows that the variables board size, board busyness, CEO power, and CEO pay have the expected negative and statistically significant coefficients, whereas board diligence carries a positive and statistically significant coefficient. Interestingly, we do not find any effect of board independence on *Tobin's Q*. In Table 6 we find firms with higher FIIs' ownership exhibit lower board independence, which suggests that the non-significant impact of board independence on firm value is not surprising. In Panel B, we use *ROA* as the proxy of firm value and the results are qualitatively similar to Panel A. Further, the results are also qualitatively comparable to Panel A when we use *EPS*, *PBDITA*, and *Asset turnover ratio* as the dependent variable in Panels C, D and E

respectively.[36] Overall, these results suggest that improvement in board monitoring increases the firm value of treatment firms compared to control firms.[37]

4.4.2. Innovation activities

In this subsection, we examine the impact of improved board monitoring by FIIs on the innovation activity of firms. Empirical evidence is mixed with regard to the impact of board monitoring on innovation. Luoung et al. (2017) suggest that FIIs promote firm innovation by being active monitors.[38] However, Faleye et al. (2011) argue that intense board monitoring can dampen corporate innovation. We examine the effect of improved board monitoring, demanded by FIIs' pressure, on the innovation activities as measured using two different proxies: *Patent count* and *R&D*. We run different versions of the following regression specification:

$$Innv_{it} = \beta_1\, Treated_i \times Crisis_t \times\, y_{it} + \beta_2\, Treated_i \times Crisis_t + \beta_3\, Treated_i \times\, y_{it} +\, \beta_4\, Crisis_t \times\, y_{it} +\, X_{ijt} + \gamma_t + \alpha_j + \varepsilon_{it} \quad (7)$$

where i indexes firms, t indexes time. $Innv_{it}$ is the continuous variable reflecting firm innovation: *Patent count*, and *R&D*. All other variables are as defined previously (also see Appendix A). X_{it} is a vector of control variables discussed in the following paragraph. Our main variable of interest is β_1, a DiDiD estimator that captures the effect of improved board monitoring on the innovation activities of treatment firms compared to control firms after the financial crisis period.

We also control for a set of firm-level variables that can affect a firm's innovation output. Based on the literature, we control for firm value using *Tobin's Q*, *Firm size* using log of total assets, *Sales* using sales revenue scaled by total assets, *Export sales* as export revenue scaled by total sales revenue, *Firm age* using log of firm age, *Leverage* as total debt to shareholders' equity, and *ROA* as net income divided by total assets (Helmers et al., 2017; Luoung et al., 2017; Lu and Wang, 2018). For brevity we do not report the results for the control variables; however, the results on controls are consistent with those reported in the empirical literature (available from the authors on request). The results of different specifications of Equation (6) are presented in Table 12.

[Insert Table 12 about here]

[36] It is important to note that although the sign of board independence varies, board independence does not significantly affect any firm value measures.

[37] The results are qualitatively similar using the alternative identification strategy discussed in Section 4.2.2. Results are available upon request.

[38] Although they focus on independent (long-term) FIIs as active monitors that improve innovation, we focus on the effect of FIIs on board monitoring that improves innovation.

In Panel A, the main dependent variable is *Patent count*. Again, we find a negative and statistically significant impact of board size, board busyness, network size, CEO power, and CEO pay. We find a positive and statistically significant impact of board diligence on the total patent count. The results are qualitatively similar when we use *R&D* as the main dependent variable in Panel B. Overall, the results provide evidence to support the conjecture that improved board monitoring by FIIs has a positive and significant impact on a firm's innovation activities.

5. Conclusion

One of the key trends in the global financial market during the financial crisis of 2007-08 was the "flight of capital" from emerging markets to the developed economies. India, one of the largest emerging economies, also witnessed a substantial outflow of foreign capital in the aftermath of the crisis. From an empirical identification point of view, this crisis represents an unexpected negative shock to FIIs' ownership in India, making it an ideal set-up to investigate the role of FIIs in influencing the monitoring role of boards. In this study, we focus on the four years pre-crisis and post-crisis beginning in 2008 and use different proxies of board monitoring to evaluate the impact of FIIs on the board monitoring of the firms that they invest.

The literature on corporate governance notes that FIIs, being informed and sophisticated investors, have the incentive as well as the ability to improve board monitoring. Our study adds to this literature by providing causal evidence of FIIs' influential role in improving the effectiveness of board monitoring. Consistent with economic arguments, the results show that firms with higher FIIs' ownership are associated with lower board size, busyness, network size, CEO power, and CEO pay and higher board diligence. Interestingly, we also find that FIIs prefer lower board independence in India. However, our result on board independence is counter-intuitive, but not surprising, given the empirical evidence that managers in emerging markets may appoint directors who are independent from the point of view of the regulators, but they are still connected and sympathetic to the existing management. We also find that FIIs improve the performance of the firms through their improved board monitoring role. Specifically, we find that the enhanced board monitoring by FIIs improves both firm value and corporate innovation measures.

These results highlight the importance of FIIs in emerging markets. Given our evidence of improved board monitoring by FIIs and subsequent positive influence on firm performance, firms that suffer from governance and monitoring problems might find it beneficial to attract

FIIs' investments. Our empirical results highlight the positive externalities generated by FIIs in emerging markets.

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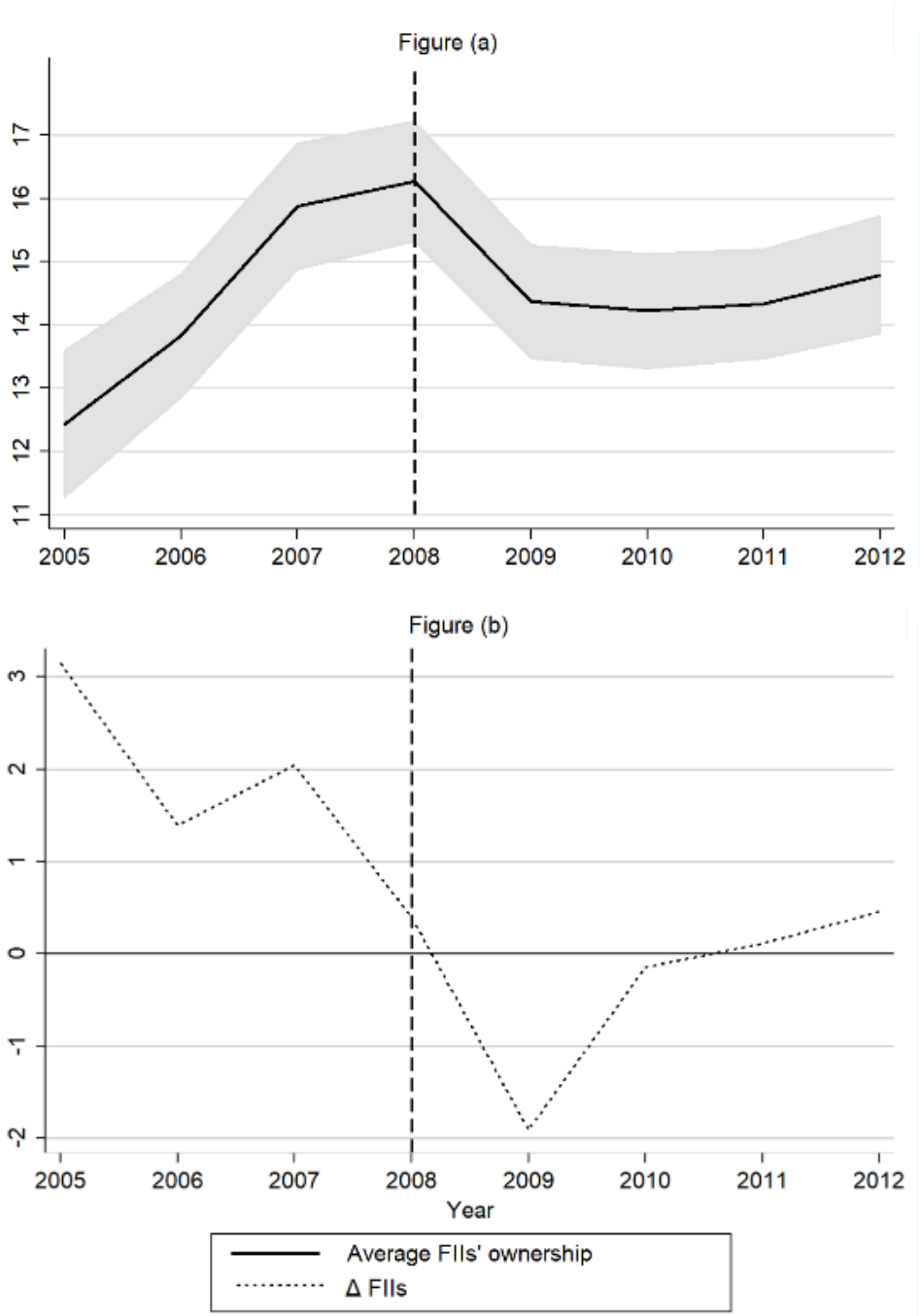

Fig. 1. Average FIIs' ownership

This figure plots the average FIIs' ownership (y-axis) in figure (a) and change in FIIs' ownership (y-axis) in figure (b) four years (x-axis) before and after the financial crisis (dash vertical line). The shaded area in figure (a) shows the 95% confidence interval.

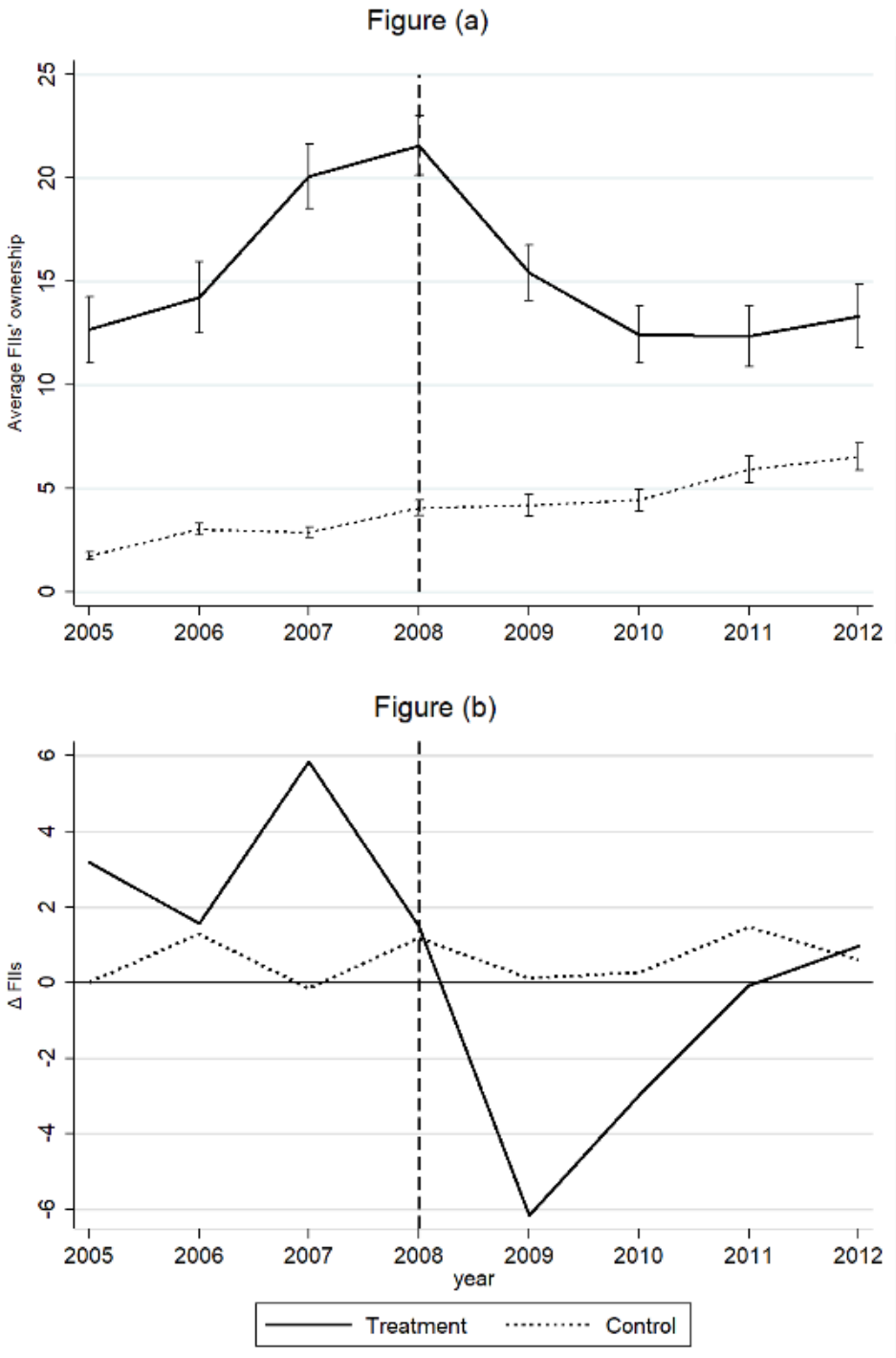

Fig. 2. Average FIIs' ownership of treatment and control group

This figure shows the trend in the average FIIs' ownership (y-axis) in figure (a) and trend in the change in FIIs' ownership (y-axis) in figure (b) for the firms in the treatment group (solid black line) and the firms in the control group (dot black line), four years (x-axis) before and after the crisis (dash vertical line). Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median and "High DIIs" firms are those in which DIIs' ownership is above the median before 2008. Two standard errors are represented by the vertical lines in figure (a) from each of the annual mean nodes.

Table 1: Summary statistics

The table provides the summary statistics of all the variables in our full sample. The sample period is 2006-2011. Variables are described in Appendix A.

	Mean	Median	Std. Dev.	10pct	90pct
Panel A: Board monitoring					
Board size (#)	9.26	9.00	3.09	6.00	13.00
Board independence (%)	47.34	46.67	13.86	30.00	66.67
Board busyness	5.25	5.00	3.10	1.00	9.00
Board diligence	0.63	0.63	0.20	0.36	0.91
Network size (#)	25.10	20.00	22.80	1.00	55.00
CEO power	0.16	1.00	0.25	0.00	1.00
CEO pay (INR Million)	6.67	3.30	10.05	0.64	16.13
Panel B: Ownership variables					
FIIs' ownership (%)	11.62	3.29	16.31	0.05	36.49
DIIs' ownership (%)	28.54	12.98	35.13	0.17	82.17
Panel C: Firm performance variables					
Return on assets (%)	3.57	3.32	6.20	-4.37	12.04
Tobin's Q	0.95	0.79	0.54	0.45	1.75
Earnings per share (EPS)	8.10	3.42	41.47	-4.80	24.37
PBDITA (INR Million)	525.61	195.80	767.22	9.30	1,588.70
Assets turnover ratio (Times)	0.99	0.92	0.63	0.19	1.92
Panel D: Innovation variables					
R&D expenses (INR Million)	8.13	0.00	25.75	0.00	20.60
Patent count (#)	0.07	0.00	0.57	0.00	2.00
Panel E: Other financial variables					
Firm size (INR Million)	4,158.76	1,883.30	5,544.57	330.20	11,276.80
Firm age (Years)	33.19	26.00	19.77	15.00	62.00
Leverage (%)	125.36	79.73	136.64	0.87	324.68
STDDEV (%)	17.96	16.63	8.47	9.25	27.76
Sales (INR Million)	4,721.50	1,712.40	9,282.25	143.00	11,310.80
Export (% of Sales)	15.58	3.25	24.51	0.00	53.50
Capital expenses (INR Million)	532.69	125.20	1,312.43	8.50	1,415.30

Table 2: Sample selection

The table shows the sample selection process. The sample firms are identified based on FIIs' and DIIs' ownership before 2008.

Filter	Number of firms
Number of firms in the universe with FIIs' and DIIs' ownership	4,842
Number of firms classified as "High FIIs"	2,932
Number of firms classified as "High DIIs"	2,102
Number of firms classified as "None"	1,469
Less: Number of firms classified both as "High FIIs" and "High DIIs"	1,861
Number of firms classified as "High FIIs" but no "High DIIs"	689
Number of firms classified as "High DIIs" but no "High FIIs"	823
Number of firms classified as "None"	1,469

Table 3: Propensity score matching

The table reports the results of PSM. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with the nearest neighborhood of 0.01 caliper using various firm-level characteristics to identify matched control groups. Panel A presents the parameter estimates from the probit model used to estimate the propensity scores for the treatment and control groups. The dependent variable is 1 if in the treatment group and 0 if in the control group. The firm-level characteristics are defined in Appendix A. We control for firm fixed effects. Standard errors are corrected for clustering at the firm level. Panel B reports the distribution of estimated propensity scores post matching. Panel C reports the univariate comparison between the treatment and control firm's characteristics and their corresponding *t*-statistics. Panel D reports regression results based on Equation (1). The dependent variable is various proxies of board monitoring: board size, board independence, board busyness, board diligence, network size, CEO power and CEO pay. $Treated_i$ is the dummy variable that takes the value of one if the firm is classified as a treated firm and zero if firms are classified as control firms. $Year_{05-06}$, $Year_{07}$, $Year_{08}$, $Year_{09}$, $Year_{10}$, and $Year_{11-12}$ indicate firm-year observations. Firm and time fixed effects are included, and errors are clustered at firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Pre-match propensity score regression and post-match diagnostic regression

	Dummy=1 if in the treatment group; 0 if in the control group	
	Model 1 Pre-match	Model 2 Post-Match
Firm size	0.672***	-0.220
	(3.25)	(-1.58)
Tobin's Q	0.170**	0.112
	(2.32)	(0.86)
Firm age	-0.183***	-0.121
	(-2.59)	(-1.61)
Return on assets	0.426	0.601
	(0.97)	(1.39)
Leverage	-0.000	-0.000
	(-1.21)	(-1.14)
Pseudo R^2	0.372	0.214
Number of observations	6,111	4,263

Panel B: Estimated propensity score distributions

	Firms	Min.	5pct	Median	Mean	Std. Dev	95pct	Max
Treatment	390	0.004	0.188	0.565	0.563	0.214	0.904	0.984
Control	390	0.004	0.188	0.574	0.569	0.218	0.914	0.994
Difference	-	0.000	0.000	-0.009	-0.006	-0.004	-0.010	-0.010

Panel C: Difference in firm characteristics

	Treatment	Control	Difference	*t*-statistics
Firm size	7.704	7.284	0.420	0.47
Tobin's Q	0.887	0.938	-0.051	-0.99
Firm age	3.158	3.138	0.020	0.77
Return on assets	0.029	0.034	-0.005	-1.55
Leverage	3.513	2.462	1.051	0.94

Panel D: Parallel trends

	Board size (1)	Board independence (2)	Board busyness (3)	Board diligence (4)	Network size (5)	CEO power (6)	CEO pay (7)
$Treated_i \times Year_{05-06}$	0.017	-0.003	0.020	-0.019	0.749	-0.023	0.096
	(1.25)	(0.61)	(0.59)	(-1.26)	(1.80)	(-0.70)	(1.24)
$Treated_i \times Year_{07}$	0.029	-0.015	0.059	0.040	0.830	-0.020	0.113
	(1.05)	(0.17)	(0.69)	(1.42)	(0.87)	(-0.91)	(1.54)
$Treated_i \times Year_{08}$	0.019	-0.009	0.010	0.066	1.377*	-0.015	0.175
	(1.09)	(0.00)	(1.34)	(1.07)	(1.87)	(-1.13)	(1.29)
$Treated_i \times Year_{09}$	0.055**	0.012**	0.098**	-0.046***	2.198***	0.056**	0.263***
	(2.52)	(2.14)	(2.02)	(-3.79)	(3.06)	(2.41)	(4.35)
$Treated_i \times Year_{09}$	0.058**	0.021**	0.096**	-0.051***	4.353***	0.053**	0.377***
	(2.62)	(2.35)	(2.46)	(-2.74)	(3.35)	(2.22)	(4.29)
$Treated_i \times Year_{11-12}$	0.062**	0.029***	0.108**	-0.062***	5.885***	0.051***	0.434***
	(2.49)	(3.02)	(2.33)	(-3.34)	(3.11)	(3.70)	(2.92)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.30	0.08	0.23	0.27	0.26	0.07	0.44
Number of observations	4,390	4,253	4,001	4,250	4,414	4,390	3,308

Table 4: Pre and post summary figures

This table compares the important variables before and after the financial crisis. Panel A shows the comparison of means and the Panel B shows the comparison of medians. The significance of the mean and median is based on a two-tailed *t*-test and Wilcoxon test respectively. *, **, and *** denote significance at the 10%, 5% and 1% significance level respectively.

	Panel A: Means			Panel B: Medians		
	Pre-crisis (1)	Post-crisis (2)	Diff (2)-(1)	Pre-crisis (1)	Post-crisis (2)	Diff (2)-(1)
Board size (#)	8.97	9.55	0.58***	9.00	9.00	0.00
Board independence (%)	45.83	48.83	3.00***	44.44	50.00	5.56***
Board busyness	4.96	5.58	0.62***	5.00	5.00	0.00
Board diligence	0.67	0.59	-0.08**	0.64	0.62	-0.02**
Network size (#)	23.98	26.21	2.23***	19.00	21.00	2.00***
CEO power	0.14	0.18	0.04	0.00	0.00	0.00
CEO pay	5.27	8.07	2.80***	3.06	4.15	1.09***
Return on assets (%)	4.33	3.00	-1.33***	4.25	2.86	-1.39***
Tobin's Q	1.01	0.90	-0.11***	0.90	0.76	-0.14***
Earnings per share	8.56	7.64	-0.92	4.23	2.88	-1.35***
PBDITA (INR Million)	605.22	445.99	-159.23***	232.40	182.90	-49.50***
Assets turnover ratio (Times)	1.03	0.96	-0.07***	0.93	0.87	-0.06***
R&D expenses (INR Million)	9.97	6.31	-3.66***	0.00	0.00	0.00
Patent count (#)	0.09	0.04	-0.05**	0.00	0.00	0.00
Total assets (INR Million)	4,033.38	4,284.11	-250.73***	1,633.10	2,388.40	755.30***
Age (Years)	31.19	35.19	4.00***	24.00	27.00	3.00**
Leverage (%)	123.56	127.20	3.64	83.23	76.75	-6.48**
STDDEV (%)	19.49	16.42	-3.07***	17.93	16.48	-1.45***
Sales (INR Million)	3,646.05	5,793.96	2147.91***	1,542.05	2,006.45	464.40***
Export (% of sales)	16.02	15.14	-0.88	3.45	3.07	-0.38**
Capital expenses (INR Million)	621.50	443.85	-177.65***	111.85	128.90	17.05**

Table 5: Mean difference-in-differences analysis

This table reports the mean DiD test results examining the mean difference in FIIs' ownership in Panel A and board monitoring proxies in Panel B pre (2005-2008) and post crisis period (2009-2012) for the treatment and control group. The main variables are defined in Appendix A. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with the nearest neighborhood of 0.01 caliper using various firm-level characteristics to identify matched control groups. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Ownership

	Mean treatment difference (post-pre)	Mean control difference (post-pre)	Mean DiD estimator (treat-control)
FIIs' ownership (%)	-4.628***	0.820	-5.088***
	(-4.17)	(1.31)	(-4.87)
Δ FIIs (% points)	-1.590***	-0.163	-1.427***
	(-3.26)	(-1.40)	(-4.05)

Panel B: Board monitoring proxies

	Mean treatment difference (post-pre)	Mean control difference (post-pre)	Mean DiD estimator (treat-control)
Board size	0.074***	0.003	0.071***
	(3.42)	(0.83)	(3.12)
Board independence	0.041***	0.006	0.035**
	(2.98)	(0.95)	(2.43)
Board busyness	0.126***	0.017	0.109**
	(2.86)	(0.59)	(2.47)
Board diligence	-0.051***	-0.007	-0.044***
	(-3.43)	(-1.21)	(-3.21)
Network size	5.020**	0.080	4.940**
	(2.18)	(0.23)	(2.15)
CEO power	0.026**	-0.023	0.049**
	(2.27)	(-1.31)	(-2.43)
CEO pay	0.524***	0.239**	0.285***
	(5.39)	(2.35)	(2.89)

Table 6: Regression-based difference-in-differences analysis

This table reports the results for the regression-based DiD with the following specification:

$$y_{it} = \beta\, Treated_i \times Crisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$$

where i indexes firms, t indexes time; y_{it} is the dependent variable of interest, which is the different proxies of board monitoring; γ_t and α_i are year and firm fixed effects respectively; $Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as treated firms and 0 if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes the value of 1 in the post-crisis years (2009-2012) and 0 for the pre-crisis years (2005-2008); $X_{it}$are control variables; and ε_{it} is the error term. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs'' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm-level characteristics to identify matched control groups. Control variables are defined in Appendix A. Standard errors are clustered at the firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Board size (1)	Board independence (2)	Board busyness (3)	Board diligence (4)	Network size (5)	CEO power (6)	CEO pay (7)
$Treated_i \times Crisis_t$	0.053**	0.022**	0.095***	-0.030**	4.613***	0.042***	0.230***
	(2.58)	(2.37)	(2.60)	(-2.53)	(3.26)	(3.07)	(3.27)
Tobin's Q	0.008***	0.018**	0.001	0.002	0.130	0.002	-0.010
	(2.79)	(2.51)	(0.16)	(0.87)	(0.42)	(0.85)	(-0.47)
Firm size	0.098***	-0.005	0.131***	-0.069***	5.716***	0.022***	0.389***
	(13.10)	(-1.40)	(9.30)	(-17.06)	(10.13)	(2.59)	(11.93)
ROA	0.044	-0.020	0.211	-0.004	11.555**	0.088**	2.014***
	(0.65)	(-0.32)	(1.61)	(-0.05)	(2.34)	(2.37)	(3.50)
Firm age	0.036*	0.026***	0.130***	0.021*	5.266***	-0.006	0.182***
	(1.88)	(3.52)	(3.73)	(1.92)	(3.58)	(-0.08)	(3.01)
Leverage	-0.002***	0.002	-0.003***	0.001	-0.099***	-0.002*	-0.004
	(-3.15)	(0.54)	(-3.10)	(0.92)	(-3.05)	(-1.67)	(-1.13)
R&D	0.605	0.232	2.876***	-0.471	132.411***	-1.773	0.486
	(0.90)	(1.06)	(2.87)	(-1.30)	(2.89)	(-0.71)	(0.17)
STDDEV	-0.178**	-0.122***	-0.283	0.042	-9.082	0.023	-1.463***
	(-2.37)	(-3.15)	(-1.63)	(0.76)	(-1.65)	(0.46)	(-4.73)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.29	0.22	0.22	0.26	0.26	0.33	0.44
Observations	4,390	4,253	4,001	4,250	4,414	4,359	3,308

Table 7: FIIs' ownership and instrumental variable regression

Panel A of this table reports the results for the following specification:

$$y_{it} = \beta_1\, Treated_i \times Crisis_t \times \Delta FII_{it} + \beta_2\, Treated_i \times Crisis_t + \beta_3\, Treated_i \times \Delta FII_{it} + \beta_4\, Crisis_t \times \Delta FII_{it-1} + \beta_5 \Delta FII_{it} + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$$

where i indexes firms, t indexes time; y_{it} is the dependent variable of interest, which is the different proxies of board monitoring; γ_t and α_i are year and firm fixed effects respectively; $Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as treated firms and 0 if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes the value of 1 in the post-crisis years (2009-2012) and 0 for the pre-crisis years (2005-2008); ΔFII_{it} is the change in FIIs' ownership; X_{it} are control variables which are similar to Table 6; and ε_{it} is the error term. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm-level characteristics to identify matched control groups. Control variables are defined in Appendix A. Standard errors are clustered at the firm level. Panel B presents the estimates using the IV method based on two-stage least square (2SLS) panel regression. We replace ΔFII_{it} in the equation used in Panel A with ΔIV_{it}. The ΔIV_{it}. is the average FIIs' ownership in similar size-matched firms in the same industry. The estimated parameters of the controls are not reported for brevity. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Change in FIIs' ownership

	Board size	Board independence	Board busyness	Board diligence	Network size	CEO power	CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times \Delta\, FII_{it}$	-0.730**	0.218	-0.697**	0.231**	-30.701***	-0.604***	-2.141**
	(-2.16)	(1.14)	(-3.12)	(2.49)	(-2.86)	(2.78)	(-2.49)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.31	0.23	0.23	0.17	0.42	0.19	0.22
Number of observations	4,390	4,253	4,001	4,250	4,414	4,359	3,308

Panel B: Instrumental variable second-stage

	Board size	Board independence	Board busyness	Board diligence	Network size	CEO power	CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times \Delta IV_{it}$	-0.761***	0.177	-0.616***	0.820***	-31.390**	-0.529***	-1.908***
	(-3.17)	(1.02)	(-3.21)	(2.48)	(-2.17)	(-3.63)	(-2.21)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.22	0.10	0.12	0.12	0.15	0.17	0.31
First stage *F*	60.67	58.71	57.87	57.70	58.12	56.55	50.76
Shea's partial R^2	0.19	0.27	0.29	0.27	0.21	0.18	0.19
Number of observations	4,390	4,253	4,001	4,250	4,414	4,359	3,308

Table 8: Robustness test: Alternative definitions of dependent variables

This table reports the robustness results for the regression-based DiD with the following specification:

$$y_{it} = \beta\, Treated_i \times Crisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$$

where i indexes firms, t indexes time; y_{it} is the dependent variable of interest, which is the different alternate proxies of board monitoring. In model (1), the dependent variable is the number of members on the board, in model (2), the dependent variable is the number of IDs on the board, in model (3), the dependent variable is Core et al. (1999) definition of board busyness, in model (4), the dependent variable is Fich and Shivdasani (2006) definition of board busyness, in model (5), we use the alternate definition of CEO power and in model (6), the dependent variable is CEO variable pay. See Appendix A for definition. $Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as the treatment firms and 0 if firms are classified as the control firms. $Crisis_t$ is also a dummy variable that takes the value of 1 in the post-crisis years (2009-2012) and 0 for pre-crisis years (2005-2008); X_{it} are control variables; and ε_{it} is the error term. We include firm fixed effects, α_i and year fixed effects, γ_t. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm level characteristics to identify the matched control groups. Control variables are defined in Appendix A. Standard errors are clustered at the industry level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Board size (#)	Board independence (#)	Board busyness		Alternate CEO power	CEO variable pay
			Core et al. (1999)	Fich and Shivdasani (2006)		
	(1)	(1)	(3)	(4)	(5)	(6)
$Treated_i \times Crisis_t$	0.498***	0.393**	0.124***	0.094**	0.025**	0.319***
	(3.19)	(2.46)	(2.95)	(2.18)	(2.37)	(2.99)
Tobin's Q	0.409***	0.091	-0.006	-0.003	-0.001	-0.044
	(3.30)	(1.04)	(-1.39)	(-0.14)	(-0.84)	(-1.09)
Firm size	0.832***	0.353***	0.050***	0.067***	0.06**	0.667***
	(9.19)	(8.77)	(4.74)	(5.80)	(2.40)	(8.23)
ROA	-0.123	-0.156	0.113	0.189**	0.079	2.629**
	(-0.23)	(-0.32)	(1.27)	(2.21)	(1.59)	(2.44)
Firm age	0.420**	0.433***	0.084**	0.068**	0.112**	0.313**
	(2.22)	(4.44)	(2.90)	(2.47)	(2.25)	(2.58)
Leverage	-0.007	-0.006*	-0.001**	-0.003***	0.000	-0.044**
	(-1.48)	(-1.96)	(-2.65)	(-4.50)	(0.01)	(-1.99)
R&D	6.748**	5.479*	2.667***	2.692***	3.585	3.650
	(2.05)	(1.84)	(3.69)	(4.62)	(1.58)	(0.62)
STDDEV	-1.241*	0.345	-0.053	-0.243	0.003	-3.141***
	(-1.83)	(0.76)	(-0.44)	(-1.59)	(0.07)	(-4.36)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.41	0.19	0.09	0.10	0.84	0.34
Number of observations	4,385	4,253	4,391	3,937	4,359	2,044

Table 9: Robustness test: Alternative identification of treatment and control firms

This table reports the alternate results for the regression-based DiD with the following specification:

$$y_{it} = \beta\ Alt\_treated_i \times Crisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$$

where i indexes firms, t indexes time; y_{ijt} is the dependent variable of interest, which is the different proxies of board monitoring; $Alt\_Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as the alternate treated firms and 0 if firms are classified as the alternate control firms. $Crisis_t$ is also a dummy variable that takes the value of 1 in the post-crisis years (2009-2012) and 0 for pre-crisis years (2005-2008). $X_{it}$are control variables which are similar to Table 6; and ε_{it} is the error term. We include firm fixed effects, α_i and year fixed effects, γ_t. Treatment group is defined as the firms with "High FIIs" whereas the alternate control group is defined as the firms with "None". "High FIIs" firms are those one in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm level characteristics to identify the matched control groups. Control variables are defined in Appendix A. Standard errors are clustered at the firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Board size	Board independence	Board busyness	Board diligence	Network size	CEO power	CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Alt\_treated_i \times Crisis_t$	0.017**	0.007	0.075**	-0.035**	2.404***	0.031**	0.154***
	(2.14)	(0.86)	(2.15)	(-2.23)	(4.42)	(2.33)	(3.55)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.32	0.49	0.55	0.57	0.53	0.48	0.38
Number of observations	5,518	5,290	4,752	5,269	5,555	5,518	3,752

Table 10: Robustness test: False experiments

This table reports the coefficient estimates for the false experiments with the following specification:

$$y_{it} = \beta\, Treated_i \times False\ crisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$$

where i indexes firms, t indexes time; y_{it} is the dependent variable of interest, which is the different proxies of board monitoring; γ_t and α_i are year and firm fixed effects respectively; $Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as the treated firms and 0 if firms are classified as the control firms. $False\ Crisis_t$ is a dummy variable that takes the value of 0 in the four years pre-false crisis year (2005, 2006, 2012, and 2013) and 1 for four years post-false crisis years. $X_{it}$are control variables which are similar to Table 6; and ε_{it} is the error term. We include firm fixed effects, α_i and year fixed effects, γ_t. Treatment group is defined as the firms with "High FIIs" whereas control group is defined as firms with "High DIIs" in Panel B. "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm level characteristics to identify the matched control groups. Control variables are defined in Appendix A. Standard errors are clustered at the firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	Board size	Board independence	Board busyness	Board diligence	Network size	CEO power	CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times False\ crisis_{2005}$	0.022	0.015	0.085	0.022	8.123	0.012	0.077
	(0.84)	(1.12)	(1.22)	(1.12)	(1.37)	(0.66)	(0.99)
$Treated_i \times False\ crisis_{2006}$	0.020	0.001	0.042	-0.013	6.215	0.012	0.121
	(1.01)	(0.23)	(0.75)	(-1.02)	(1.22)	(1.11)	(1.41)
$Treated_i \times False\ crisis_{2012}$	0.011	0.015	0.055	0.011	2.521	0.038*	0.125
	(0.37)	(1.27)	(1.33)	(0.55)	(1.17)	(1.92)	(1.09)
$Treated_i \times False\ crisis_{2013}$	0.025	0.011	0.042	0.022**	1.511	0.021	0.127
	(1.31)	(1.20)	(1.23)	(2.12)	(0.77)	(0.91)	(1.22)

Table 11: FIIs' pressured board monitoring and firm value

This table reports the results for the following specification:

$$Value_{it} = \beta_1\, Treated_i \times Crisis_t \times\ y_{it} + \beta_2\ Treated_i \times Crisis_t + \beta_3\ Treated_i \times\ y_{it} + \beta_4\, Crisis_t \times\ y_{it} + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$$

where i indexes firms, t indexes time. $Value_{it}$ is the main dependent variable – Return on assets in Panel A, Tobin's Q in Panel B, Earnings per share in Panel C, PBDITA in Panel D and Asset Turnover Ratio is Panel E. y_{it} is the different proxies of board monitoring. These variables are defined in Appendix A. $Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as treated firms and 0 if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes the value of 1 in the post-crisis years (2009-2012) and 0 for pre-crisis years (2005-2008); $X_{it}$are control variables; and ε_{it} is the error term. We include firm fixed effects, α_i and year fixed effects, γ_t. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm level characteristics to identify the matched control groups. Control variables include firm size, age, leverage, research and development expenses, capital expenses, sales and export sales. Control variables are defined in Appendix A. Standard errors are clustered at the firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Tobin's Q

	Dependent variable = Tobin's Q						
	×Board size	×Board independence	×Board busyness	×Board diligence	×Network size	×CEO power	×CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times$	-0.103***	-1.584	-0.069***	0.131***	-0.025**	-0.166***	-0.049***
	(-3.83)	(-1.16)	(-3.22)	(3.58)	(-2.01)	(-4.32)	(3.49)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.62	0.10	0.22	0.36	0.21	0.11	0.21
Number of observations	4,356	4,213	4,001	4,210	4,380	4,359	3,308

Panel B: Return on assets

	Dependent variable = Return on assets						
	×Board size	×Board independence	×Board busyness	×Board diligence	×Network size	×CEO power	×CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times$	-0.096**	0.015	-0.030***	0.065***	-0.004***	-0.231***	-0.003**
	(-2.37)	(1.41)	(-3.34)	(3.85)	(-3.15)	(-2.99)	(-2.30)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.50	0.10	0.22	0.20	0.49	0.21	0.26
Number of observations	4,356	4,213	4,001	4,210	4,380	4,359	3,308

Panel C: Earnings per share

	Dependent variable = Earnings per share						
	×Board size	×Board independence	×Board busyness	×Board diligence	×Network size	×CEO power	×CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times$	-0.100***	-0.039	-0.056***	0.186***	-0.001**	-0. 55**	-0.036***
	(-3.69)	(-0.24)	(-3.27)	(3.04)	(-2.63)	(-2.54)	(-3.10)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.21	0.04	0.32	0.34	0.45	0.24	0.13
Number of observations	4,356	4,213	4,001	4,210	4,380	4,359	3,308

Panel D: PBDITA

	Dependent variable = PBDITA						
	×Board size	×Board independence	×Board busyness	×Board diligence	×Network size	×CEO power	×CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times$	-0.079***	0.017	-0.154***	0.611***	-0.002***	-0.241***	-0.072**
	(-2.96)	(1.78)	(-3.64)	(3.78)	(-2.32)	(-2.92)	(-2.10)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.50	0.11	0.11	0.11	0.43	0.10	0.11
Number of observations	4,356	4,213	4,001	4,210	4,380	4,359	3,308

Panel E: Assets turnover ratio

	Dependent variable = Assets turnover ratio						
	×Board size	×Board independence	×Board busyness	×Board diligence	×Network size	×CEO power	×CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times$	-0.273***	0.354	-0.071***	0.301**	-0.004***	0.281***	-0.087***
	(-3.84)	(1.44)	(-3.84)	(2.67)	(-4.91)	(3.82)	(-3.08)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.24	0.45	0.46	0.27	0.45	0.44	0.30
Number of observations	4,356	4,213	4,001	4,210	4,380	4,359	3,308

Table 12: FIIs' pressured board monitoring and innovation

This table reports the results for the following specification:

$$Innv_{it} = \beta_1\, Treated_i \times Crisis_t \times\ y_{it} + \beta_2\ Treated_i \times Crisis_t + \beta_3\ Treated_i \times\ y_{it} +\ \beta_4\, Crisis_t \times\ y_{ijt} +\ X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$$

where i indexes firms, t indexes time. $Innv_{it}$ is the main dependent variable – Total patent count in Panel A, and R&D (scaled by sales) in Panel B. y_{it} is the different proxies of board monitoring. These variables are defined in Appendix A. γ_t and α_i are year and firm fixed effects respectively. $Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as the treated firms and 0 if firms are classified as the control firms. $Crisis_t$ is also a dummy variable that takes the value of 1 in the post-crisis years (2009-2012) and 0 for pre-crisis years (2005-2008); X_{it} are control variables; and ε_{it} is the error term. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm level characteristics to identify the matched control groups. Control variables include Tobin's Q, firm size, sales, export sales, firm age, leverage, and return on assets. Control variables are defined in Appendix A. Standard errors are clustered at the firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

Panel A: Total patent count

	Dependent variable = Total patent count						
	×Board size	×Board independence	×Board busyness	×Board diligence	×Network size	×CEO power	×CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times$	-0.053**	0.045	0.051**	0.272***	-0.002**	-0.032	-0.028***
	(-2.56)	(0.17)	(2.48)	(3.96)	(-2.32)	(-0.47)	(-3.18)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.07	0.07	0.07	0.07	0.07	0.07	0.09
Number of observations	4,356	4,213	4,001	4,210	4,380	4,359	3,308

Panel B: R&D expenses

	Dependent variable = R&D						
	×Board size	×Board independence	×Board busyness	×Board diligence	×Network size	×CEO power	×CEO pay
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$Treated_i \times Crisis_t \times$	-0.001***	0.005	-0.001***	0.003***	-0.001**	0.000	-0.002**
	(-3.28)	(1.11)	(-3.59)	(3.16)	(-2.66)	(0.18)	(-2.61)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.19	0.10	0.10	0.10	0.21	0.10	0.14
Number of observations	4,356	4,213	4,001	4,210	4,380	4,359	3,308

Appendix A: Definition of variables

This table presents the description of our key variables used in this study.

Variables	Definition
Board Monitoring	
Board size	Log of number of directors on the board.
Board independence	Percentage of independent directors (IDs) on the board.
Board busyness	Log of number of directors who serve on the board of other firms.
Board busyness (Core et al., 1999)	Dummy variable 1 if the majority of members hold three, or more than three, board appointments in another firm.
Board busyness (Fich and Shivdasani, 2006)	Dummy variable 1 if the majority of IDs serve on three or more other corporate boards.
Board diligence	Mean value across all board members of the ratio of meetings attended to the total meetings held in a year.
Network size	The number of other firms with which the given firm shares common directors.
CEO power	Dummy variable 1 if CEO is the chair, promoter and the only executive member on the board or else 0.
Alternate CEO power	Dummy variable 1 if CEO is also the chair of the board and the founder/promoter of the firm.
CEO pay	Log of total compensation (sitting fees, salaries, contributions to provident fund, pension fund, bonus and commission, perquisites, and retirement benefits)
Independent Variables	
Treated	Dummy variable 1 if the firm is in the treatment group or else 0. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median and "High DIIs" firms are those in which DIIs' ownership is above the median before 2008.
Crisis	Dummy variable 1 for the pre-crisis period (2006-2008) and 0 for the post-crisis period (2009-2011).
$Year_{05-06}$	Dummy variable 1 if a firm-year observation is from year 2005 or 2006
$Year_{07}$	Dummy variable 1 if a firm-year observation is from year 2007
$Year_{08}$	Dummy variable 1 if a firm-year observation is from year 2008
$Year_{09}$	Dummy variable 1 if a firm-year observation is from year 2009
$Year_{10}$	Dummy variable 1 if a firm-year observation is from year 2010
$Year_{11-12}$	Dummy variable 1 if a firm-year observation is from year 2011 or 2012.

Institutional Ownership	
FIIs' ownership	Percentage of freely floated shares held by foreign institutional investors
DIIs' ownership	Percentage of freely floated shares held by domestic institutional investors
Δ FIIs	Change in FIIs' ownership (in percentage points)
Δ DIIs	Change in DIIs' ownership (in percentage points)
Other Financial Variables	
Firm size	Log of total assets
Firm age	Log of the age of firms (Incorporation year – year)
Leverage	Ratio of total debt to the shareholders' equity (in %)
STDDEV	One-month standard deviation of daily stock return
Sales	(Log) of total sales revenue
Export	Percentage of export sales revenue to sales revenue
Capital expenses	Total capital expenses scaled by total assets
Firm Performance Variables	
Return on assets	Net income divided by total assets (in %)
Tobin's Q	Ratio of the sum of the book value of debt, book value of preferred stock and market value of the stock to the book value of assets (in times)
Earnings per share	Net profit or (loss) after the deductions of preference divided by the weighted average number of equity shares outstanding scaled by average closing price
PBDITA	Profit before depreciation, interest, taxation and amortization scaled by total assets (in %)
Assets turnover ratio	Ratio of total sales and total assets (in times)
Innovation Variables	
Patent count	Number of patent applications filed in a given fiscal year
R&D	Total research and development expenses scaled by total assets

Appendix B: Robustness tests using a linear probability model

This table reports the results using the probit model. Both the coefficient and the marginal effect calculated using the delta method are reported. The main dependent variables are different proxies of board monitoring coded in binary. See Appendix A for definitions. $Treated_i$ is the dummy variable that takes the value of 1 if the firms are classified as treated firms and 0 if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes the value of 1 in the post-crisis years (2009-2012) and 0 for the pre-crisis years (2005- 2008). We include firm fixed effects and year fixed effects. Treatment group is defined as the firms with "High FIIs" whereas Control group is defined as the firms with "High DIIs". "High FIIs" firms are those in which FIIs' ownership is above the median FIIs' ownership and "High DIIs" firms are those in which DIIs' ownership is above the median DIIs' ownership before 2008. We use PSM with nearest neighborhood of 0.01 caliper using various firm-level characteristics to identify matched control groups. Control variables are defined in Appendix A. Standard errors are clustered at the firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance level respectively.

	CEO power (1)		Board busyness: Core et al. (1999) (2)		Board busyness: Fich and Shivdasani (2006) (3)		Alternate CEO power (4)	
	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect
$Treated_i \times Crisis_t$	0.112***	0.043***	0.090**	0.028**	0.193***	0.068***	0.144***	0.022***
	(3.25)	(9.33)	(2.23)	(2.25)	(3.78)	(3.84)	(5.54)	(3.33)
Tobin's Q	0.002		-0.018		-0.002		-0.052***	
	(0.27)		(-1.58)		(-0.26)		(-2.78)	
Firm size	0.054**		0.159***		0.187***		0.084***	
	(2.48)		(15.83)		(15.01)		(7.20)	
ROA	0.218**		0.406*		0.494**		0.537**	
	(2.05)		(1.81)		(2.06)		(2.23)	
Firm age	0.094***		0.245***		0.184***		0.031	
	(4.52)		(5.68)		(6.60)		(1.16)	
Leverage	-0.003		0.008**		0.018**		0.014***	
	(-1.60)		(2.47)		(2.16)		(3.89)	
R&D	-6.810***		-9.106***		-7.552***		-7.583***	
	(-2.78)		(-6.71)		(-4.02)		(-4.07)	
STDDEV	-0.700**		-0.139		-0.674**		0.370	
	(-2.07)		(-0.49)		(-2.45)		(0.91)	
Firm fixed effects	Yes		Yes		Yes		Yes	
Year fixed effects	Yes		Yes		Yes		Yes	
Log likelihood	-157.50		-240.26		-243.82		-218.63	
Number of observations	4,168		4,315		3,904		4,200	