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Do foreign institutional investors improve board monitoring?☆

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ABSTRACT

Exploiting the global financial crisis of 2007–08 as an exogenous shock that resulted in a significant decline in the ownership of foreign institutional investors (FIIs) in the Indian equity market, we find evidence of a causal link between FIIs' ownership and different dimensions of board monitoring. Specifically, the empirical results suggest that higher FIIs ownership leads to lower board size, busyness, network size, CEO power, CEO pay, and improved board diligence. However, we also document a negative link between FIIs' ownership and board independence, indicating that FIIs do not view independent directors as effective monitors. In terms of implications, our results suggest that improved board monitoring, induced by higher FIIs' ownership, leads to higher firm valuation and innovation activities.

1. Introduction

Although boards are recognized as a powerful internal corporate governance mechanism, their effectiveness can vary significantly (Adams et al., 2010; Tung, 2011).[1] This has spurred research into the underlying causes and strategies for enhancing board effectiveness. Implementing effective internal corporate governance mechanisms that enhance board effectiveness is associated with reducing information asymmetry and agency risks (Jensen & Meckling, 1976; Renders et al., 2010). Existing literature provides support to this conjecture (e.g., Brick and Chidambaran (2010) and Conheady et al. (2015)) by showing a positive association between

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[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.

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board monitoring, its effectiveness, and firm value.[2]

Our study adds to this growing area of literature by examining the influence of foreign institutional investors (FIIs) as a source of external corporate governance mechanism on the internal corporate governance mechanism, namely board effectiveness. Gillan and Starks (2003) offer a theoretical argument that growth in FIIs' ownership should result in improved board monitoring and overall governance of the host firm.[3] The literature highlights the role of FIIs in shaping corporate governance due to their substantial ownership in firms. FIIs are able to monitor board and management activities through voting rights and incentives via cash-flow rights. For instance, Bena et al. (2017), Ferreira and Matos (2008), and Aggarwal et al. (2011) show that FIIs' monitoring efforts are primarily directed toward enhancing long-term firm performance, demonstrating that FIIs can curb managers' incentives to overinvest and improve governance, particularly in countries with weak shareholder protection. FIIs act as independent monitors, being non-domestic investors with limited ties to the host firms, thereby reducing agency costs and improving board monitoring quality (Gillan & Starks, 2003; Tsang et al., 2019). They are also more likely to exit investments in firms with subpar governance (Leuz et al., 2009). FIIs' independence from local political pressure allows them to perform arms-length monitoring and resist decisions that do not maximize shareholder value. Moreover, their deep understanding of global corporate governance practices, experience, demand for information disclosure, and superior monitoring technologies empower them to foster better governance practices and board monitoring (Grinblatt & Keloharju, 2000). Unsurprisingly, anecdotal evidence suggests that FIIs influence board monitoring by removing directors whose decisions do not maximize their wealth and expropriate minority shareholders.[4]

Despite convincing theoretical arguments, to our knowledge, no prior empirical study uses board-level data to investigate the link between FIIs' ownership and different facets of board monitoring. In other words, 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 gap in the literature by associating exogenous changes in FIIs' ownership with variations in different facets of board monitoring.

Overcoming the endogeneity problem is a significant challenge in establishing a causal link between FIIs and board monitoring (Gillan & Starks, 2003).[5] In this study, we attempt to deal with this identification challenge by exploiting the 2007–08 financial crisis as an exogenous shock that significantly diminished the ownership of FIIs in the Indian equity market.[6] The 2007–08 global financial crisis provides an ideal opportunity for establishing a 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.

India serves as an appropriate setting for examining the significance of FIIs in enhancing board monitoring within emerging economies, offering several unique advantages. Firstly, the aftermath of the 2008–09 global financial crisis led to a marked reduction in FIIs' ownership in India, as we elaborate in Section 3.3. Notably, a substantial decline of approximately 13.2 % in FIIs' ownership post-crisis period occurred. This abrupt and significant decline presents an ideal setup for investigating the role of FIIs in board monitoring. Secondly, India is a pivotal destination for foreign investments, having witnessed substantial growth in FIIs' equity investments over the years (Neupane et al., 2021). For example, FIIs in India hold approximately 40 % of freely tradable shares (Crabtree, 2015). Similarly, net FII investments in the Indian equity market expanded from INR 440 billion (equivalent to approximately US$9.6 billion) in 2003–04 to INR 1102 billion (about US$18.01 billion) in 2014–15 (Reserve Bank of India, 2016). Lastly, the Indian market exhibits characteristics similar to other emerging markets, including substantial ownership concentration, limited investor protection standards, and a relatively weaker legal enforcement environment (Claessens et al., 2000; Gaur & Kumar, 2009; Gopalan & Gormley, 2013; Marshall et al., 2022; Neupane et al., 2021). Consequently, our findings, particularly concerning the impact of FIIs on board monitoring, may have broader applicability to economies sharing these common traits.

Our empirical investigation identifies seven board-level proxies that capture differing board monitoring features or channels. These characteristics include board size, board independence, board busyness, board diligence, network size, CEO power, and CEO pay level. For the identification strategy, we use a matched sample of treatment and control firms (based on the FIIs' level of ownership before 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 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. Following existing literature that typically employs a three to four-year window period surrounding the exogenous shock event (such as Fang et al., 2014; Kim, 2020), we investigate the level of board monitoring four years before and after the crisis.

The results of our study indicate that changes in FIIs' ownership trigger changes in different aspects of board monitoring. Overall, our empirical examinations reveal a negative relation between FIIs and board size, board independence, board busyness, boards

[2] Gillan (2006) provides an excellent overview of literature that documents the positive impact of effective board monitoring on firm value.

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

[4] See "Foreign investors rebel in bidding war for India's Fortis Healthcare." *The Financial Times*, 20th May 2018. https://www.ft.com/content/dc6e612e-5a63-11e8-bdb7-f6677d2e1ce8.

[5] 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).

[6] 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. India is also an appropriate setting for our study as relative to other developed markets, the Indian corporate sector is more challenged by the "twin agency" problems of controlling corporate insiders and state ruler discretion (Stulz, 2005).

outside network size, power and pay of CEOs, and positive impact on the board diligence. These results are consistent with the view that FIIs shrink the cost of monitoring associated with larger board size (Raheja, 2005) and avoid appointing boards that are independent from a regulatory point of view only but may not be "truly" independent (Cohen et al., 2012; Romano, 2005).[7] The negative impact on board busyness, the board's outside network size, and the power and pay of CEOs, coupled with the positive influence on board diligence, all show that FIIs exert a significant impact and improve the quality and intensity of the board's monitoring role. We explore the cross-sectional heterogeneity and find that the FIIs' influence is higher on firms with high promoters' ownership, foreign sales, and poor audit quality.

We also find 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. Similarly, we find that FIIs' positive link with board diligence is likely to influence firms' value and innovation positively. These findings suggest that firms where FIIs play a positive role in board monitoring are associated with higher firm valuation and increased firm innovation.

Our study makes two distinct yet interconnected contributions to the existing body of literature. Firstly, we fill a significant gap in the literature by exploring the specific channels through which FIIs enhance firm-level governance. We do this by examining the nexus between FIIs' ownership and board monitoring of firms (Agarwal & Chaudhry, 2022; Gillan & Starks, 2003; Huang & Zhu, 2015). While existing literature shows that FIIs play a significant role in improving the overall *Governance Index* (Aggarwal et al., 2011) and contribute to improving internal quality control (Li et al., 2021),[8] these studies do not directly investigate the link between FIIs' ownership and the specific channels through which they influence corporate governance.

Our study adds to the growing body of literature by investigating how FIIs, as external corporate governance mechanisms, can influence the internal corporate governance mechanism, particularly board monitoring. Our study attempts to overcome the challenge of endogeneity, a critical concern in establishing a causal link between FIIs and board monitoring, as highlighted by Gillan and Starks (2003). We exploit the 2007–08 global financial crisis as an exogenous shock that significantly reduced FIIs' ownership in the Indian equity market. To the best of our knowledge, this is the first study to empirically ascertain that changes in FIIs' ownership are linked to positive aspects of board monitoring using an exogenous shock to establish causality.

Secondly, our study also contributes to the literature that examines the impact of FIIs on firm performance and innovation. Theories on board monitoring suggest that efficient board monitoring enhances firm value and innovation (An et al., 2021; Guo & Masulis, 2015; Liu et al., 2015). Likewise, existing literature provides compelling evidence of the impact of FIIs on firm performance and innovation. For instance, Ferreira and Matos (2008), Aggarwal et al. (2011), and Abdallah and Ismail (2017) demonstrate the instrumental role of FIIs in improving firm valuations and operating performance by improving the corporate governance of the firms. In terms of innovation activities, Luong et al. (2017) and Bena et al. (2017) document that FIIs promote long-term tangible investments, such as patents and R&D. Bena et al. (2017) demonstrate that the FIIs improve innovation through their monitoring role. In the Indian context, Agarwal and Chaudhry (2022) show that foreign controlling shareholders are associated with efficient investment decisions. Our study builds upon these findings by illustrating how changes in various specific board-level characteristics, driven by shifts in FIIs' ownership, mediate the relationship between FIIs and firm performance and innovation activities. Thus, our research enriches our understanding of corporate governance and sheds light on how FIIs influence firm-level outcomes.

Our findings have several policy implications. The findings offer compelling insights that underscore the potential benefits of opening emerging markets to FIIs. The study reveals that the presence and influence of FIIs can substantially enhance the effectiveness of board monitoring, thereby mitigating inherent agency problems. This finding suggests that leveraging the presence of FIIs in emerging markets can be an effective strategy for improving corporate governance and fostering a more robust oversight of board activities. Thus, our findings support the argument that FIIs, acting as external corporate governance mechanisms, can generate positive externalities within emerging markets through their active participation in board monitoring. This underscores the importance of formulating conducive and prudent policies for attracting investments from FIIs.

The remainder of the paper is organized as follows. We present the discussion of relevant literature and develop the testable hypotheses in Section 2. Section 3 discusses the data sources and all the variables used in this study. We also discuss the financial crisis as an exogenous shock and the identification strategy. Section 4 discusses empirical findings, including 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 virtue of their large shareholding, have the ability (through voting rights) and the incentive

[7] 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 (https://indianboards.com/files/clause_49.pdf). However, "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,* 30th November 2015).

[8] 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.

(through cash-flow rights) to monitor the board and the management.[9] As FIIs' investment in emerging markets has increased, this can influence corporate governance through direct intervention or indirect supply and demand effects.[10] It is argued that FIIs' monitoring primarily aims to enhance firms' long-term performance (Bena et al., 2017). For instance, Ferreira and Matos (2008) find that FIIs' pressure can curtail a manager's incentives to (over)invest, providing evidence that FIIs can influence firm value through monitoring.[11] Similarly, Aggarwal et al. (2011) find that FIIs dominate in improving firm-level governance in countries with weak shareholder protection.[12] Finally, Huang and Zhu (2015) suggest that FIIs perform arms-length monitoring to limit expropriation by controlling shareholders and promoting the rule of market-based 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 in for several reasons. First, by virtue of being non-domestic investors, these FIIs act as independent monitors as they are less prone to have links in business or ties to management with the host firms (Aggarwal et al., 2011; Bena et al., 2017; Gillan & Starks, 2003; Kim et al., 2016). As ties to corporate insiders burden them less, FIIs can help reduce agency costs 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 or risk losing investment. For example, Leuz et al. (2009) argue that FIIs will likely leave firms that do not improve their governance. Third, compared to domestic institutional investors (DIIs), FIIs are less prone to local political pressure in emerging markets; hence, they are more likely to perform arms-length monitoring (Huang & Zhu, 2015). For instance, Kim et al. (2016) argue that FIIs can resist firms' non-shareholder value-maximizing decisions without political pressure. Fourth, FIIs may possess a deeper understanding of the best global corporate governance practices and have a wide range of experience in improving the firm's monitoring (Kim et al., 2016). This knowledge, experience, and skill set put them in a powerful position to ensure that firms adopt best governance practices, including better board monitoring (Aggarwal et al., 2011). FIIs will likely demand higher information disclosure and transparency to ensure they can function as better board monitors. Finally, FIIs are typically equipped with innovative investment technology, cutting-edge analytical tools, and a pool of talented fund managers who could help them improve the effectiveness and efficiency of board monitoring (Kim et al., 2016). 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 proxies reflecting different board monitoring qualities. This 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 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 (Jensen, 1993; Lipton & Lorsch, 1992). Similarly, Raheja (2005) and Harris and Raviv (2008) theoretically suggest that firms where insiders' interests align with 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. Kinateder et al. (2021) also show that larger board size is associated with lower credit risk, and Zhang et al. (2021) report large boards adopt the use of renewable energy.

Boone et al. (2007) propose two main hypotheses, namely, scope of operation and monitoring hypothesis, that determine the size of a board. They argue that the board's size depends on the business's scope and complexity of operations. Coles et al. (2008) also find that complex firms require higher advising needs; hence, they demand larger boards. Likewise, Boone et al. (2007) and Linck et al. (2008) argue that firms with higher free-riding problems and information asymmetry tend to have larger boards due to increased monitoring needs.

Likewise, the literature on the preference of FIIs regarding the board size is also inconclusive. While Aggarwal et al. (2011) note that FIIs prefer firms with board sizes between five and 16, Chen (2015) reports that firms with large foreign ownership are associated with reduced board size. Miletkov et al. (2014) and Banerjee et al. (2019), on the other hand, do not find any association between board size and FIIs ownership. Based on the mixed theoretical predictions and empirical evidence on the optimal size of the board and its effectiveness, as well as the preference of FIIs, the impact of FIIs' ownership on board size remains an empirical issue. Hence, we develop our first sub-hypotheses as:

[9] See Shleifer and Vishny (1986), Kang and Shivdasani (1995), Claessens et al. (2002), and NOE (2002).

[10] 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.

[11] 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.

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

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.[13] Despite governance codes and mandatory rules worldwide pushing for higher representation of IDs on the board, empirical evidence on its effectiveness is mixed. Theorists observe that although IDs are less affiliated with CEOs, they possess significantly poorer access to firm information and have weaker financial incentives to perform than corporate officers. Raheja (2005) and Adams and Ferriera (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) refer to this as the "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., R&D-intensive firms prefer more independent boards. Likewise, based on Boone et al. (2007) "monitoring hypothesis", an optimal board employs a large number of IDs when the cost of monitoring is low and the 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. Kinateder et al. (2021) also do not find any significant impact of board independence on credit risk.

Concerning emerging markets, empirical studies indicate that IDs are generally ineffective board monitors. For example, Ma and Khanna (2015) show that IDs typically defer to the top managers as they feel obliged to have 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.

The literature on the preference of FIIs regarding board independence is inconclusive as well. While Aggarwal et al. (2011) and Ho et al. (2020) show that FIIs improve the board independence of their investee firms, Banerjee et al. (2019) demonstrate a lack of association between FIIs and independent boards in emerging markets. 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:

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 & Sen, 2019). Adams et al. (2010) propose a simple theory that 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 (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 and advise management effectively, negatively affecting firm performance. Hauser (2018) also argues that the effectiveness of board members (be they insiders or independent) depends on their ability to devote substantial effort and time to gathering relevant information, providing adequate advice, and assisting in deliberating decisions. To the best of our knowledge, there is no empirical study that examines the impact of FIIs on the board's busyness. Hence, given the differing evidence on the monitoring ability of busy boards, whether FIIs should strive to decrease 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. Similarly, Hermalin (2005) argues that board diligence improves board

[13] 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.

monitoring by making CEOs work harder and deliver higher CEO effort. Vafeas (1999) and Adams (2005) view the frequency of board meetings as an essential 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) find that the attendance at board meetings by the directors themselves, a proxy of better board monitoring, enhances firm performance significantly (Brick and Chidambaran (2010). Sarkar et al. (2008) suggest that a diligent board reduces earnings management. Also, Col and Sen (2019) report that institutional ownership positively affects board diligence. Vafeas (1999) finds that the number of board meetings is negatively related to insider ownership. Given a lack of anecdotal evidence on the preference of FIIs with regards to board diligence and as most of the literature suggests that diligent boards are effective monitors, 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 by 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 literature. A board network could benefit firms if such a network facilitates information or knowledge transfer. For instance, Khanna and Thomas (2009) argue that director interlocks could facilitate coordination across firms due to joint resource allocation and information dissemination.

However, Fich and White (2003) and Fich and Shivdasani (2006) argue that boards comprising directors with large outside networks are less likely to perform a better monitoring role, potentially reducing board members' independence and exacerbating agency problems. Firms with higher director network connections are also related to higher CEO compensation and involvement in options backdating, potentially increasing agency problems (Bizjak et al., 2009). Fich and White (2005) also report that board networks, especially CEOs' networks, benefit the directors themselves but not the firm's shareholders.[14] To the best of our knowledge, there is no empirical study that reveals the preference of FIIs regarding the board network; hence, against the backdrop of conflicting prior evidence on the effectiveness of board networks, 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 more extensive board networks.

2.7. FIIs' ownership and CEO power

CEO's power refers to the ability of the CEO to influence critical 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). Regarding the effect of powerful CEOs on 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's efficiency (Bebchuk & Fried, 2003; Ryan & Wiggins, 2004). Onali et al. (2016) state that powerful CEOs may invest in value-destroying projects to meet their managerial objectives. These activities may include increasing perquisites, initiating empire-building, and exhibiting expense preference behavior. In terms of its effectiveness, studies report that CEO power is positively associated with increased cost of debt, increased level of executive compensation, lower accounting profitability, and lower (negative) acquisition announcement returns (Adams et al., 2005; Bebchuk et al., 2011; Jiraporn et al., 2012; Liu & Jiraporn, 2010).

Concerning the preference of FIIs for CEO power, the existing literature shows that FIIs are less likely to invest in firms with powerful CEOs (Goyer & Jung, 2011; Wei et al., 2022). Given the negative impact of CEO power on 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.

2.8. FIIs' ownership and CEO pay

CEO pay denotes the total remuneration (such as salaries, bonuses, fees, and other benefits) the CEO receives in a year. Agency theory suggests that compensation is a primary tool to control CEO behavior and align the interests of shareholders and managers, thereby reducing agency costs (Jensen & Meckling, 1976; Nyberg & Fulmer, 2010). However, empirical evidence questions the validity of agency theory (Dalton et al., 2007). Studies argue that CEOs are paid for luck and performance beyond their control, and this

[14] 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.

behavior is most assertive among poorly governed firms (Bertrand and Mullainathan (2001). Empirical evidence also suggests that CEOs are overpaid, and these overcompensated CEOs exacerbate the agency's problems as they are not focused on protecting shareholders' interests (Dah & Frye, 2017). The evidence about the effectiveness of CEO pay is also mixed. While Chang et al. (2010) argue that CEO pay reflects the ability of the CEO to affect firm performance positively, Brick et al. (2006) find that cronyism exists in determining CEO compensation. Such excess compensation leads to poor firm performance (Core et al., 1999).

The literature on the impact of foreign investors on CEO pay is also mixed. Cao et al. (2011) show that the presence of foreign investors increases CEO pay, whereas Ming et al. (2018) show that FIIs are associated with increased monitoring through reduced CEO compensation. As the literature provides mixed evidence on the effect of CEO pay on board monitoring and the preference of FIIs, 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 collect data for all the publicly listed companies in India (both in the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE)) from 2005 to 2012[15] to investigate the period between four years before and four years after the financial crisis.[16] 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.

The firm-year level data are gathered from the Prowess database maintained by the Centre for Monitoring the Indian Economy (CMIE). Prowess provides detailed information on the ownership structure and other financial (stock market and non-market-based) information of Indian firms.[17] Prowess also supplies comprehensive data on board members of each firm-year, such as the 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 several other companies. Information on board meetings, dates, and purposes is accessed from Prowess.

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.[18] Regarding 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 & Sen, 2019). Following Col and Sen (2019), 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).

3.2.1.1. Control variables. Following the literature, we also include a set of control variables that could be correlated with board monitoring (see Appendix A for definition). First, we control factors accounting 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. Following the literature, we expect *Tobin's Q, R&D*, and *STDDEV* have a negative effect on board size, board independence, board busyness, network size, CEO power, and pay but a positive effect on board diligence.

Second, we control factors that account for the firm's complexity and scope of operation (Baker & Gompers, 2003; Boone et al., 2007; Guest, 2008; Linck et al., 2008). We proxy a firm's complexity and scope of operation using *Firm size, Leverage*, and *Firm age*. We expect *Firm size*, *Leverage*, and *Firm age* to negatively affect board monitoring as larger and more complex firms have more significant agency problems (Boone et al., 2007).[19] Finally, we also include return on assets (*ROA*) to control for the impact of the firm's

[15] In India, the fiscal year ends on the 31st of March of the subsequent year.
[16] We also use a three-year and five-year window period and find consistent results. However, we use four-year window period as it allows the governance impact to be materialized following the FIIs decline in ownership. We avoid using longer window periods to avoid irrelevant and noisy events creeping in during the sample period that may affect our estimation.
[17] 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. (2020).
[18] 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 & Sen, 2019).
[19] Leverage also proxies for change in a firm's capital structure and default risk.

profitability on the board monitoring (Banerjee & Homroy, 2018; Cheng, 2008).

3.2.1.2. Firm performance and innovation variables. We use return on assets (*ROA*) and *Tobin's Q* to measure firm valuation (defined in the previous section). We also use other proxies to measure firm performance, such as earnings per share (*EPS*), profit before depreciation, interest, taxation, and amortizations scaled by total assets (*PBDITA*), and *Assets turnover ratio* (Banerjee & Homroy, 2018). See Appendix A for the definition.

We apply two proxies of innovation activities. These include *R&D* (scaled by total sales) and *Patent count* (Helmers et al., 2017). Patents are the most widely used proxy of a firm's innovation activities as they are the measurable output from the innovation process. 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.[20] We collect patent data from several sources. First, we rely on the Indian and international patent data until 2009 from Helmers et al. (2017).[21] Second, for additional periods, we collect data from two sources. Firstly, the information on Indian patent applications is collected from the Indian Patent Advanced Search System (InPASS).[22] While searching for patents in InPASS, we use the inventor country as "INDIA" and the application date between 1st January 2010 and 31st March 2018. 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 an Indian firm has filed. Secondly, 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. Due to the absence of a unique identifier in the patent data, we manually match the names of the firms in the patent data from each source with the names of our sample firms in the Prowess database.

3.2.1.3. Descriptive statistics. Table 1 presents the firm-year descriptive statistics of the main variables, firm performance, innovation, and other financial variables, which we compare to other relevant Indian studies. All the unbounded variables are winsorized at the 1 % extreme. The monetary variables are denoted in million rupees (INR Million). Panel A shows that the average board comprises around 9.3 members, similar to the 9.9 members Banerjee and Homroy (2018) reported. Given the enforcement of a mandatory reform in 2000, named Clause 49, we expect the average board independence to be close to 50 %.[23] Banerjee and Homroy (2018) report an average board independence of around 51 %, and we find an average board independence of about 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 the mean *Network size* suggests. 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). The slight differences with Banerjee and Homroy (2018) could be due to the difference in sample firms used. We use all the firms listed in NSE and BSE, whereas Banerjee and Homroy (2018) focus only on BSE500 companies.

Panel B shows the FIIs' average ownership of around 11.62 % and DIIs' average ownership of approximately 28.54 %. Panel C shows that the average *ROA* of firms in our sample is 3.57 %, *Tobin's Q* is about 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).[24] 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, an average age of 33 years, and leverage of 125 %. Overall, our descriptive results are similar to other Indian studies, such as Vig (2013), Helmers et al. (2017), Banerjee and Homroy (2018), and Col and Sen (2019).

3.3. Exogenous shock and identification strategy

Motivated by existing studies such as Puri et al. (2011), Kovner (2012), Lins et al. (2013), and Buchanan et al. (2018), to overcome endogeneity concerns, in this study, we use the financial crisis of 2008–09 as an exogenous shock to ownership of FIIs in emerging markets. The financial crisis provides an interesting opportunity to focus on the monitoring effect of FIIs. Recent studies show that foreign investors display a "flight to familiarity" during crisis periods, i.e., during turbulent periods, they invest in markets with familiarity and a lower level of information asymmetry (Tanos & Jimenez-Garcès, 2022). During the financial crisis, FIIs are more likely to withdraw from the Indian emerging market due to the presence of a high level of information asymmetry. Fig. 1 shows the average FIIs' ownership and change in FIIs' ownership.[25] Consistent with our view, the share of FIIs' ownership declined sharply after the crisis

[20] Similar to Helmers et al. (2017), we are 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.

[21] 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 to 2009 and collect additional patent data.

[22] https://ipindiaservices.gov.in/publicsearch.

[23] 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.

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

[25] We follow Patnaik and Shah (2013) and Bhatta et al. (2022) 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.

Table 1
Summary statistics. The table provides the summary statistics of all the variables in our full sample. The sample period is 2005–2012. 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

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 with an ideal identification set-up to test the implications of this decline on the different characteristics of board monitoring/effectiveness. As the financial crisis would have affected all the firms, we identify a group of firms that share similar firm characteristics prior to the crisis.

Although the shock is exogenous, we need a highly comparable group of firms whose FIIs' ownership should be differentially affected by the global financial crisis but share similar firm characteristics. We construct the treatment and control group firms following Patnaik and Shah (2013), who find significant differences between FIIs' and DIIs' firm preferences along specific dimensions of firm characteristics in the Indian market. For instance, they find that FIIs favor younger, larger, lower risk, higher beta, and 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).[26] 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, we drop firms categorized as both "High FIIs" and "High DIIs" among these two groups.[27] Thus, the remaining "High FIIs" firms, with significantly higher levels of FIIs ownership relative to DIIs ownership, are categorized as *treatment* firms. Similarly, the remaining "High DIIs" firms, with significantly higher DIIs ownership relative to FIIs ownership, are categorized as *control* firms. The treatment firms are essentially a set of firms that FIIs choose for investment but are

[26] Prowess provides ownership data with its classification starting in 2002.
[27] 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.

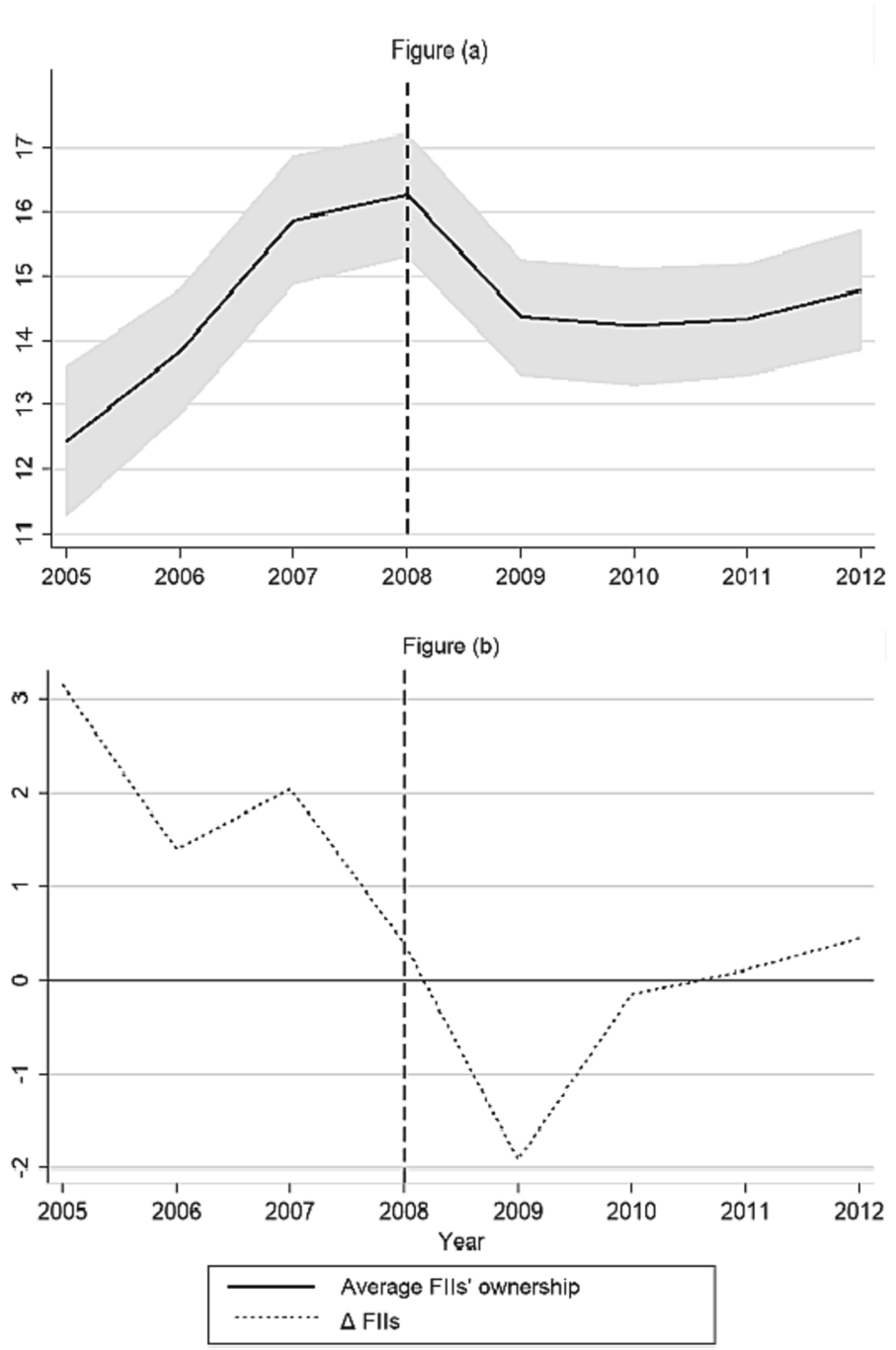

Fig. 1. Average FIIs' ownership. This figure plots the average FIIs' ownership (y-axis) in Figure (a) and the change in FIIs' ownership (y-axis) in Figure (b) four years (x-axis) before and after the financial crisis (dash vertical line). The shaded area in Figure (a) shows the 95% confidence interval.

generally ignored by DIIs, and the control firms are selected 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 4,642 firms in the universe, we identify 1,512 firms with both "High FIIs" and "High DIIs" and 1,269 firms in a "None" category. After dropping firms from these categories, our sample includes 689 firms with high FIIs' ownership and low DIIs' ownership and 823 firms with high DIIs' ownership and low FIIs' ownership.

To further eliminate the concern that the differential impact of FIIs on board monitoring may be due to the differential firm preferences, we perform propensity score matching (PSM) to identify a matched set of treatment and control firms in a similar spirit to

Fang et al. (2014) and Yunhao et al. (2020). To do so, we first estimate the probit model in which the dependent variable equals 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 matching covariates (following Col & Sen, 2019). In keeping with the literature, we expect that firms with higher FIIs' ownership exhibit higher market valuations, are larger, are younger, have higher *ROA,* and have lower leverage (Douma et al., 2006; Ferreira & Matos, 2008; Patnaik & Shah, 2013). These variables are included to help satisfy the parallel trend assumptions, as there should not be any firm-specific differences in characteristics that attract FIIs between the treatment and the control group prior to the crisis. 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 firm characteristics variation between the treatment and the control group. We then use the propensity scores from the model (1) to perform one-to-one nearest-neighbor PSM without replacement within a 0.01 caliper and end up with 390 unique pairs of matched firms. Although we lose about half of the sample firms in our study, the matching process allows us to focus on treatment and control firms that do not differ significantly in terms of matching covariates and help satisfy parallel trend assumptions.

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 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 and control group firms are significant. The diagnostic tests show that our approach to using the PSM process removes meaningful observable differences between firms with high FIIs' ownership and firms with high DIIs' ownership.

We follow Bertrand and Mullainathan (2003) to examine the parallel trend and how board monitoring changes over time. Specifically, we run the 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 a dummy variable that takes the value of one if a firm is classified as treated and zero if control. $Year_{05-06}$, $Year_{07}$, $Year_{08}$, $Year_{09}$, $Year_{10}$, and $Year_{11-12}$ indicate firm-year observations. For example, $Year_{05-06}$ is a dummy variable that takes value of one 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 % or 5 % level. The difference in the significance of the before and after dummies shows a parallel trend in the board monitoring between the treatment and control groups before the crisis. Further, it also highlights that the reverse causality does not drive the results, and the change in board monitoring is casually affected by the change in the level of FIIs' ownership due to the crisis.

We plot the average and change in FIIs' ownership for the treatment and the control groups in Fig. 2.[28] The average FIIs' ownership increased in both the treatment and the control group before the crisis. However, FIIs' ownership of the treatment group firms declined sharply from around 21.6 % in 2008 to 15.4 % in 2009 (a decline of 6.2 % points) and decreased further to 13.3 % in 2012. In contrast, the control group's average FIIs ownership remained relatively similar at 4.1 % in 2008 to 4.2 % in 2009 and increased to 6.5 % in 2012. The key takeaway from this figure is that compared to the parallel trend observed between treatment and control groups before the end of 2009, FIIs' ownership of firms in the treated group significantly declined 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.

3.4. Pre- and post-crisis summary figures

We conduct a univariate analysis comparing firm-year summary statistics of the board and other firm-level characteristics before and after the crisis of 2008. Panels A and B of Table 4 report the mean and median for the pre- (2005–2008) and post-crisis (2009–2012) periods, 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 increased significantly following the crisis, based on all definitions. However, board diligence seems to be worse relative to the pre-crisis period, 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 firm in terms of *ROA, Tobin's Q, EPS, PBDITA*, and *Asset turnover ratio* all declined significantly in the post-crisis period, which is expected given the impact of the crisis. However, the size of firms in terms of assets and sales revenue increased significantly following the crisis. Variables related to firm innovation, i.e., average *Patent count* and *R&D* reduced significantly

[28] 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.

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	4,642
Less: Number of firms classified as "None"	1,669
Less: Number of firms classified both as "High FIIs" and "High DIIs"	1,861
Remaining firms	1,512
Number of firms classified as "High FIIs" but no "High DIIs"	689
Number of firms classified as "High DIIs" but no "High FIIs"	823

following the crisis period, again consistent with the impact of a financial shock.

4. Empirical analysis

We begin our empirical investigation with a baseline difference-in-differences (DiD) regression followed by PSM-DiD regression. We also perform robustness tests on our main result 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 present the summary figures of 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 ownership change between the treatment and control firms during the pre- and post-crisis period. Corresponding *t*-statistics testing the null hypothesis that the DiD estimators are zero are presented in parentheses.

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 the control group. The magnitude of the DiD estimator suggests that, on average, the exogenous shock leads to a significant decrease in FIIs' ownership of about 5.1 % in the four years after the crisis relative to the four years 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 Panel B of Table 5 show a significant increase in the board size of the treated firms (firms with high FIIs' ownership) in the post-crisis period compared to the control firms, which is not statistically significant. Notably, 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 board independence. This could suggest that board independence is less significant to FIIs than expected. We interpret this result cautiously as credible evidence suggests that incumbent managers in emerging markets can appoint independent directors according to regulatory definitions but can still be overly sympathetic to management (Cohen et al., 2012; Romano, 2005). This implies that lower monitoring pressure from FIIs in the post-crisis period could have motivated managers to increase the so-called regulatory-defined IDs. Still, they may not be very effective in monitoring, but they support managerial decisions.

The mean DiD estimate for board busyness is significantly positive, indicating that higher FIIs' ownership is associated with lower board busyness in the pre-crisis period, i.e., a 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.

These DiD univariate results indicate 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 analysis

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:

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

Table 3

Propensity score matching. The table reports the results of Propensity Score Matching (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 zero if in the treatment group and one 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. $\boldsymbol{Treated}_i$ is a dummy variable that takes the value of one if a firm is classified as a treated firm and zero if a firm is classified as a control firm. $\boldsymbol{Year}_{05-06}$, $\boldsymbol{Year}_{07}$, $\boldsymbol{Year}_{08}$, $\boldsymbol{Year}_{09}$, $\boldsymbol{Year}_{10}$, and $\boldsymbol{Year}_{11-12}$ indicate firm-year observations. Firm and year 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 = one if in the treatment group; zero 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

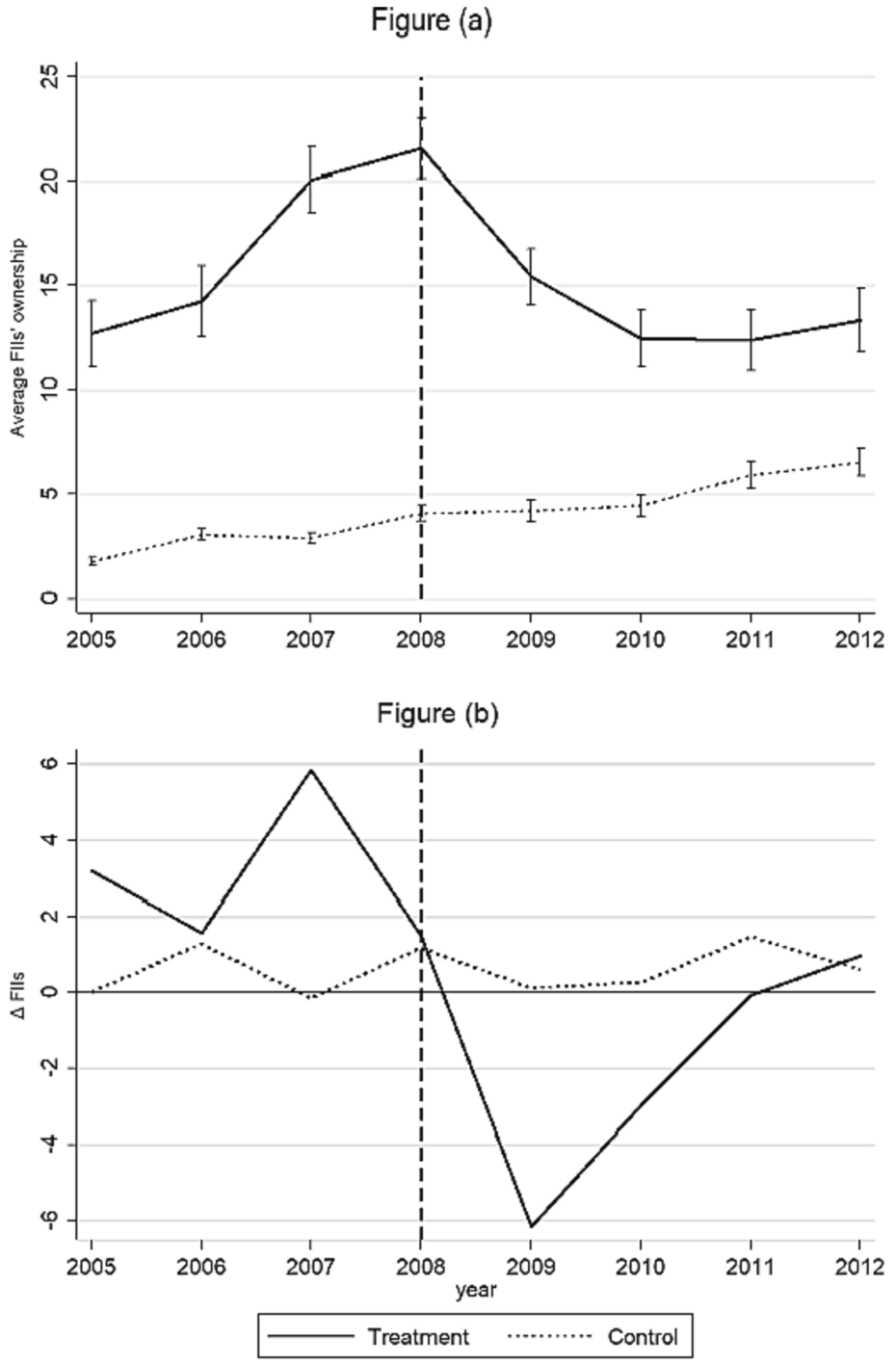

Fig. 2. Average FIIs' ownership of treatment and control group. This figure shows the trend in the average FIIs' ownership (y-axis) in Figure (a) and the trend in the change in FIIs' ownership (y-axis) in Figure (b) for the firms in the treatment group (solid black line) and the firms in the control 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 4
Pre and post summary figures.

	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**

This table compares the important variables before and after the financial crisis. Panel A shows the comparison of means and 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.

Table 5
Mean difference-in-differences analysis.

Panel A: Ownership

	Mean treatmentdifference (post-pre)	Mean controldifference (post-pre)	Mean DiDestimator (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 treatmentdifference (post-pre)	Mean controldifference (post-pre)	Mean DiDestimator (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)

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.

where $Crisis_t$ is 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, which captures the DiD effect.

A couple of points are worth noting before discussing the equation (2) results reported in Table 6. First, the β coefficient 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 2008–09 financial crisis was a negative shock that resulted in a decline in FIIs ownership, we need to interpret the β coefficient inversely. For example, the positive coefficient of β on board size (as a dependent variable) would suggest a larger board size for treated firms, compared to control firms, after the shock when there is a 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 results of Puri et al. (2011) and 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 models 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 the 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 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).

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. Next, in the model (2), we include board independence as our main dependent variable.

The DiD estimator is positive and statistically significant, supporting 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 indicate that FIIs believe that corporate

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

	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

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 a dummy variable that takes the value of one if firms are classified as treated firms and zero if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes value of one in the post-crisis years (2009–2012) and zero 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 the 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 levels, respectively.

managers in emerging markets could appoint directors who may appear independent from a regulatory definition 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 board's monitoring role. The DiD estimation of board diligence, as reported in the model (4), is negative and significant, offering support 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 was higher than in the post-crisis period.

Concerning network size, as presented in the 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 to improve the effectiveness of their monitoring role.

Similarly, we also examine the power of the CEO in model (6). The DiD estimation is positive and statistically significant, supporting sub-hypothesis 6. The result suggests that the treatment firms have powerful CEOs in the post-crisis period compared to the control firms. 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 CEOs' pay in the post-crisis period compared to the control firms.

Taken together, the above results provide 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 monitor the board effectively. 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

We conduct several additional tests to investigate the robustness of our baseline results. We use shock-based estimations, employ

Table 7
FIIs' ownership and instrumental variable regression

Panel A: Change in FIIs' ownership

	Board size (1)	Board independence (2)	Board busyness (3)	Board diligence (4)	Network size (5)	CEO power (6)	CEO pay (7)
$Treated_i \times Crisis_t \times \Delta FII_{it}$	−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 (1)	Board independence (2)	Board busyness (3)	Board diligence (4)	Network size (5)	CEO power (6)	CEO pay (7)
$Treated_i \times Crisis_t \times IV_{it}$	−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

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 a dummy variable that takes the value of one if firms are classified as treated firms and zero if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes value of one in post-crisis years (2009–2012) and zero in 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 IV_{it}. The IV_{it}. is the predicted 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.

alternative definitions of board monitoring, followed by an alternative identification strategy, and conduct a series of false experiments.

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

Our identification strategy assumes 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 capture other events, such as global risk aversion, and not the exogeneity of changes in FIIs' ownership. We estimate the following regression equation to capture the specific effect of FIIs' ownership:

$$y_{it} = \beta_1 Treated_i \times Crisis_t \times \Delta FII_{it} + \beta_2 Treated_i \times Crisis_t + \beta_3 Treated_i \times \Delta FII_{it} + \beta_4 Crisis_t \times \Delta FII_{it} + \beta_5 \Delta FII_{it} + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it} \quad (3)$$

In equation (3), ΔFII_{it} is the change in FIIs' ownership in firm i in year t. Here, we interact the DiD variable with actual time-varying change in FIIs' ownership variable. The $Treated_i \times Crisis_t \times \Delta FII_{it}$ term captures the DiD effect and the actual exogenous change in FIIs' ownership driven by the crisis. All other variables are as previously defined.

The results are presented in Panel A of Table 7. We find evidence consistent with our main results reported in Table 6. The increase in 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.

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, our existing control variables may not capture that. 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 with the error term in the regression. Following Desender et al. (2016), we generate an instrument by calculating the average FIIs' ownership (except the focal firm) within the same industry and of similar size.[29] We argue that the average 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, denoted as IV_{it}.

The results are presented in Panel B of Table 7.[30] 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 appear 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 before the crisis. Second, following Core et al. (1999) and Fich and Shivdasani (2006), we use two alternative definitions of board busyness (see Appendix A). Third, we use an alternative definition of CEO power (*Alternative CEO Power*), a dummy variable that takes a value of one if the CEO is chair and the promoter and zero otherwise. The results based on the probit model are presented in Appendix B. Finally, as an alternative definition for CEO pay, we use a fraction of variable pay scaled by total pay as the dependent variable (Banerjee & 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 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.

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.[31] As discussed in Section 3.3, the "None" group consists of firms that have no FII and DII investment, i.e., these firms have lower FIIs' and DIIs' ownership. Similar to 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:

[29] 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.

[30] 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.

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

Table 8
Robustness test: Alternative definitions of dependent variables.

	Board size (#) (1)	Board independence (#) (1)	Board busyness		Alternate CEO power (5)	CEO variable pay (6)
			Core et al. (1999) (3)	Fich and Shivdasani (2006) (4)		
$Treated_i \times Crisis_t$	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

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 a dummy variable that takes value of one if firms are classified as the treatment firms and zero if firms are classified as the control firms. $Crisis_t$ is also a dummy variable that takes value of one in post-crisis years (2009-2012) and zero in 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 firm level. In this table, *, ** and *** denote statistical significance at the 10%, 5% and 1% significance levels, respectively.

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

$Alt\_Treated_i$ is a dummy variable that takes the value of one for firms in the "High FIIs" category and zero for firms in the "None" category. All other variables are 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 to board independence in the Indian firms in which they invest.

An additional concern with our DiD estimates is that the changes we observe in board monitoring measures and FIIs could simply capture the continuation of a pre-existing regular trend that repeats itself regularly. This concern is partly mitigated by the non-parallel trends observed in Fig. 2 and by including year-fixed effects. Nonetheless, to address this concern further, we supplement the analysis by running a series of false experiments to hone the impact 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:

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

$FalseCrisis_t$ is a dummy variable that takes 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 due to the financial crisis rather than to some other confounding event or pre-existing trend factors.

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

	Board size (1)	Board independence (2)	Board busyness (3)	Board diligence (4)	Network size (5)	CEO power (6)	CEO pay (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

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 a dummy variable that takes value of one if firms are classified as the alternate treated firms and zero if firms are classified as the alternate control firms. $Crisis_t$ is also a dummy variable that takes value of one in the post-crisis years (2009–2012) and zero in the 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 the 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 levels, respectively.

4.4. Cross-sectional heterogeneity

In this section, we conduct additional tests to examine if there are heterogeneous treatment effects. In an emerging market context, concentrated ownership by founders (promoters) is a prominent and important ownership feature (Morck & Yeung, 2003). however, these firms suffer from principal-principal agency problems where smaller shareholders face a threat of expropriation from larger shareholders (Villalonga & Amit, 2006). In this context, in a post-crisis period with a decline in FIIs' ownership, there may be a significant negative impact on board monitoring in firms with higher ownership concentration. Likewise, empirical literature also shows that increased internalization of firms leads to organizational problems and higher monitoring costs due to the size and complexity of its operations (Tihanyi et al., 2000). As such, we expect the negative impact on the board monitoring with a decline in FIIs ownership to be higher in firms with higher internalization. Similarly, firms with lower auditor quality are associated with poor corporate governance and board monitoring (Carcello et al., 2002; Lin & Hwang, 2010). Accordingly, we posit the negative impact of the reduction in FIIs' ownership during the post-crisis period on the board monitoring to be attenuated in firms with lower audit quality. We use three proxies to measure higher ownership concentration, firm internalization, and audit quality: promoters' ownership, foreign sales, and Big Four auditors, respectively. We define high promoters' ownership as the firms where the promoters own more than 50 % of the outstanding shares. Firms with a presence of export revenue is defined as international firms. Likewise, firms audited by Big Four auditors and their associated firms are defined as Big Four audited firms (Col & Sen, 2019).[32]

We rerun equation (2) for a sub-sample of firms with high promoter ownership, presence of foreign sales, and presence of big four auditors. The results are presented in Table 11. For the sake of brevity, we only report coefficients of the dependent variables for the sub-sample of firms and do not report the control variables. Consistent with our expectation, we find that the impact of the decline in FIIs' ownership in the post-crisis period on the board monitoring is higher on the firms with higher promoters' ownership, higher foreign sales, and poor audit quality.

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

Our results so far suggest that FIIs in India improve board monitoring. Since the principal objective of the board is to improve the firm's performance through its monitoring and advising functions, it follows that the FIIs' improvement of board monitoring should impact firm performance.[33] However, whether firms benefit from improved monitoring by FIIs remains an empirical issue. To assess the improvement in board monitoring, we study the effect on two dimensions of firm performance: firm value and innovation.

[32] Following Col and Sen (2019), the big four auditors in India are PwC and its associated audit firms, Deloitte and its associated audit firms, KPMG and its associated audit firms, and Ernst & Young and its associated audit firms.

[33] Although existing studies provide evidence of a decline in firm value after the financial crisis, several studies highlight heterogeneity in the impact. For instance, Enikolopov et al. (2014) show that firms with high level of transparency had lower impact on firm value during the crisis, Buchanan et al. (2018) show that firms with higher level of CSR had lower firm value after financial crisis, and state-owned enterprises and firm with higher government ownership also had small reduction in firm value in post-crisis (Beuselinck et al., 2017; Liu et al., 2012). Likewise, Francis et al. (2012) report that the firm performance during the crisis period is a function of firm-level differences in corporate boards.

Table 10
Robustness test: False experiments.

	Board size (1)	Board independence (2)	Board busyness (3)	Board diligence (4)	Network size (5)	CEO power (6)	CEO pay (7)
$Treated_i \times Falsecrisis_{2005}$	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)
$Treated_i \times Falsecrisis_{2006}$	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)
$Treated_i \times Falsecrisis_{2012}$	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)
$Treated_i \times Falsecrisis_{2013}$	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)

This table reports the coefficient estimates for the false experiments with the following specification:
$y_{it} = \beta Treated_i \times Falsecrisis_t + X_{it} + \gamma_t + \alpha_i + \varepsilon_{it}$
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 effect respectively; $Treated_i$ is a dummy variable that takes value of one if the firms are classified as the treated firms and zero if firms are classified as the control firms. $FalseCrisis_t$ is a dummy variable that takes value of zero in the four years pre-false crisis year (2005, 2006, 2012, and 2013) and one 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 the 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 levels, respectively.

Table 11
Cross-sectional heterogeneity.

	Independent variable $= Treated_i \times Crisis_t$					
	Promoters' Ownership		Foreign Sales		Big Four Auditors	
	High (1)	Low (2)	Yes (3)	No (4)	Yes (5)	No (6)
Board Size	0.056**	0.011**	0.061***	0.020	0.027	0.054**
	(2.26)	(2.12)	(2.59)	(0.48)	(0.66)	(2.27)
Board independence	0.007	0.027	0.017	0.037	0.037	0.022
	(0.60)	(1.59)	(1.12)	(1.17)	(1.41)	(1.12)
Board busyness	0.208***	0.035	0.113***	0.072	−0.072	0.134***
	(3.42)	(0.79)	(2.81)	(0.84)	(-0.99)	(3.20)
Board diligence	−0.038**	−0.028	−0.030**	−0.009	−0.014	−0.031**
	(-2.58)	(-1.44)	(-2.17)	(-0.46)	(-0.55)	(-2.34)
Network size	8.279***	2.015	5.915***	0.789	3.254	4.547***
	(4.44)	(1.05)	(3.59)	(0.29)	(0.97)	(2.79)
CEO power	0.042***	−0.056***	−0.010	0.038	0.061*	0.019
	(2.61)	(-2.83)	(-0.76)	(1.12)	(1.83)	(1.56)
CEO pay	0.395***	0.138	0.225***	0.205	0.069	0.219***
	(3.38)	(1.63)	(2.78)	(1.47)	(0.42)	(2.75)

This table reports the coefficients for the regression-based DiD for a sub-sample of firms 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. All the variables are as defined in Table 6 and other 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 levels, respectively.

4.5.1. Firm value

In this subsection, we examine how improvement in board monitoring through FIIs investment influences firm value and 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 (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 the firm size, age, leverage, research and development expenses, capital expenses, sales, and export sales to be associated with a firm value (Brick & Chidambaran, 2010; Cheng, 2008; Coles et al., 2008; Liu et al., 2015). As such, we use *Firm size*, *Firm age*, *Leverage*, *R&D*, *Capital expenses*, *Sales,* and *Export Sales* (see Appendix A for definition). 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 12.

Panel A, where *Tobin's Q* is the dependent variable, shows that the variables such as board size, board busyness, CEO power, and CEO pay have the expected negative and statistically significant coefficients. In contrast, board diligence carries a positive and statistically significant coefficient. Interestingly, we do not find any effect of board independence on *Tobin's Q*. The non-significant impact of board independence suggests that FIIs do not view independent directors as value-enhancing in emerging markets. 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.[34] Overall, these results suggest that improvement in board monitoring increases the firm value of treatment firms compared to control firms.[35]

4.5.2. Innovation activities

In this subsection, we examine the impact of improved board monitoring by FIIs on firms' innovation activity. We examine the effect of enhanced 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 (see Appendix A for definition). Based on the literature, we control for firm value (*Tobin's Q*), *Firm size*, *Sales*, *Export sales*, *Firm age*, *Leverage*, and *ROA* (Helmers et al., 2017; Lu & Wang, 2018; Luong et al., 2017). 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 (7) are presented in Table 13.

In Panel A, the main dependent variable is *Patent count*. 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 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 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 in which they invest.

The literature on corporate governance notes that FIIs, being informed and sophisticated investors, have the incentive and ability to improve board monitoring. Our study adds to this literature by providing causal evidence of FIIs' influential role in enhancing 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, 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 independent from the regulators' point of view. However, 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

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

[35] The results are qualitatively similar using the alternative identification strategy discussed in Section 4.3.3. Results are available upon request.

Table 12
FIIs' pressured board monitoring and firm value.

Panel A: Tobin's Q							
	Dependent variable = Tobin's Q						
	× Board size (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (7)
$Treated_i \times Crisis_t \times$	−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 (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (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 (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (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 (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (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 (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (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

(*continued on next page*)

Table 12 (*continued*)

Panel E: Assets turnover ratio							
	Dependent variable = Assets turnover ratio						
	× Board size (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (7)
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

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 a dummy variable that takes the value of one if firms are classified as treated firms and zero if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes the value of one in the post-crisis years (2009–2012) and zero in 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 levels, respectively.

Table 13
FIIs' pressured board monitoring and innovation

Panel A: Total patent count							
	Dependent variable = Total patent count						
	× Board size (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (7)
$Treated_i \times Crisis_t \times$	−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 (1)	× Board independence (2)	× Board busyness (3)	× Board diligence (4)	× Network size (5)	× CEO power (6)	× CEO pay (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

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 a dummy variable that takes value of one if firms are classified as the treated firms and zero if firms are classified as the control firms. $Crisis_t$ is also a dummy variable that takes the value of one in the post-crisis years (2009–2012) and zero 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 the 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 levels, respectively.

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

CRediT authorship contribution statement

Biwesh Neupane: Data curation, Investigation, Methodology, Software. **Chandra Thapa:** Conceptualization, Formal analysis, Investigation, Project administration, Supervision, Validation, Writing – review & editing. **Andrew Marshall:** Supervision, Writing – review & editing. **Suman Neupane:** Resources, Supervision, Writing – review & editing. **Chaman Shrestha:** Data curation, Project administration, Resources, Validation, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

Appendix A:. Definition of variables

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

Variables	Definition
Board Monitoring	
Board size	Log of the number of directors on the board.
Board independence	Percentage of independent directors (IDs) on the board.
Board busyness	Log of the number of directors who serve on the board of other firms.
Board busyness (Core et al., 1999)	Dummy variable one if the majority of members hold three, or more than three, board appointments in another firm.
Board busyness (Fich & Shivdasani, 2006)	Dummy variable one 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 one if CEO is the chair, promoter and the only executive member on the board or else 0.
Alternate CEO power	Dummy variable one 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 one if a firm is in the treatment group or else zero. 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 one in the pre-crisis period (2006–2008) and zero in the post-crisis period (2009–2011).
$Year_{05-06}$	Dummy variable one if a firm-year observation is from the year 2005 or 2006
$Year_{07}$	Dummy variable one if a firm-year observation is from the year 2007
$Year_{08}$	Dummy variable one if a firm-year observation is from the year 2008
$Year_{09}$	Dummy variable one if a firm-year observation is from the year 2009
$Year_{10}$	Dummy variable one if a firm-year observation is from the year 2010
$Year_{11-12}$	Dummy variable one if a firm-year observation is from the 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	The ratio of total debt to the shareholders' equity (in %)
STDDEV	The one-month standard deviation of daily stock return
Sales	(Log) of total sales revenue
Capital expenses	Total capital expenses scaled by total assets
Cross-sectional heterogeneity	
Promoters' ownership	Percentage of shares owned by promoters
Export sales	Sales revenue earned through exports of the product and services.
Big four auditors	Firms audited by Big Four auditors (Col and Sen, 2019)

(*continued on next page*)

(*continued*)

Variables	Definition
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 the 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. 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 a dummy variable that takes the value of one if the firms are classified as treated firms and zero if firms are classified as control firms. $Crisis_t$ is also a dummy variable that takes the value of one in the post-crisis years (2009–2012) and zero 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				Alternate CEO power (4)	
			Core et al. (1999) (2)		Fich and Shivdasani (2006) (3)			
	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	

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