Watching the Wolves: Unveiling the Moderating Role of Corporate Governance on CEO Power

Lubna Rahman[a]
Md Emdadul Islam[b]
Jo-Ann Suchard[c]
Mark Humphery-Jenner[d]

Abstract

We use the concurrent passage of the Sarbanes-Oxley Act (SOX) of 2002 and NYSE/NASDAQ listing regulation changes as an exogenous shock to internal firm governance to explore the impact of powerful CEOs on corporate policy. We use the heterogeneity in a firm's pre-SOX governance, to challenge the notion that CEO power negatively impacts corporate outcomes for all firms. We show that for firms with weaker pre-SOX corporate governance (*Non-Compliant Firms*) and powerful CEOs, the improvement in governance induced by exogenous regulatory changes initiated a strategic shift in resource allocation. In the post-SOX period, the *Non-Compliant Firms* with powerful CEOs reduced investments in tangible assets and showed less acquisitiveness (fewer M&A deals). On the other hand, they increased investments in value-enhancing intangible assets (R&D), increased innovation and launched breakthrough product. In addition, the quality of M&A deals in the post-SOX period improved in that the market reacted more positively to the announcements of M&A deals by the *Non-Compliant* firms with powerful CEOs. The exogenous improvements in governance are associated with higher dividend payments and higher firm value, thus suggesting the diversion of misaligned efforts of powerful CEOs to value-enhancing corporate policies.

Keywords: Powerful CEOs, Sarbanes-Oxley Act (SOX), Compliant firms, Non-Compliant firms, R&D, Innovation, Empire building, CAPX, PPE, Dividend, Corporate governance

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[a]School of Banking and Finance, UNSW Australia. Email: l.rahman@unsw.edu.au. Corresponding author.
[b]School of Banking and Finance, UNSW Australia. Email: m.e.islam@unsw.edu.au.
[c]School of Banking and Finance, UNSW Australia. Phone: +61 2 9385 5876. Email: j.suchard@unsw.edu.au
[d]School of Banking and Finance, UNSW Australia. Phone:+61 2 9385 5853. Email: m.humpheryjenner@unsw.edu.au

1. Introduction

The perception of CEO-power as largely self-serving is a natural one (see, e.g., Bebchuk, Fried, and Walker, 2002). Prior studies suggest that CEO power has a negative effect on corporate outcomes[1]. As CEOs gain more control over corporate boards, agency problems may lead to empire-building motivated investment inefficiencies such as an increase in the number of investments and decrease in investment quality (Pan, Wang, and Weisbach, 2016). However, there is scant evidence of any counteracting mechanism that realigns the often-distorted policies of powerful CEOs, to be value enhancing for shareholders through reallocation of capital.

We use the concurrent passage of the Sarbanes-Oxley Act and NYSE/NASDAQ listing regulation changes (collectively, "SOX") as a natural experiment that brought about exogenous changes in the internal governance of the firms through changes in regulatory mandates, to analyze the impact of CEO power on corporate policy choices. In particular, the study uses the heterogeneity in a firm's pre-SOX governance to challenge the notion that powerful CEOs are detrimental for all firms. An exogenous improvement in firm governance may result in a strategic shift in firms with powerful CEOs and thus divert the energy and efforts of powerful CEOs to value-enhancing projects.

A key mechanism of corporate governance to discipline the behavior of self-serving managers, is the board of directors, a market solution to an organizational design problem (see, Hermalin and Weisbach, 1998; Adams, Hermalin and Weisbach, 2010). This mechanism is particularly important in the context of powerful CEOs, as they may have more ability and/or authority to make decisions and adopt policies that may not be in the best interest of shareholders. Powerful CEOs may engage in empire building (Pan et al., 2016) as they signal their power through their fiefdoms (Robinson, 2014) and avoid value-enhancing strategic investments such as Research and Development (R&D). However, managerial incentives in exercising power in the context of sub-optimal capital allocation decisions could be restrained or ameliorated by the board of directors (Mace, 1979; Fama and Jensen, 1983). Likewise, if deemed necessary, properly functioning boards of directors may make a

[1] See, for example, Ryan and Wiggins, 2004; Adams, Almeida and Ferreira, 2005; Bebchuk et al., 2002; Bebchuk, Cremers and Peyer, 2011; Morse, Nanda and Seru, 2011; Landier, Sauvagnat, Sraer and Thesmar, 2013; Khanna, Kim and Lu, 2015; Faulkender and Yang, 2010; Han, Nanda and Silveri, 2016, Grinstein and Hribar, 2004.

contrarian opinion when CEOs proposals are not in the best interest of the firm's shareholders (see, Knyazeva, Knyazeva, and Masulis, 2013; Masulis and Mobbs, 2014).

A complicating factor, however, is that firm governance structures are endogenous[2] and thus identifying the true moderating effect of corporate boards on CEO power is challenging. Powerful CEOs can use their influence to increase firm-specific information asymmetry to reduce the effectiveness of board monitoring (Masulis and Mobbs, 2011; Raheja, 2005; Adams and Ferreira, 2007; Duchin, Matsusaka and Ozbas, 2010) and/or select board of directors to ensure a pliable board (Tirole, 2001; Fama, 1980; Shivdasani and Yermack, 1999). Thus the corporate directors could be less diligent in monitoring management (Zajac and Westphal, 1996; Hermalin and Weisbach, 1998; Cohen, Frazzini and Malloy, 2012). Additionally, lack of financial stakes of the independent board members may trigger the free-rider problem among board members (Harris and Raviv, 2008; Perry, 1999) resulting in passive corporate boards[3] and thus misaligned board independence and strict board monitoring (Guo and Masulis, 2015).

We use the concurrent passage of the Sarbanes-Oxley Act of 2002 (SOX) and NYSE/NASDAQ listing regulation changes (collectively, "SOX")[4] as a natural experiment which brought about exogenous changes in the internal governance of the firms from changes in regulatory mandates[5,6]. Graham, Kim, and Leary (2017) report that average board independence increased to over 70% by 2011 following the introduction of the SOX and amendments to NYSE and NASDAQ listing requirements[7]. They claim that these regulations might, therefore, reduce the ability of powerful CEOs to decrease board independence.

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[2] See, for example, Demsetz and Lehn, 1985; Hermalin and Weisbach, 1988; 1998; 2003, Himmelberg, Hubbard and Palia, 1999; Palia, 2001; Coles, Daniel and Naveen, 2014; Bhagat and Jefferis, 2002; Becht, Bolton and Röell, 2003; Morse et al., 2011.

[3] AT&T's board members were criticized for being one of the most passive boards in corporate America while Robert Allen was the CEO of the company and acquired McCaw Cellular in 1992.

[4] While SOX does not specifically require majority-independent boards, it does mandate that the audit committee be composed entirely of independent directors. The new listing requirements of the NYSE and NASDAQ mandate majority-independent boards (Linck, Netter, and Yang, 2008)

[5] See Banerjee, Humphery-Jenner, and Nanda, 2015; Linck, Netter, and Yang, 2009; Guo, Lach, and Mobbs, 2015; Guo and Masulis, 2015; Duchin et al., 2010; Chhaochharia, Grinstein, Grullon and Michaely, 2017.

[6] According to Guo and Masulis (2015), exogenous shocks that substantially alter board structure are promising way to overcome the endogenous relationship between board monitoring and board independence. They claim that the mandatory adoption of an independent board following the SOX should substantially improve board's monitoring role.

[7] Similar trend is revealed in other related literature (see, Balsmeier, Fleming and Manso, 2017; Linck et al., 2009; 2008).

Although the SOX is considered to be the most important legislation since the original securities laws of the 1930s (Donaldson, 2005; Li, Pincus and Phillips, 2008), the empirical evidence on the effect of SOX on corporate policies is inconclusive (see, Coates and Srinivasan, 2014). One plausible reason for the inconclusive or weak findings in the literature is potentially attributable to the failure to explicitly consider the heterogeneity in underlying firm governance mechanisms at the time of enactment of these regulations. Some firms were, already compliant with aspects of SOX well before it was enacted. For example, the directors of the Archer-Daniels-Midland Company approved a series of proposals to turn majority control of the board over to a group of outside directors in 1996 in response to widespread criticism of insider domination of the company's board (Eichenwald, 1995).

We consider the pre-SOX cross-sectional heterogeneity in a firm's corporate governance quality by partitioning the sample by the degree of compliance with the required thresholds of SOX: pre-SOX *Compliant Firms* (henceforth *Compliant Firms*) and pre-SOX *Non-Compliant Firms* (henceforth *Non-Compliant Firms)*. We argue that firms with a majority independent board and fully independent audit committee were compliant with the SOX before it became mandated (similar to Banerjee et al., 2015), and are arguably better governed than the *Non-Compliant Firms*. Thus, the SOX is unlikely to be an "exogenous shock" for these firms. More importantly, any sub-optimal strategies by powerful CEOs would, arguably, be mitigated by the monitoring of the empowered boards in the *Compliant Firms*. Thus, we argue that the SOX should not have a moderating effect on the *Compliant Firms* with powerful CEOs. However, for *Non-Compliant Firms*, the passage of the SOX is more likely to be an "exogenous shock".

A concern with using these regulatory changes as an identification strategy is that powerful CEOs may be replaced during the SOX period. Thus, the changes in corporate policy may be driven by new CEOs whose power structure, leadership style and choice of corporate policies could be significantly different from the powerful CEOs in the pre-SOX period. We address this concern by analyzing the impact of powerful CEOs on corporate policies after excluding firms that experience turnover of CEOs around the SOX in 2002 (i.e., for whom the CEO in 2001 is different from the CEO in 2003).

We analyze the impact of CEO power on corporate policy choices including innovation, capital expenditure, property, plant, and equipment growth, and dividends. That

is, we examine both the quantity and the quality of investments in physical or tangible assets and intangibles[8] and highlight resource reallocation in the *Non-Compliant Firms* with powerful CEOs during the post-SOX period. We find a long term strategic shift in CEO decisions within the organization. We show that a powerful CEO coupled with poor corporate governance drives the negative view of powerful CEOs.

In particular, we find that, in the post-SOX period, the *Non-Complaint Firms* with powerful CEOs, on average, engage more in the productive value enhancing R&D investments than non-powerful CEOs managed *Non-Complaint Firms*. Importantly, the increased R&D spending of treated firms significantly increases the corporate innovation quality and productivity (see, Hall, Jaffe, and Trajtenberg, 2005) measured by the quantity of innovations (patents) and the quality of innovation (citations) than their peer group[9]. Consistent with the idea, we also find that the exogenous improvement in board governance encourages the powerful CEOs for making value-enhancing innovation (market value of innovation).

We also examine whether the exogenous shocks in governance generate value for the *Non-Compliant Firms* with powerful CEOs. Our analysis shows that the empowered board stimulates the powerful CEOs not only to increase R&D investments but also to introduce unique higher quality new products. Particularly, we find that the reaction of the product announcement by the Non-*Compliant Firms* with powerful CEOs in the post-SOX period is significantly higher than the Non-*Compliant Firms* without powerful CEOs.

There are several plausible explanations for why the *Non-Compliant Firms* with powerful CEOs increase their R&D investments, enhance valuable innovation and introduce higher quality products in the post-SOX period. First, the empowered board in the post-SOX period may provide timely feedback to managers and thus motivate innovation (Manso, 2011). Second, intensified monitoring coupled with diverse expert opinions from the restructured board after the SOX enactment would strengthen the effort of the powerful CEOs in value enhancing investment policies and better innovations (Balsmeier et al., 2017).

Again, powerful managers may have incentives to grow their firms beyond the optimal size and thus may engage in "empire building" as the corporate growth increases

[8] Pan et al. (2016) argue that investment in intangible capital and physical capital could be subject to different agency incentives and that CEO's preference to grow his firms beyond what is optimal for shareholders could be more relevant for physical rather than intangible investments.

[9] The findings on innovation are consistent with Balsmeier et al. (2017).

managers' power by increasing the resources under their control (Jensen, 1986). Our study shows that the effective empowered board in the *Non-Compliant Firms* with powerful CEOs promotes reallocation of resources, in that, these firms engage less in empire building (pursued lower growth in capital expenditures (CAPEX), and property, plant, and equipment (PPE)) and thus reduce physical investments in the post-SOX period.

We also examine whether the SOX improves the Merger and Acquisition (M&A) deals of the firms with powerful CEOs. We find that the *Non-Compliant Firms* with powerful CEOs undertake higher quality investments (positive announcement returns on M&A deals) but fewer acquisitions (measured by the number of deals) in the post-SOX period. The SOX induced vigilant boards' strict monitoring and expert opinions could eliminate the value-destroying M&A deals and subsequently improve the market reaction of the better M&A deals (Kroll, Walters, and Wright, 2008).

Further, we analyse whether the exogenous improvement in board governance, valuable advice and monitoring by independent boards after the SOX could encourage the powerful CEOs to adopt optimal corporate policies, e.g., optimal dividend policies, and thus contribute to alleviate agency problem. We find some evidence that the *Non-Compliant Firms* with powerful CEOs pay more dividends in the post-SOX period which complies with our notion.

Supporting our findings, we conduct falsification tests on the *Compliant Firms*. We show that the moderating effects of the SOX on powerful CEOs are weak or insignificant for the sample of *Compliant Firms.* The analysis confirms our conjecture that the SOX-driven improvement in firm-level governance is beneficial for firms that were more in need of such an exogenous shock that is those with weaker governance and managed by powerful CEOs.

As our empirical study includes long period dataset, we use year fixed effects in our analysis. Assuming the plausibility of estimating biased coefficient driven by any unobservable time-invariant differences across firms (industry), we also incorporate firm (industry) fixed effects in the analysis. We also apply high-dimensional industry-year joint fixed effects with firm fixed effects. Our results are robust in high-dimensional fixed effects models. Thus, we find no support that the findings of the study are driven by unobserved sources of heterogeneous variations related to the firms, industry, or year of observation (Karpoff and Wittry, 2016).

We also control other measures of CEO power such as CEO Pay Slice (Bebchuk et al., 2009), the CEO being the only insider on the board (Adams et al., 2005), CEO overconfidence (Banerjee et al., 2015), institutional holdings (Aghion, Reenen, and Zingales, 2013), dual-class stock (Masulis, Wang, and Xie, 2009) and board size (Yermack, 1996).

We conduct further test exploiting the cross-sectional variation of the Entrenchment index (E-index) and CEO power of the firms (see, Bebchuk and Cohen, 2005). We use a high E-index in the pre-SOX period as an indicator of weaker governance. We find that the benefits from post-SOX improved decision-making by powerful CEOs are concentrated in the firms that were otherwise poorly governed (above median E-index value) in the pre-SOX period. In contrast, there is no impact for firms where CEOs were not entrenched (below median E-index value) in the pre-SOX period.

Our study contributes to the literature in several ways. Firstly, popular perception of powerful CEOs is self-serving. Previous literature suggests that powerful CEOs may influence the board to extract high compensation (Ryan and Wiggins, 2004; Morse et al., 2011; Bebchuk et al., 2002; Bebchuk and Fried, 2004; Bebchuk et al., 2011; Faulkender and Yang, 2010), private benefits from more and less valuable[10] M&A deals (Grinstein and Hribar, 2004), can affect board decision, firm performance and firm's governance adversely (Han et al., 2016; Adams et al., 2005; Landier et al., 2013; Khanna et al., 2015). However, evidence on channelling or diverting the misaligned efforts of powerful CEOs to value-enhancing projects of the firms is inadequate. Our study fills that gap by showing that the improvement in governance induced by exogenous regulatory changes benefit the pre-SOX poorly governed firms with powerful CEOs in the post-SOX period[11,12].

Additionally, our results may contribute to the discussion of why some firms still appoint or continue to have powerful CEOs (see, Han et al., 2015). Similar to Li, Lu, and Phillips (2016), we also highlight the "bright side" of CEO's power to answer this question. We argue that monitoring can divert the energy and effort of self-serving powerful CEOs to

[10] Powerful CEOs in firms with weaker corporate governance could potentially be entrenched and engage in value-destroying acquisitions (Harford, Humphery-Jenner, and Powell, 2012; Masulis, Wang and Xie, 2007).

[11] "A company that recognizes the true benefits of the Act (SOX) in strengthening our capital markets will have no trouble seeing that effective compliance with Sarbanes-Oxley – doing the right thing – is not only in the best interests of its investors, but the long-term interests of the company itself." –Donaldson (2005).

[12] Tang, Crossan, and Rowe (2011) show that powerful boards of directors can reduce the likelihood of a CEO harming a firm because they are more likely to screen out and oppose unsound business decisions. They also argue that having dominant CEOs is risky, but powerful boards help control the downside risks while leaving the upside potential relatively open.

value enhancing projects or facilitate taking optimal policies without necessarily curbing CEO power. Nevertheless, our study differs from Li et al. (2016), who explore product market heterogeneity and market monitoring to explore the contextual importance of CEO's power. We explicitly consider the endogenous nature of firm governance and provide evidence from a quasi-natural experiment, the enactment of SOX, on the counteracting role of the corporate board in restraining powerful CEOs.

Our findings are also related to the literature that explores the significance of internal governance to mitigate agency problem. The agency cost hypothesis predicts that CEOs of firms where information hoarding is high, such as firms led by powerful CEOs, can make (suboptimal) self-maximizing corporate policies (Hope and Thomas, 2007). Existing evidence on role of boards for governing managerial hubris and alleviating value-destroying corporate policies is mixed and contextual[13]. Our study extends understanding about the impact of empowered board after regulatory mandates (SOX) using the context of powerful CEOs-agents who may trigger agency problem. Assuming M&A deals are potential sources of agency conflicts (Grinstein and Hribar, 2004), our study reemphasizes that the empowered board in the *Non-Compliant Firms* reduced agency costs[14]in the post-SOX period. Our study also shows that the empowered boards also lessen agency conflicts spurred from the limited dividend payouts and value reducing investments due to available free cash flows for powerful CEOs with moral hazard problems (see, e.g., Campbell and Marino, 1994; Hirshleifer and Thakor, 1992; Narayanan, 1985).

Our study contributes to innovation literature. For example, previous innovation literature reveals the impact of CEO's overconfidence (Hirshleifer, Low, and Teoh, 2012; Galasso and Simcoe, 2011) and sensation to risk taking (Dyer, Gregersen and Christensen, 2011; Sunder, Sunder and Zhang, 2017) on innovation. Our study shows that powerful CEOs governed by empowered board can generate value enhancing innovation for firms. Our study also furthers the literature that explored the impact of CEO characteristics and psychological biases on corporate policies (see, Bertrand and Schoar, 2003; Malmendier, tate and Yan, 2011; Malmendier and Nagel, 2011; Graham, Harvey and Puri, 2013).

[13] For example, Duchin et al. (2010) on effectiveness of outside directors as the function of cost of acquiring information, Masulis and Mobbs (2014) on directors' reputation, Ferreira, Ferreira and Raposo (2014) on price informativeness, Falato, Kadyrzhanova and Lel (2014) on directors' distraction, Field, Lowry and Mkrtchyan (2013) on busy directors.

[14] The findings particularly related to Fogel, Ma and Morck (2015) who suggest that the powerful boards ought to check value destroying M&A deals

Finally, despite the economic significance of the SOX[15], the effectiveness of this regulation has been criticised (see, Romano, 2004; Hochberg, Sapienza and Vissing-Jorgensen, 2009; Perino, 2002) and there is limited empirical analyses of the impact of SOX. One plausible reason for the limited empirical evidence could be the difficulty in quantifying the benefits of SOX (Coates, 2007) or lack of control group of publicly traded firms unaffected by the legislation (Hochberg et al., 2009)[16]. Our study contributes to the literature by empirically evaluating the moderating effect of SOX on a particular type of powerful CEOs, one whose power was unchecked by a well-functioning corporate boards before the enactment of SOX[17]. We show that in the post-SOX period, the improvement in corporate decision-making or reduction in self-serving behavior by powerful CEOs was concentrated among *Non-Compliant Firms*. This result does not consistently hold for *Compliant Firms*. Thus, we argue that the enactment of the SOX has had a fundamental impact in governing the unbridled power of CEOs.

The rest of the paper is organized as follows: Section 2 focuses on literature review and hypotheses development. We describe variable construction, methodology, and sample in Section 3. Empirical analyses are presented in Section 5. Section 6 concludes the paper.

2. Motivation and hypothesis development

The classical model of managerial discretion of Williamson (1964) highlights managerial incentives for using their 'discretion' to implement corporate policies which would maximise their own utility rather than maximise shareholder utility. Moreover, prior to the SOX, the securities laws did not directly address board composition, board size, and director qualifications (Linck et al., 2008). Thus, when the firm's decision-making forum is dominated by powerful CEOs who might form pliable boards that plausibly lack in independent monitors hinders the diversity of opinions and monitoring, we argue that self-serving decision-making is more pronounced.

[15] Coates (2007) argues that the SOX should bring long-term benefit to economy through better allocation of resources, greater transparency and faster growth.

[16] "There are two main competing views about the likely impact of the Sarbanes-Oxley Act (SOX) on shareholders. Proponents of SOX argue that it will lead to improved disclosure, transparency, and corporate governance, thereby reducing misconduct, perquisite consumption, and mismanagement by insiders (whether legal or illegal), and that these benefits outweigh the costs of compliance. Opponents argue that SOX will be ineffective in preventing corporate wrongdoing and/or that any benefits of SOX will not be large enough to outweigh the associated compliance costs"- Hochberg et al., 2009.

[17] In related study, Armstrong, Core and Guay (2012) claim that though the regulatory shock that imposed mandatory requirement of board independence reduced information asymmetry in the Non-Compliant firms, the results vary across the degree of managerial entrenchment.

However, evidence suggests that the SOX has improved disclosure and subsequently firm governance and monitoring (e.g., Coates, 2007; Karolyi, 2009; Brickey, 2003) and thus is beneficial to individual investors and investor groups (Hochberg et al., 2009; Li et al., 2008[18], Chhaochharia and Grinstein, 2007). The SOX has increased board independence, strengthened the monitoring role of independent directors by reducing information risk (Ashbaugh-Skaife, Collins, Kinney, and Lafond, 2008), increased the personal responsibility of corporate leaders for financial disclosure (Linck et al., 2009; Faleye, 2011; Baloria, Marquardt and Wiedman, 2017) and has increased the diversity of opinions at board level[19], thus disciplining powerful CEOs through better governance (Linck et al., 2008). So, we expect that the implementation of the SOX has reduced or reversed sub-optimal decision-making by powerful CEOs in the post-SOX period. Nevertheless, the regulatory provisions of SOX are more likely to be an "exogenous shock" only for *Non-Compliant Firms.*

2.1. Strategic investments: R&D

The net effect of the SOX driven board independence on firms' R&D investments is still an empirical question. Bargeron, Lehn, and Zutter (2010) show that the SOX of 2002 discourages risk-taking of the firms leading to a reduction of the R&D investments. However, Balsmeier et al. (2017) using the SOX as exogenous event show that board independence is unrelated to the level of firm's R&D investment. Previous literature highlights that the CEO characteristics can influence R&D investments of the firms (see, Barker and Mueller, 2002).

R&D investments are essential in enhancing technological know-how and allow the firm to remain innovative and obtain competitive advantages. The important characteristic that distinguishes R&D investment from other strategic investments is the highly uncertain and skewed returns of R&D investments. These investments are time-consuming and entail failure-intensive outcomes (see, e.g., Scherer, 1998; Scherer and Harhoff, 2000). Compared to their non-powerful peers, powerful CEOs might derive more disutility from R&D investments as they value control over larger resources and failed investments in R&D may

[18] Li et al. (2008) show that the more extensively firms had managed their earnings before the SOX, the more SOX would constrain earnings management and enhance the quality of financial statement information.

[19] Linck et al. (2009) report that the makeup of the director pool changed substantially post-SOX. Sitting executives make up a significantly smaller fraction of the director pool, while retired executives, directors with financial expertise, lawyers, and academics make up a larger portion.

dissipate those resources. Moreover, successful R&D programs require a corporate culture that allows for the freedom to experiment and tolerates failure to motivate innovation among employees of large corporations (Farson and Keyes, 2002; Sutton, 2002). Although Hillman and Dalziel (2003) suggest that board incentives are key moderating factors between board capital and resource provision, Chen (2014) shows that powerful CEOs have the ability to influence the relationship between board capital and R&D investment and thus influence the magnitude of R&D investments in an organization.

Barker and Mueller (2002) suggest that CEO preferences for various levels of R&D spending are associated with visible CEO characteristics such as age, tenure, education, career experiences, and stock ownership. They show that the impact of a CEOs effects on relative R&D spending increases with tenure implying that CEOs, over time, may mold R&D spending to suit their preferences. Grimm and Smith (1991) show that longer-tenured CEOs make fewer changes in strategy. This is consistent with a stronger commitment by long-tenured CEOs in implementing their own paradigm for how the organization should be run (see, e.g., Hambrick and Fukutomi, 1991). R&D investments may not be compatible with the inflexible strategies of long-tenured CEOs. As longer tenure and larger ownership stakes make CEOs powerful across firms and over time, powerful CEOs in *Non-Compliant Firms* are more likely to invest less in R&D.

Strategic investments such as R&D have long-term value implications for outside shareholders and thus we expect that the introduction of SOX leads to a reduction in under-investment by powerful CEO run firms in the post-SOX period. However, the effects of SOX in reducing under-investment in R&D projects by powerful CEOs would be more pronounced among the *Non-Compliant Firms*. Therefore, our hypothesis is:

Hypothesis 1: SOX reduces under-investment in R&D projects by in Non-Compliant Firms with powerful CEOs.

2.2. Investments in tangible assets: Empire building

Rajan and Zingales (1998) discuss how the ability to grab power can be used to design corporate investment policy. They argue that a fear that others will grab power, may lead to excessive power-seeking which, in turn, may prevent otherwise value-enhancing transactions from taking place. Rajan Servaes and Zingales (2000) document that power struggles within a company may lead to distortions in capital allocation. Kumar, Rajan and

Zingales (1999) show that an efficient legal system eases managerial power captured through management's ability to use critical resources and thus leads to the establishment of larger firms. McNeil and Smythe (2004) find evidence that divisional managers' lobbying power is positively correlated with a segment's capital expenditures.

Empire building could be achieved via growth in capital expenditure and property, plant and equipment. Since powerful CEOs, arguably, would like to lead firms of larger size, they are likely to grow investments in capital expenditures faster compared to other CEOs (Li et al., 2016). Jung, Kim, and Stulz (1996) claim that the agency problems may drive managers to pursue their own objectives by increasing firm's growth at the expense of shareholders. Shleifer and Vishny (1989) suggest that managers may seek to entrench themselves by investing in assets which are more profitable under their management than under the management of their closest competitors irrespective of such investments being value-increasing or not.

Pan et al. (2016) show that as CEOs' tenure increases, their power over the board increases. CEOs are often reluctant to divest or re-optimize bad investments that they have made due to private benefits or career concerns. Often board governance practices permit long-tenured powerful CEOs to overinvest or engage in empire building (Baldenius, Melumad and Meng, 2014; Jensen, 1993).

We expect the SOX to reduce the propensity of powerful CEO run *Non-Compliant Firms* to grow too fast. In other words, we expect the growth policies of powerful CEO run firms to be moderated by independent boards who bring a diversity of opinion to decision-making forums. Hence, our next hypothesis is:

Hypothesis 2: SOX reduces over-investment in CAPEX and PP&E by Non-Compliant Firms with powerful CEOs.

2.3. Dividend policy

Similar to capital structure decisions, the payout policy of firms with powerful CEOs could also differ. Firms' payout policies often cause major agency conflicts (e.g., Jensen, 1986) as the availability of free cash flow resulting from a firm's payout policy may lead to engagement in wasteful investment or extraction of perks. Since they value control over resources, powerful CEOs may limit dividend payouts to shareholders. The entrenchment hypothesis argues that CEOs who may fear disciplinary actions are inclined to pay higher

dividends as a shield against such actions (e.g., Zwiebel, 1996; Fluck, 1999; Allen, Bernardo and Welch, 2000). However, the incentive to pay dividends as a monitoring device could be negligible for powerful CEOs who can fend off takeover threats (e.g., Stulz, 1988). As the SOX has a disciplining effect and a resultant improvement in governance, we argue that the SOX reduces the tendency of powerful CEOs in *Non-Complaint Firms* to pay lower dividends. Hence, our hypothesis is:

Hypothesis 3: The SOX increases dividend payments by Non-Compliant Firms with Powerful CEOs.

3. Variable construction, methodology and sample

3.1. Variable construction: CEO Power

CEOs derive power generally from four areas - structural, ownership, expertise, and prestige (Finkelstein, 1992). Prior research[20] posits that the CEOs may increase their power through holding the position of chairman of the board and/or holding the titles of other top corporate executives such as President or Chief Operating Officer thereby dominating the decision-making forum. Additional power may also derive from their status as a founder of the firm, from retaining significant holdings of the firm's equity and through longer tenure as CEO.

In an attempt to assess the impact of CEO power on corporate policies in the context of the SOX enactment, we construct our power measure emphasizing on their expertise and ownership besides identifying whether the CEOs are holding Chairman or any other major corporate positions. We exploit hand-collected data to reveal whether the CEOs are the founders of the firms and incorporate that in our CEO power measure.

CEOs in dual-class firms could be more powerful as CEO turnover events do occur less frequently among dual-class firms (Smart, Thirumalai, and Zutter, 2008; Bebchuk, Cohen and Ferrell, 2009). However, the SOX provision of board independence reduced firms' incentives to use dual class structure (Arugaslan, Cook, and Kieschnick, 2010) and thus dual class does not qualify as the component of our CEO power measure. Similarly, we didn't include staggered board or any antitakeover provision (ATP) in the measure of CEO power as the SOX could influence these features through board monitoring and strong board could be potential substitute of the takeover market (see, Bebchuk and Cohen, 2005; Shivdasani,

[20] See, for example, Han et al. (2016), Adams et al. (2005), Li et al., (2016), Graham et al. (2017).

1993; Brickley, Coles and Terry, 1994; Brickley and James, 1987). Our CEO power measure also excluded any SOX reform requirements directing at CEOs, e.g. certification requirements of financial reports, restrictions on loans and trading, etc (see, Li et al., 2008 for details). Thus, this quasi-natural experiment enables us to draw a causal inference of the effect of CEO power that has cross-sectional differences in firms, on firm-level policies in an environment characterized by the strengthening of board oversight through the exogenous shock-the SOX enactment.[21]

Thus, our main explanatory variable, "*CEO power*" is an index and we follow Finkelstein (1992) and Daily and Johnson (1997) to identify major sources of managerial power in constructing the index. The index components include founder CEO, CEO-Chair duality, title concentration, tenure and ownership.

Founder CEO:

A source of CEO power is whether a CEO is also a founder of the company (Adams et al., 2005; Li et al., 2016). Prior studies show that CEOs, through their status as founders, are able to exercise wide-ranging control over the firms' operating, capital allocation and strategic decision-making processes (Anderson and Reeb, 2003; Adams, Almeida and Ferreira, 2009, Fahlenbrach, 2009).

We hand-collect information on founders such as names and number of founders of each firm and founding year, for sample firms. We use several sources including 10-K filings of the firms with the SEC available in Electronic Data-Gathering, Analysis, and Retrieval (EDGAR), the Funding Universe website, company websites, and other Internet resources including Wikipedia, Forbes pages, Bloomberg's Business Week website, among others. 'Founder-CEO' in a given year is an indicator variable that equals one if any source explicitly mentions that the current CEO is one of the original founders of the firm or was the main executive at the time the company was founded (see: Adams et al., 2009, Fahlenbrach, 2009).

CEO-Chair duality:

Much attention in the corporate governance literature has been given to CEO-chair duality. The CEO and chairman roles have responsibilities that overlap in many respects, at least in appearance, but also differ in key ways. Jensen (1993) points out that "the function

[21] The difference of means test on CEO power measure between pre and post-SOX periods is not statically significant (t= -0.575) in our sample.

of the chairman is to run board meetings and oversee the process of hiring, firing, evaluating, and compensating the CEO." In the presence of CEO-chair duality, this important function is compromised. CEO-chair duality would also give CEO's much greater say (power) on the workings of the board and thus affects a company's performance (Jensen, 1993; Brickley, Coles, and Jarrell, 1997; Finkelstein and D'aveni, 1994). 'CEO-Chair' equals one if CEO is also the chairman of the board (Li et al., 2016; Han et al., 2016). We use ExecuComp to identify whether the current CEO is also the chairman of the board.

Title concentration:

CEO title concentration is narrower than CEO-chair duality in that it applies when a CEO, who is also chairman, additionally holds any one, or more, of a number of other senior posts (titles), including COO, President, and CFO. Each of these roles on their own is an influential leadership role within the firm and captures structural power (Finkelstein, 1992). As such when combined with the CEO-chair, they arguably confer much greater power on the CEO-chair (Li et al., 2016; Han et al., 2016; Adams et al., 2005). Morck, Shleifer and Vishny (1988) define CEOs as powerful when no other person holds the title of president or chairman and no other person co-signs the letter to the shareholders in the annual report. '*CEO title concentration',* is a dummy variable which is one if CEO's hold more than two titles and zero otherwise.

Tenure above industry median:

A CEO's experience, firm-specific knowledge, and expertise accumulated with tenure, can influence a firm's corporate policy (Hermalin and Weisbach, 1991; Brookman and Thistle, 2009). CEOs with tenure that is longer than the industry median should be more powerful than other CEOs (see: Han et al., 2016). Tenure data is collected from ExecuComp. However, the tenure measure from ExecuComp may be incorrect for CEOs who leave their managerial position and return to the focal firm of analysis later in the sample period. For these CEOs, we hand-collect tenure data from the sources used to collect the founder data. Finally, we create a dummy tenure variable as a component of 'CEO Power' which is one if the tenure of CEO is above the industry median (See: Han et al., 2016). This variable allows us to capture both expert and prestige power (Finkelstein, 1992).

Ownership above industry median:

CEOs with significant shareholdings have the ability to influence important firm decisions in an ownership capacity, prevent involuntary dismissal and thus are likely to be

more powerful (Daily and Jonson, 1997). Besides, powerful CEOs may extract incremental power by holding large stock ownership in the firms (Cyert, Kang, Kumar, and Shah, 1997; Holderness and Sheehan, 1988).

We construct a 'CEO Ownership' variable which is one if the ownership of CEO is above the industry median (See: Han et al. (2016)). The '*CEO Power*'- index is an aggregate measure of the five components of CEO power and thus the index value ranges from 0 to 5. We also use an indicator variable – *'CEO Power TOP-Q'* which is one if '*CEO Power*' index is in the top quartile of the industry.

3.2. Methodology

We use Difference in Difference (DiD) analysis using the SOX enactment as exogenous shocks to show that the powerful CEOs who were not replaced around the SOX period and monitored by empowered board gradually changed their attitudes and brought strategic shifts within the organization. Non-powerful CEOs in the *Non-Compliant Firms* sample are our potential control firms in DiD analysis and allow us to explore the cross-sectional variation in CEO power among the *Non-Compliant Firms*. Because, the strategies of both powerful and non-powerful CEOs in *Non-Compliant Firms* remain unchecked and under-supervised by truly independent, vigilant and expert boards of directors (see, Balsmeier et al., 2017; Duchin et al., 2010; Guo and Masulis, 2015) before the mandatory adoption of board independence induced by the SOX.

We estimate the following model for the analysis:

$$Y_{i,t+1} = \alpha + \beta SOX_{i,t} x\ CEO - Power_{i,t} + \partial CEO - Power_{i,t} + +\delta SOX_{i,t} + \omega\gamma_{i,t} + \phi_t + \lambda_{j(i)} + \varepsilon_{i,t} \quad (1)$$

Here, $Y_{i,t+1}$ represent the corporate policy in firm *i* in year *t+1*. SOX is an indicator variable (treatment) that is equal to one for years after the passage of the Sarbanes-Oxley Act and NYSE/NASDAQ listing regulation changes and zero otherwise. CEO power is proxied by the CEO-power Index or CEO-power Top Q. $\gamma_{i,t}$is the vector of firm level controls. $\phi_t$is year fixed effect. $\lambda_{j(i)}$is firm (industry) fixed effect for the *Non-Compliant Firms*. $\varepsilon_{i,t}$is represents error terms. The coefficient βmeasures the sensitivity of the corporate policy of the Non-Complaint firms with powerful CEOs in the post-SOX period.

3.3. Sample and data

We construct our primary dataset combining the universe of firms contained in the Standard and Poor's Executive Compensation (ExecuComp) database with Compustat for financial and accounting data. Following the standard literature, we exclude financial firms (Standard Industrial Classification [SIC] codes 6000-6999) and regulated industries (SIC codes 4900-4949). The Centre for Research in Security Prices (CRSP) dataset provides stock price information. Most of the CEO characteristics variables are from the ExecuComp database. After excluding observations with missing data on CEO power components, we obtain a sample size of 30,754 firm-year observations for 1992-2014[22]. Our final sample includes 1,102 unique firms with 2,909 CEOs and 18,396 firm-year observations after excluding firms that experience turnover of CEOs around the SOX (for whom the CEO in 2001 is different from the CEO in 2003).

Dependent variables

We use two measures of capital investment. The first measure is a firm's strategic risky investment which is measured as R&D scaled by total assets. We also examine the impact of powerful CEOs on innovation-the outcome of R&D investment. Following the extant literature (e.g. Hirshleifer et al., 2012), we use the number of patents applied for (and subsequently granted) as a proxy for the quantity of innovation. To distinguish major technological breakthroughs from incremental technological improvements, we also use the number of citations received by these patents to measure the quality of innovation.23

The patent data are mainly from the Kogan et al. (2017) (henceforth KPSS) Patent dataset. The KPSS patent dataset provides data for all patents that are granted by the U.S. Patent and Trademark Office (USPTO) over 1926-2010. The dataset provides information for each patent such as the names of the assignees, the number of patents and the number of citations received by each patent. We follow the innovation literature and date the patents by the year of their application (Hall, Griliches, and Hausman, 1986). We restrict the sample to patents applications up to 2008 as patents applied for after 2008 may not appear in the dataset because of the time lag in granting patents. We use the KPSS (2017) patent data

[22] Year 1992 is the first year for available data in ExecuComp. We didn't analyse beyond year 2014 to have a balanced pre (10 years) and post-SOX (12 years) periods.

[23] Studies employing these two variables to measure innovation performance include among others Hirshleifer et al., 2012; Seru, 2014; Tian and Wang, 2014; He and Tian, 2013; Hsu, Tian and Xu, 2014; Fang, Tian and Tice, 2014; Chemannur and Tian, 2013; Bereskin and Hsu, 2012; Kang, Liu and Low, 2014; Atanassov, 2013.

instead of the NBER patent data as it allows us to identify comprehensive patent portfolios up to 2008, compared to 2004 for the NBER patent data. We also collect data on market value of innovation from KPSS (2017).The merged dataset includes 11,352 firm-year observations with 9,79 unique firms and 1,969 CEOs.

We also use the recent updated database of KPSS (2017) that includes market value of innovation from year 1982 to 2010. As we restrict our dataset on patents and citation up to year 2008, the merged dataset includes 4,992 firm-year observations for 605 unique firms.

We also explore the impact of CEO power on the market reaction to new product announcements. The data on the market reaction to a new product announcement is from Mukherjee, Singh and Žaldokas (2017). Mukherjee et al., (2017) dataset for 1990-2006 is created by a textual search of the LexisNexis News database for company press releases that are tagged under the subject "New Products" and where their headlines include keywords (with the roots of words) such as "Launch," "Product," "Introduce," "Begin," "Unveil". We use standard event study methodology, where cumulative abnormal returns (CARs) are estimated over the three (-1, 1) day period around the press release of the product announcement. We create two variables: '*ann_cum'* and '*ann_75'.* The variable '*ann_cum'* is the sum of all positive cumulative abnormal returns over the year. The count of the number of announcements with cumulative abnormal returns above the 75th percentile is represented by '*ann_75'.* This allows us to analyse the product market conditions of the firms which could be influenced by corporate innovation.

As the second measure of capital allocation policy, we use growth in CAPEX, and PPE to proxy for empire-building activities of CEOs (Xuan, 2009; Chen Lu and Sougiannis, 2008). We also explore the Merger and Acquisition (M&A) activities of the powerful CEOs. Following Masulis et al., (2007), only the completed deals having value of more than one million dollars are selected for the analysis. We also require that the acquirers must control less than 50% of the target company before acquisition and control 100% of the target after acquisition. Finally, we require that the deal value must be at least 1% of the acquirer's market value of equity measured on the 11th trading day prior to the announcement date. The merged dataset includes 4418 unique deals made by 787 unique firms.

We further explore the payout policy of firms with powerful CEOs. To proxy the firm's payout policy, we use dividends paid scaled by total assets.

Control variables

As per the literature, we control for the determinants of corporate policies. The firm-level controls include firm size (natural log of market value of equity of the firm (Bushee, 1998)[24], capital expenditures (ratio of CAPEX to sales) and R&D expenditures (R&D scaled by the book value of assets). We also control for profitability (Earnings before interest and tax [EBIT] scaled by total assets) as a firm's profitability and market performance significantly influence the firm's access to funds and subsequent investment (Kaplan and Zingales, 1997; Fama and French, 2016; Rajan et. al., 2000). We use Tobin's Q (Market value of assets over book value of assets) as a determinant of the firm's capital allocation decisions as Bushee (1998) claims that firms with higher Tobin's Q may have better R&D opportunities and face a higher cost of reducing R&D for myopic reasons. We use time fixed effects to capture firm or industry specific changes over time and firm (industry) specific unobserved heterogeneity is controlled using firm (industry) fixed effects.

3.4. Summary statistics

We report descriptive statistics of the variables in Table 1. Panel (A) of Table 1 reports summary statistics of the components of the powerful CEO index. Approximately 18% of firm-year observations have CEOs that are also founders of their firms. The CEO also holds the chairman position in around 60% of firm-year observations in our sample. In approximately 25% of firm-year observations, the CEO-Chair also holds other titles. The average CEO's ownership is 3% and the average CEO tenure is around 8.86 years. These measures are similar to prior studies (Li et al., 2016; Han et al., 2016; Adams et al., 2005). Finally, the *'CEO Power'* variable has a mean value of 2.02 with the 75th percentile having an index value equal to 3. Thus '*CEO Power Top Q'* has a mean value of 0.16. Panel B of Table 1 reports the correlation matrix of the individual sources of power and the CEO power index.

We report firm-level descriptive statistics in panel C. The average firm size in our sample is large ($6.8 billion) as the sample consists of S&P1500 firms. The firm's average profitability ratio is 9%. The average Tobin's Q of the firms is 2.17 with a median of 1.66. The

[24] Chemmanur and Tian (2013) and Sapra, Subramanian and Subramanian (2014), among others, use natural log of assets to measure firm size. Hirshleifer et al. (2012) and Kang et al. (2014), among others, use natural log of sales to measure firm size. Our results are robust using alternative measurements of firm size.

average PPE growth is 7%. The average number of patents and citations are 21 and 211 respectively.

<<Insert Table 1 about here>>

We report summary statistics for our treated firms: *Non-Compliant Firms* with powerful CEOs and control firms: *Non-Compliant Firms* without powerful CEOs in the pre-SOX period in Panel D. The average market size of the firms run by powerful CEOs is smaller than firms with non-powerful-CEOs in the *Non-Compliant Firm* sample. In pre-SOX period, the treated firms had more investment in the physical assets (measured by capital expenditures and PPE growth) and fewer patents and citations.

4. Empirical Analysis

4.1. Powerful CEOs, long-term strategic investments and the SOX

The net effect of the SOX driven board independence on firms' R&D investments is still an empirical question. Bargeron, Lehn and Zutter (2010) show that the SOX of 2002 discourages risk-taking of the firms leading to reduction of the R&D investments. However, Balsmeier et al. (2017) show that board independence is unrelated to the level of firm's R&D investment. Following previous literature that highlights that the CEO characteristics can influence R&D investments of the firms (see, Barker and Mueller, 2002), we exploit the impact of CEO power in the Non-Compliant firms.

Initially, we report the full sample results using industry and year fixed effects in column (1) including the SOX indicator and the interaction term (SOX x CEO power). We use firm fixed effects in column (2). The coefficients of CEO power are negative and significant. Most importantly, the coefficients on the interaction term of columns (1) and (2), *'SOX x CEO power'* are positive and economically and statistically highly significant. The results suggest that on an average, in the pre-SOX periods, powerful CEOs invested less in risky R&D investments. However, after the passage of the SOX, powerful CEOs invested more in R&D projects relative to other CEOs.

<<<<Insert Table 2 about here>>>>>

We divide the sample on the basis of whether firms were already compliant with the provisions of SOX, before SOX was enacted. Using model (1), we empirically show that after the exogenous shock of the enactment of SOX, the Non-Compliant Firms with powerful CEOs investments more in long term strategic investment–R&D than the Non-Compliant Firms without powerful CEOs (Columns (3), (4), (7) and (8)). More precisely, R&D

investments of powerful CEOs in the *Non-Compliant Firms* were significantly lower than the *Non-Compliant Firms* without powerful CEOs in the pre-SOX period. However, after the passage of the SOX, the differential impact powerful CEOs on investment propensities among the Non-Compliant Firms have dropped quite sharply (0.159/-0.135=1.18 in column (4)) making them more similar in terms pursuing R&D projects. The results are robust to using both industry and firm fixed effect models that mitigates the concern for any spurious relationship driven by unobservable time-invariant differences across firms or industries. Thus, the increase in R&D investment after the introduction of the SOX is consistent with our hypothesis that the SOX reduces the underinvestment in R&D by *Non-Complaint Firms* with powerful CEOs.

Our results suggest that in the post-SOX periods, the composition, expertise and diversity of corporate boards of directors change significantly and more importantly, those changes are arguably exogenous. The fresh new perspective brought about by changes in regulations corrected the under-investments by the powerful-CEOs. Since, R&D investments have spill-over benefits to competitive advantages through innovation (Barker and Mueller, 2002), we argue that such incremental spending in R&D projects should benefit the corporate outcome at large.

4.1.1 Powerful CEOs, Innovation and SOX

The above results suggest that in the post-SOX period, *Non-Compliant Firms* with powerful CEOs invest more in R&D projects. However, R&D is an innovation input and powerful CEOs may impact innovation performance. We use standard measures of innovation output from the literature, the number of patents grants received to measure the quantity of innovation and the number of forward citations received by these patents to measure the quality of innovation. The innovation performance results of powerful CEOs are shown in Table 3.

In all specifications, we control for contemporaneous R&D spending following the innovation literature (Sevilier and Tian, 2012; Tian and Wang, 2014). Provision of sufficient access to innovation inputs (R&D expenditure) is a necessary but not sufficient condition for innovation success. Since it is plausible that powerful CEOs could invest more in R&D to achieve above-average innovation success, we control for R&D scaled by total assets to capture innovation efficiency.

<<<<Insert Table 3 about here>>>>>

The results generally suggest that using the continuous measure of CEO power in the pre-SOX period, the *Non-Compliant Firms* with powerful CEOs have, on an average, a negative impact on innovation performance (both quantity-patents and quality-citations). We find qualitatively similar results using the binary measure of CEO power.

In the post-SOX period, the coefficients on the interaction term, *'SOX *CEO power' (SOX*CEO Power Top Q),* are positive and significant in all columns. More precisely, we find that the Non-Compliant Firms with powerful CEOs generate 4.71% (0.048/1.02) more patents (column (1)) and 8.98% (0.132/1.47) more citations (column(2)) in the post-SOX period. Thus, the results suggest that powerful CEOs in the Non-Compliant Firms generate better patents and citations. We continue to evidence suggestive of innovation-spurring environment in the firms as the impact of powerful CEOs in the post-SOX period subsided (patents: 0.048/-0.043 = -1.12; citations: 0.132/-0.089=1.48).

To further analyse the strategical shift to investments in intangibles, we explore the productive value enhancement of R&D investments of the *Non-Compliant Firms*. KPSS(2017) highlight the significance of private valuation of patents. Their patent level estimates of private economic value are positively related to the scientific value of the patents, as measured by the number of citations that the patent receives in the future. Thus, their findings show that technological innovation is a significant driver of both economic growth and creative destruction.

Using data of market value of patents from KPSS(2017), we show that (columns (3) and (6)) powerful CEOs in the *NON-Compliant Firms* generate higher market value of innovation in the post-SOX period. Specially, our results (column (3)) show that the innovation value of the Non-Compliant powerful CEO firms were lower (-6.6 millions) than *Non-Compliant Firms* without powerful CEOs in the pre-SOX period. In the post-SOX period, the value of innovation increases significantly (8.5 millions) and the adverse effect of powerful CEOs decline (0.085/-0.066 = 1.28). We reveal similar results when we use binary measure of CEO power.

One plausible explanation of this valuable innovation could be the improvement of sense of teamwork in the organization under better governance and monitoring in the post-SOX period. An empowered board may contribute to moderate agency conflicts within the organization and encourage powerful CEOs to drive corporate resources to win the battle

against the competitors of the markets and thus to achieve corporate goals of value maximization.

Powerful CEOs, SOX and Value of R&D investments:

It could be argued that the post-SOX increase in innovation productivity of firms with powerful CEOs could come from other firm-level changes due to the SOX, rather than an increase in R&D investment. We test this using a triple-interaction test of CEO power, SOX and R&D. We run the following regressions:

$$Innovation\ productivity_{t+k,i} =$$
$$\alpha + \beta_1 SOX_{i,t} x\ CEO - Power_{i,t} x\ R\&D_{i,t} + \beta_2 CEO - Power_{i,t}\ X\ R\&D_{i,t} +$$
$$\beta_3\ SOX_{i,t} x\ R\&D_{i,t} + \beta_4 SOX_{i,t}\ x\ CEO - Power_{i,t} + + \beta_5 SOX_{i,t} \beta_5 CEO - Power_{i,t} +$$
$$\beta_6 SOX_{i,t} + + \beta_7 R\&D_{i,t} + \phi_t + \lambda_{j(i)} + \varepsilon_{i,t} \quad (2)$$

We use patents and citations as the proxy of innovation productivity. If the post-SOX increase in R&D investment increases innovation performance rather than wasting valuable corporate resources, we would expect the coefficient on the triple interaction term on innovation productivity to be positive and significant. The results are presented in Table 4.

<<<<Insert Table 4 about here>>>>>

The coefficients on the triple interaction terms for all firms are only positive and significant when we use Patents as our dependent variable (columns (1) and (5) of Table 4). On the other hand, the triple interaction term is not significant for models where we measure innovation productivity by citations (columns (3) and (7)).

The analysis shows that after the enactment of SOX, innovation productivity (in terms of both patents and citations) increases consistently and significantly for the *Non-Compliant Firms* with powerful CEOs (columns (2), (4), (6) and (8) of Table 4). This suggests that the higher level of R&D investment by *Non-Compliant Firms* with powerful CEOs, was effective in generating patentable corporate intangible assets.

Powerful CEOs, Innovation and Value creation:

The previous results suggest that in the post-SOX period, there is an increase in R&D investment and innovation productivity of firms with powerful CEOs. However, the increase in innovation productivity, particularly the increase in patents, should translate to direct value creation for the shareholders to justify the increased spending in R&D. More specifically, if the patent portfolios of firms with powerful CEOs are valuable, we would expect these firms to derive higher market valuation of innovation. Additionally, they may

also introduce major breakthrough products into the market. Li et al. (2016) document that granting power to CEOs could lead to higher corporate investment measured by capital expenditures and advertising expenditures and increase the growth of new products in dynamic and competitive product markets.

<<<<Insert Table 5 about here>>>>>

The announcements of major breakthrough products are found to have a positive abnormal stock return (Chaney and Devinney, 1992). In this section, we test how the market reacts to major product announcements using data from Mukherjee et al. (2016) for 1992-2006. Due to data constraints, our sample size reduces to 2,601 firm-year observations. The results are in Table 5.

We find that in the post-SOX period, *Non-Compliant Firms* led by powerful CEOs introduced more breakthrough products that earned positive abnormal announcement returns that were above the 75th percentile of the abnormal returns distribution (columns (1) and (2) of Table 5).

We also examine total cumulative abnormal returns in columns (3) and (4) of Table 5 and show that in the post-SOX periods, the market values new product announcements by powerful CEO run *Non-Compliant Firms* more positively. This is consistent with our conjecture of higher quality innovation by *Non-Compliant Firms* with powerful CEOs in the post-SOX period. We find similar results using 'CEO *Power Top Q*'. Notably, in every model of Table 5, we find that market reactions to the announcement of new products by the *Non-Complaint Firms* with powerful CEOs are generally significantly negative in the pre-SOX periods. That is powerful CEOs could not generate positive market reaction by introducing better products in the pre-SOX period.

One plausible explanation of the results could be lack of cooperative spirit within the organizations that may result in disengagement by the corporate participants when powerful CEOs adopt self-serving policies and boards fail to monitor and advise the CEOs effectively. Introducing breakthrough new products are the fruitful outcome of collaborative engagement of corporate participants. When the empowered board advises, monitors and promotes value-enhancing investments, firms with powerful CEOs can bring benefits that will maximize corporate value.

4.2. Powerful CEOs, Empire building investments in tangible assets and SOX:

Powerful CEOs who have a preference for making tangible investments with the objective of increasing the visible size of their firms (empire building) will invest more in tangible assets. Thus, in this section, we test our hypothesis regarding empire building by powerful CEOs. We use growth in Capital Expenditure (CAPEX) and Property and Plant and Equipment (PPE) as the dependant variables and examine the disciplining effect of the SOX on powerful CEOs in Table 6.

<<<<Insert Table 6 about here>>>>>

Consistent with our conjecture, we show quite sharp reduction of the growth of CAPEX following the passage of SOX in the Non-Compliant Firms leaded by powerful-CEOs. For example, focusing on the coefficient on the interaction term of column (3) of Table 6 where we use binary measure of CEO-Power, we find a negative growth rate of CAPEX by 5.64% (i.e., ($e^{-0.058}$ -1)*100). This seems a result of economic as well as statistical significance since this reflects that SOX curbed the growth of CAPEX to bring about equality in CAPEX growth among the Non-Compliant Firms. We report similar trend when we use continuous measure of CEO-power in column 2 and different level of fixed effect in column (1) of Table 7. We also find that the Non-Compliant Firms with powerful CEOs reduce their investments in PPE by 3.05% (i.e., ($e^{-0.031}$ -1)*100) in the post-SOX period (column (6)). Moreover, similar to Cohen et al (2004), we reveal the negative effect of SOX on CAPX growth in every specification.

We further explore empire building hypothesis using the evidence from M&A deals of powerful CEOs. Because powerful CEOs being elicited by personal gratification, may build their own *Luxembourg* through M&A deals and thus signal their phenomenal status in their organizations. In our study, we examine market reaction to their M&A deals. We consider acquirer returns using CARs calculated over five-day event windows (-2, +2)[25] around the acquisition announcement date (see, Masulis et al., 2007; Fuller, Netter and Stegemoller, 2002). We control for deal specific features following Hardford, Humphrey-Jenner and Powell (2012). The results of Table 7 show that the announcement returns for Non-Compliant Firms with powerful CEOs are, on average, higher (column (1) and (2))[26] after the enactment of the SOX. This indicates that the valuable advices and monitoring by

[25] Our results are robust (not reported) for 3-day window (-1,1).
[26] Masulis et al. (2007) document lower announcement returns for dictator CEOs.

independent boards can divert the enthusiasm powerful-CEOs to value enhancing projects or facilitate taking optimal policies without necessarily curving CEO power.

<<<<Insert Table 7 about here>>>>>

We also analyses the acquisitiveness of the powerful CEOs by counting the number of acquisitions per firm-year (acquisition count). Our findings further previous literature[27][28], highlighting the acquisitiveness of powerful CEOs. We show that the acquisitiveness of *Non-compliant Firms* with powerful CEOs declines after the enactment of the SOX. Thus, one plausible argument for high acquisitiveness of powerful CEOs could be attributed to lack of strict monitoring by empowered board.

Powerful CEOs and dividend payout policy:

Powerful CEOs who might have moral hazard problem (see, e.g., Campbell and Marino, 1994; Hirshleifer and Thakor, 1992; Narayanan, 1985) could further induce agency conflicts by paying less dividend and using free cash-flows by investing in value-reducing projects. On the other hand, dividends signal corporate performance (See: Ross, 1977) and thus serves for monitoring managerial activities and could prevent powerful-CEOs from extracting corporate resource for establishing their dictatorship in companies.

In this section, we examine the impact of powerful CEOs on dividend payout policy. The results for dividend payout are in columns (1) and (2) of Table 8. We show that on average, Non-Complaint Firms with powerful CEOs are associated with lower dividend payments in the pre-SOX period. However, in the post-SOX period, dividends in firms with powerful CEOs increase (the coefficient on the interaction term is positive and significant). The results highlight the tendency of Non-Complaint Firms with powerful CEOs to pay lower dividends in the pre-SOX periods (column 2 and 3). Thus, the enactment of the SOX mitigates impact of powerful CEOs on holding free cash-flows significantly (0.098/-0.086 = 1.14 in column (1)).

<<<<Insert Table 8 about here>>>>>

Moreover, though dividend payments may have moderating effect on agency conflicts, firms with high growth potentials may pay less dividends to avoid

[27] Fracassi and Tate (2012) argue that firms with more powerful CEOs are more likely to add new directors with pre-existing network ties that results in weaker board monitoring and more frequent acquisitions, but their merger bids destroy shareholder value. The effects are concentrated in firms with weak governance.

[28] Fahlenbrach (2009), using a sample of US firms from 1993 to 2002 (pre-SOX period) shows that firms that are headed by founder-CEOs (a component of powerful CEO index) make more acquisitions per year than non-founder-CEO firms.

underinvestment problem and costly financing options (Jensen, 1986; Fazzari, Hubbard and Peterson, 1988). On the other hand, dividend signalling models argues that more valuable firms pay higher dividends (Bhattacharya, 1979). However, this relationship could be subject to the governance structure of the firms (Pinkowitz, Stulz and Williamson, 2006). Thus, we analyse whether the dividend payout policy of *Non-Compliant Firms* with powerful CEOs, which had arguably weaker governance structure in the pre-SOX period improve firm's performance.

Using triple interaction analysis similar to model (2) and Tobin's Q as the measure of firm's performance , we find that after the enactment of SOX, firm's value increases consistently and significantly for the *Non-Compliant Firms* with powerful CEOs (columns (3), and (4) of Table 8). This suggests that the higher level of dividend payments by *Non-Compliant Firms* with powerful CEOs can maximize firm value.

5. Robustness tests:

5.1. Powerful CEOs, Compliant Firms and SOX: Falsification test

As discussed earlier, the exogenous improvement in corporate policies following the enactment of the SOX should be concentrated among the *Non-Compliant Firms*. Our results thus far show the moderating effect of the SOX on the powerful CEOs in the Non-Complaint Firms. In this segment, we re-estimate the corporate policies adopted the powerful CEOs in the Compliant Firms in the post-SOX period. More precisely, we perform falsification test to evaluate whether the powerful CEOs in the *Compliant-Firms* also initiate any strategic shift within the organizations in the post-SOX period.

<<<<Insert Table 9 about here>>>>>

Consistent with our conjecture, our results show that the Compliant Firms with powerful CEOs generally adopt any divergent corporate policies compared to the Compliant Firms without powerful CEOs. From Table (8), we can find that the SOX hasn't triggered any strategic shift in the Compliant Firms with powerful-CEOs. We note that the interaction terms of 'SOX * CEO power' representing the impact of SOX on powerful-CEOs' corporate policies and investments are insignificant in all models expect for the dividend payout policy. However, we didn't find the similar impact using the binary measure of CEO power. This implies that the SOX, on an average, has neutralized the pre-SOX differential corporate policy between Non-Compliant Firms with powerful-CEOs and without powerful-CEOs.

Powerful CEOs, poorly governed firms and SOX:

Arguably, the mandated increase in independence of audit committees and boards in general would benefit firms which are otherwise poorly governed or have a high Entrenchment Index value (E-index) (see, Bebchuk et al., 2009). Entrenchment provisions may harm shareholders by weakening the disciplinary threat of removal of management thereby could increase shirking, empire-building, and extraction of private benefits (see, Fracassi and Tate, 2012). Since an improvement in internal governance triggered by board and committee level independence would help to mitigate the negative effects associated with having highly entrenched management, we would expect a stronger effect of the SOX in these firms.

<<<<Insert Table 10 about here>>>>>

We consider sub-samples of firms that have a high (above median) pre-SOX E-index value (highly entrenched firms) and a low (below median) pre-SOX E-index value. E-Index data are from Bebchuk et al. (2009). We find significant results for the sample of pre-SOX high E-Index firms but not for the sample of the pre-SOX low E-index firms presented in Table in 9. The high E-index sub-sample results are generally consistent with the results for the entire sample. Powerful CEOs who were entrenched in the pre-SOX period, invest significantly more in R&D, lower capital expenditures, lower PPE growth, and higher dividends in the post SOX period.

5.2. Powerful CEOs, other measures of power and omitted governance variables:

Bebchuk et al. (2011) use CEO Pay Slice (CPS) -the fraction of the aggregate compensation of the top-five executive team captured by the CEO - to measure the relative importance of the CEO and the extent to which the CEO may extract rent. They suggest that CPS measures the centrality of the CEO in the compensation structure and reflects the outcome of CEO power on compensation. Adams et al. (2005) consider CEO power by exploring several sources of power but do not measure power in aggregate form to formulate a unique measure of CEO power. They concentrate on the title accumulation and founder status of CEOs, and whether or not the CEO is the only insider on the board. As we do not include 'CPS' and 'only insider' as a component in the CEO power measure, we control for these two variables in Table 11 in addition to the CEO power measure. Our results continue to hold after controlling for these variables.

<<<<Insert Table 11 about here>>>>>

Although we explicitly consider the underlying governance of the firms in identifying the moderating effect of the SOX on the effect of CEO power on firm-level policies, one could argue that our results, nevertheless, may be driven by other omitted characteristics of corporate governance. We argue that this, though not impossible, is less likely to be the case since we use firm-fixed effects in our specifications. Nevertheless, we control for other corporate governance features in our specifications. For example, external governance mechanisms, such as institutional holdings of company stock, may exert influence on the CEOs' investment preferences and quality (see, Appel, Gormley and Keim, 2016; Edmans, 2009). In addition, when the wedges between cash-flow rights and control rights are significantly large, a firms' governance quality may be significantly different since some of the agents dominate the decision-making forum (Villalonga and Amit, 2006). This leaves the room adoption of more self-serving strategies (Masulis et al., 2009). In addition, Yermack (1996) suggests that the size of the corporate board has important implications for the governance quality and firms' outcomes.

Moreover, by including firm fixed effects in our analyses, we control for average differences across firms that may result from any unobservable or observable predictors. Though firm fixed effect minimizes our concern for biased estimators due to omitted variable bias, following previous literature, we also control for other firm level features, such as leverage and cash holdings in Table 11 (Banerjee et al., 2015; Bushee, 2001). We find results consistent with our baseline estimations.

5.3. Alternative econometric modelling: Industry-Year interacted joint fixed effects with firm fixed effects

We also test whether the results are robust to the use of alternative fixed effects estimation. Specifically, industry specific shocks in a particular year may jointly affect CEO power and firm-level policies. To mitigate such concern, we run the baseline specifications using (industry X year) interacted joint fixed-effects with firm fixed effects instead of the baseline year fixed-effects and industry fixed-effects or year fixed-effects and firm-fixed effects. The results in Table 12 are consistent with the baseline results suggesting that time varying industry shocks are unlikely to drive our results.

<<<<Insert Table 12 about here>>>>>

5.4. CEO overconfidence and Powerful CEOs

Banarjee et al. (2015) show that in the post-SOX period, over-confident CEOs have been restrained in terms of over-investment in tangible investments such as PP&E and CAPEX. Some of the powerful CEOs in our study could also be overconfident CEOs, although the correlation coefficient between powerful CEOs and overconfident CEOs is not very high (0.078). We construct overconfidence measure following Humphery-Jenner, Lisic, Nanda and Silveri (2016). We include an overconfident-CEO variable and an interaction-term of overconfident-CEO and SOX in models (1) to (4) in Table 13. We find robust results for the moderating effect of the SOX on the relationship between CEO power and firm-level policies.

<<<<Insert Table 13 about here>>>>>

6. Conclusion

We analyse whether the efforts of powerful CEOs pursuing self-serving policies (such as empire building) could be diverted by the board of directors, to be better aligned with the interests of shareholders. We use the concurrent passage of the Sarbanes-Oxley Act of 2002 (SOX) and NYSE/NASDAQ listing regulation changes as an exogenous shock to internal firm governance to explore the impact of powerful CEOs on corporate policies. In particular, we use the heterogeneity in firm governance pre SOX, to challenge the notion that powerful CEOs are detrimental for all firms.

We suggest that contrary to the popular perception of the self-serving behavior of powerful CEOs, the improvement in governance induced by exogenous regulatory changes can channel or divert the misaligned efforts of powerful CEOs to value enhancing projects. In particular, for firms that had weaker governance, the passage of SOX was more likely to be an "exogenous shock" than for firms that were compliant with SOX before it became mandated.

The results suggest that the impact of SOX on firm corporate policy is concentrated in those firms with powerful CEOs that were *Non-Compliant* in the pre SOX period. We find that in the post-SOX period, *Non-Compliant Firms* with powerful CEOs engage less in empire building (pursue lower growth in CAPEX, PP&E), make higher quality investments (positive announcement return on M&A deals) but fewer acquisitions. They invest more in R&D investments and the increase in R&D investment significantly increases corporate innovation productivity.

We also find evidence of value creation in the post-SOX period, in that *Non-Compliant Firms* with powerful CEOs introduce higher quality new products and derive higher market value for innovation. In addition, they pay more dividends in the post-SOX period. The results are robust to the inclusion of other measures of CEO power used in the literature (CEO Pay Slice, CEO being only insider in the board and CEO overconfidence). Overall, the results suggest that improved decision making in the post-SOX period benefited the firms that needed such an exogenous change in governance to discipline powerful CEOs-firms with weak corporate governance structures.

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Table 1: Summary statistics

This table provides summary statistics for data employed in the analysis. The sample consists of 1,102 publicly traded, non-regulated firms that were available on ExecuComp from 1992 to 2014. The sample excludes missing data on CEO power components and firms that experience CEO turnover around SOX in 2002. *'Founder-CEO'* in a given year is an indicator variable that equals one if any source explicitly mentions that the current CEO is one of the original founders of the firm or was a main executive at the time the company was founded. 'CEO-Chair' is an indicator of powerful-CEO and it equals one if CEO is also the chairman of the board. '*CEO title concentration',* is a dummy variable which is one if CEOs hold more than two titles and zero otherwise. The percentage of ownership held by CEOs is represented by '*CEO Ownership'. 'CEO Ownership above industry median'* is an indicator equals one if the ownership of CEOs is greater than industry median. *'CEO Tenure'* is the number of years the CEO has served as CEO at the firm. *'CEO Tenure above industry median'* is one if the tenure of CEO is above the industry median. '*CEO Power'* is an index which is an aggregate measure of the five components of CEO power and thus the index value ranges from 0 to 5. *'CEO Power TOP-Q'* is one if '*CEO Power'* index is in the top quartile of the industry. *'Market Cap'* is firm market capitalization measured by share price times shares outstanding at the fiscal year-end. '*Profitability'* is earnings before interest and tax (EBIT) scaled by total assets. '*R&D/Asset'* is R&D expenditures scaled by total assets. '*CAPEX/Asset'* is capital expenditures scaled by total assets. '*PPE growth'* represents the log increase in PPE form concurrent year to next year. '*Tobin's Q'* is Market value of assets over book value of assets. '*Patent* $_{(t+1)}$*'* is natural logarithm of one plus number of patents in year (t+1). '*Citations* $_{(t+1)}$*'* is natural logarithm of one plus number of citations in year (t+1). Log(Market value of innovation) is the natural logarithm of the market value of patents available from updated dataset of KPSS(2017). *CAR* which is five-day cumulative abnormal return calculated using the market model. P-values are in parentheses. Significance levels are indicated: *=10%; **=5%; ***=1%.

Panel A: CEO Power components and variables

Variable	Mean	Median	Standard deviation
Founder CEO	0.18	0	0.38
CEO-Chair duality	0.60	1	0.49
Title Concentration	0.25	0	0.44
CEO Ownership	0.03	0	0.06
CEO Ownership above industry median	0.47	0	0.5
CEO Tenure	8.86	6	7.96
CEO Tenure above industry median	0.50	0	0.50
CEO Power	2.02	2	1.40
CEO Power Top Q	0.16	0	0.37

Panel B: Correlation matrix of CEO Power components and variables

Variable	Founder CEO	CEO-Chair duality	Title Concentration	CEO Ownership	CEO Tenure	CEO Power	CEO Power Top Q
Founder CEO	1						
CEO-Chair duality	0.13	1					

Title Concentration	0.02	0.47	1				
CEO Ownership	0.45	0.14	0.04	1			
CEO Tenure	0.48	0.25	0.07	0.41	1		
CEO Power	0.55	0.66	0.52	0.42	0.62	1	
CEO Power Top Q	0.53	0.35	0.40	0.37	0.46	0.69	1

Panel C: Summary statistics of full sample

Variable	Mean	Median	Standard deviation
Market Cap ($million)	6864.97	1297.8	24875.05
Profitability	0.09	0.10	0.28
R&D/Asset	0.04	0.00	0.14
$Patents_{t+2}$	1.02	0.00	1.56
$Citations_{t+2}$	1.47	0.00	2.30
CAPEX/Asset	0.06	0.04	0.06
Dividend/Asset	0.01	0.00	0.04
PPE Growth	0.07	0.04	0.3
Tobin's Q	2.17	1.66	2.56
Log(Market value of innovation)	4.23	4.10	2.43
CAR(-2,2)(%)	0.30	0.20	6.82

Panel D: Non-Compliant firms in pre-SOX period

	Powerful CEO: Treated		Non-Powerful CEO: Control		Test of differences	
Variables	Mean	Median	Mean	Median	t-stat	z-stat
Market Cap ($million)	5433.09	895.40	9127.15	1292.01	1.71	3.72
Profitability	0.12	0.12	0.12	0.11	-0.85	-2.62
R&D/Asset	0.03	0.00	0.03	0.00	0.32	2.42
$Patents_{t+2}$	1.05	0.00	1.37	0.69	4.01	4.07
$Citations_{t+2}$	1.96	0.00	2.28	0.00	2.52	3.14
CAPEX/Asset	0.08	0.05	0.07	0.06	-2.42	0.87

Dividend/Asset	0.01	0.00	0.02	0.01	4.71	12.22
PPE Growth	0.14	0.12	0.11	0.06	-3.17	-5.48
Tobin's Q	2.82	2.02	2.38	1.76	-3.76	-5.16
Log(Market value of innovation)	3.59	3.33	4.29	4.05	4.05	4.20
CAR(-2,2)	0.61	0.56	0.26	0.22	-0.57	-1.02

Table 2: Powerful CEOs and R&D investment

This table represents results for the relationship between firm R&D investment and powerful CEOs. Columns (1), (2), (5), (6) include all S&P1500 firms from 1992-2014 with available information to construct powerful-CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. We define *'Non-Compliant firms'* (columns (3), (4), (7) and (8)) are firms without both a majority independent board and fully independent audit committee before SOX (1998-2001). The dependent variable is R&D expenditures$_{(t+1)}$ scaled by total assets$_{(t)}$. 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'Firm size' is measured by market value of equity. 'Profitability' is firms' earnings before interest and tax (EBIT) scaled by total assets. 'CAPEX/Asset' is firms' capital expenditures scaled by total assets. 'R&D/Asset' is firms' value of R&D expenditures scaled by total assets. 'Tobin's Q' is market value of assets over book value of assets. All models include year fixed effect. Models (1), (3), (5) and (7) include industry fixed effects. The other models include firm fixed effects. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**[RD(t+1)/Asset(t)] x 100**							
	Full sample		**Non-compliant**		**Full sample**		**Non-compliant**	
Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
SOX * CEO Power	0.096***	0.143***	0.123***	0.159***				
	[0.002]	[0.000]	[0.005]	[0.002]				
SOX *CEO power Top Q					0.195*	0.338***	0.253**	0.422***
					[0.081]	[0.005]	[0.023]	[0.005]
CEO Power	-0.146***	-0.144***	-0.144***	-0.135***				
	[0.000]	[0.000]	[0.000]	[0.000]				
CEO power Top Q					-0.372***	-0.313**	-0.324***	-0.247*
					[0.000]	[0.022]	[0.006]	[0.061]
SOX	0.127	0.568***	0.439*	0.869***	0.317**	0.826***	0.668***	1.146***
	[0.441]	[0.004]	[0.061]	[0.001]	[0.046]	[0.000]	[0.004]	[0.000]
Firm size	-0.215***	-0.573***	-0.180***	-0.536***	-0.214***	-0.573***	-0.178***	-0.538***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Profitability	0.234	0.781**	-1.103	-0.158	0.233	0.779**	-1.100	-0.158
	[0.706]	[0.034]	[0.178]	[0.750]	[0.707]	[0.034]	[0.176]	[0.747]
CAPEX/Asset	-0.252	0.827	0.766	1.328	-0.251	0.807	0.747	1.264
	[0.671]	[0.245]	[0.487]	[0.292]	[0.672]	[0.259]	[0.500]	[0.321]
R&D/Asset	0.734***	0.421***	0.652***	0.420***	0.735***	0.421***	0.653***	0.421***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Tobin's Q	0.172***	0.363***	0.293***	0.385***	0.169***	0.361***	0.291***	0.385***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]

Constant	1.590*** [0.000]	5.306*** [0.000]	0.542 [0.170]	4.466*** [0.000]	1.205*** [0.000]	5.051*** [0.000]	0.274 [0.470]	4.226*** [0.000]
Year fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effect	N	Y	N	Y	N	Y	N	Y
Industry fixed effect	Y	N	Y	N	Y	N	Y	N
Observations	18,263	18,263	8,604	8,604	18,263	18,263	8,604	8,604
R-squared	0.851	0.339	0.862	0.347	0.851	0.338	0.862	0.346

Table 3: Powerful CEOs, innovation output and quality of innovation

This table represents results for examining the relationship between firm's innovation and powerful CEOs. Models include Non-complaint Firms of S&P1500 firms from 1992-2008 with available information on innovation from Kogan et al. (2017) and to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. Models (3) and (6) include data from the updated dataset of Kogan et al. (2017) with innovation value. The dependent variable in models (1) and (4) is log(1+number of patents) $_{(t+2)}$. The dependent variable in models (2) and (5) is log(1+number of citations) $_{(t+2)}$. The dependent variable in models (3) and (6) is log(Market value of innovation)-natural logarithm of the market value of patents available from updated dataset of KPSS(2017). 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'Firm size' is measured by market value of equity. 'Profitability' is firms' earnings before interest and tax (EBIT) scaled by total assets. 'CAPEX/Asset' is firms' capital expenditures scaled by total assets. 'R&D/Asset' is firms' value of R&D expenditures scaled by total assets. Tobin's Q' is market value of assets over book value of assets. All models include firm and year fixed effects. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**Patent $_{(t+2)}$**	**Citations $_{(t+2)}$**	**Log(Market value of innovation)**	**Patent $_{(t+2)}$**	**Citations $_{(t+2)}$**	**Log(Market value of innovation)**
Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
SOX * CEO Power	0.048**	0.132***	0.085**			
	[0.044]	[0.003]	[0.047]			
SOX *CEO power Top Q				0.316***	0.525***	0.508***
				[0.000]	[0.001]	[0.001]
CEO Power	-0.043**	-0.089**	-0.066*			
	[0.012]	[0.010]	[0.083]			
CEO power Top Q				-0.102	-0.168	-0.358***
				[0.108]	[0.209]	[0.004]
SOX	-1.230***	-2.426***	1.375**	-1.171***	-2.225***	1.511**
	[0.000]	[0.000]	[0.042]	[0.000]	[0.000]	[0.018]
Firm size	-0.027	0.007	0.185***	-0.025	0.009	0.183***
	[0.261]	[0.859]	[0.000]	[0.299]	[0.805]	[0.000]
Profitability	-0.311	0.312	-0.626	-0.300	0.343	-0.643
	[0.223]	[0.387]	[0.183]	[0.246]	[0.339]	[0.166]
CAPEX/Asset	0.155	0.120	0.662***	0.147	0.104	0.705***
	[0.274]	[0.728]	[0.000]	[0.303]	[0.766]	[0.000]
R&D/Asset	3.490***	11.267***	-3.257***	3.409***	11.129***	-3.310***
	[0.003]	[0.000]	[0.000]	[0.004]	[0.000]	[0.000]

Tobin's Q	0.063	0.014	-0.001	0.058	0.008	0.003
	[0.111]	[0.825]	[0.972]	[0.136]	[0.903]	[0.913]
Constant	1.233***	2.356***	2.133***	1.154***	2.188***	2.179***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Year fixed effect	Y	Y	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y	Y	Y
Observations	5,055	5,055	2,542	5,055	5,055	2,542
R-squared	0.285	0.379	0.422	0.288	0.379	0.426

Table 4: Powerful CEO, SOX and Value of R&D investments

This table represents results for examining the relationship between firm's value of R&D investment and powerful CEOs. Columns (1), (3), (5) and (7) include S&P1500 firms from 1992-2008 with available information on innovation from Kogan et al. (2017) and to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. We define *'Non-Compliant Firms'* (columns (2), (4), (6) and (8)) are firms without both a majority independent board and fully independent audit committee before SOX (1998-2001). The dependent variable in models (1), (2), (5) and (6) is log(1+number of patents) $_{(t+2)}$. The dependent variable in models (3), (4), (7) and (8) is log(1+number of citations) $_{(t+2)}$. 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'Firm size' is measured by market value of equity. 'Profitability' is firms' earnings before interest and tax (EBIT) scaled by total assets. 'CAPEX/Asset' is firms' capital expenditures scaled by total assets. 'R&D/Asset' is firms' value of R&D expenditures scaled by total assets. 'Tobin's Q' is market value of assets over book value of assets. All models include firm and year fixed effects. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**Patent $_{(t+2)}$**		**Citations $_{(t+2)}$**		**Patent $_{(t+2)}$**		**Citations $_{(t+2)}$**	
	All firms	**Non-compliant**	**All firms**	**Non-compliant**	**All firms**	**Non-compliant**	**All firms**	**Non-compliant**
Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
SOX * CEO Power* R&D	0.655**	1.277**	0.591	3.210**				
	[0.044]	[0.013]	[0.474]	[0.018]				
SOX *CEO power Top Q * R&D					2.155**	4.203***	2.738	9.427**
					[0.031]	[0.003]	[0.404]	[0.035]
CEO Power * R&D	-0.083	-0.245	0.001	-0.797				
	[0.726]	[0.417]	[0.998]	[0.212]				
CEO power Top Q * R&D					0.308	-0.136	0.719	-1.461
					[0.757]	[0.884]	[0.751]	[0.515]
SOX * R&D	-4.530***	-7.474***	-11.184***	-21.236***	-3.623***	-5.585***	-10.536***	-16.057***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
SOX * CEO Power	0.015	-0.007	0.060	0.021				
	[0.390]	[0.769]	[0.112]	[0.679]				
SOX *CEO power Top Q					0.162***	0.159**	0.315**	0.224
					[0.002]	[0.033]	[0.026]	[0.218]
SOX	-1.260***	-1.281***	-2.391***	-2.213***	-1.243***	-1.309***	-2.298***	-2.350***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
CEO Power	-0.025**	-0.028*	-0.049*	-0.058				
	[0.043]	[0.062]	[0.089]	[0.101]				
CEO power Top Q					-0.091*	-0.074	-0.151	-0.087
					[0.060]	[0.189]	[0.174]	[0.510]

Firm size	0.099***	0.121***	0.085*	0.181***	0.097***	0.120***	0.083*	0.141**
	[0.000]	[0.001]	[0.075]	[0.005]	[0.000]	[0.001]	[0.082]	[0.028]
Profitability	-0.608***	-0.727***	-0.566*	-0.497	-0.630***	-0.800***	-0.593*	-0.969***
	[0.001]	[0.003]	[0.075]	[0.181]	[0.000]	[0.001]	[0.058]	[0.008]
CAPX/Asset	0.040	-0.410	0.323	-1.544**	0.046	-0.428	0.326	-0.861
	[0.866]	[0.206]	[0.498]	[0.012]	[0.844]	[0.191]	[0.486]	[0.166]
R&D/Asset	1.971***	3.473**	5.646***	10.959***	1.724***	3.164***	5.589***	10.401***
	[0.006]	[0.011]	[0.000]	[0.000]	[0.001]	[0.002]	[0.000]	[0.000]
Tobin's Q	0.023	0.004	0.051*	-0.020	0.026*	0.006	0.055**	0.014
	[0.128]	[0.846]	[0.055]	[0.620]	[0.085]	[0.785]	[0.038]	[0.714]
Constant	0.605***	0.557**	1.831***	1.411***	0.569***	0.512**	1.742***	1.465***
	[0.001]	[0.022]	[0.000]	[0.001]	[0.001]	[0.033]	[0.000]	[0.001]
Year fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Observations	10,357	5,055	10,357	5,055	10,357	5,055	10,357	5,055
R-squared	0.296	0.302	0.394	0.441	0.297	0.305	0.396	0.420

Table 5: Powerful CEO, innovation and value creation

This table represents results for examining the relationship between firm's innovation and value creation through product announcement in the post-SOX period. Models include Non-Compliant Firms of S&P1500 firms from 1992-2006 with available data on the market reaction to a new product announcement from Mukherjee et al. (2017), on innovation from Kogan et al. (2017), and to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. Models (1) and (2) include the count of the number of announcements with the cumulative abnormal returns above the 75 percentile, represented by '75^{th} percentile CAR'. The dependent variable in models (3) and (4) is 'CAR'-the sum of all positive cumulative abnormal returns over the year. 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'Firm size' is measured by market value of equity. 'Sales growth' represents the log increase in assets from concurrent year to previous year. 'Profitability' is firms' earnings before interest and tax (EBIT) scaled by total assets. 'CAPEX/Asset' is firms' capital expenditures scaled by total assets. 'R&D/Asset' is firms' value of R&D expenditures scaled by total assets. 'Tobin's Q' is market value of assets over book value of assets. 'Patent (t)' is $\log(1+\text{number of patents})_{(t)}$. All models include firm and year fixed effects. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**75^{th} percentile CAR**		**CAR**	
Model	**(1)**	**(2)**	**(3)**	**(4)**
SOX * CEO Power	0.271***		0.018**	
	[0.009]		[0.046]	
SOX *CEO power Top Q		0.529**		0.079*
		[0.042]		[0.065]
CEO Power	-0.188**		-0.017**	
	[0.026]		[0.034]	
CEO power Top Q		-0.478**		-0.089*
		[0.048]		[0.077]
SOX	1.315*	1.675**	0.138**	0.124*
	[0.080]	[0.027]	[0.018]	[0.076]
Firm size	0.233	-0.208	0.009	-0.001
	[0.668]	[0.554]	[0.834]	[0.980]
Sales growth	-0.375**	-0.311**	-0.022*	-0.023*
	[0.034]	[0.025]	[0.085]	[0.086]
Profitability	-1.300	-1.336	-0.106	-0.148
	[0.102]	[0.332]	[0.121]	[0.336]
CAPX/Asset	-6.955	-2.094	-0.646	-0.689
	[0.247]	[0.545]	[0.139]	[0.164]
R&D/Asset	6.675**	5.909	0.482**	0.480
	[0.040]	[0.220]	[0.035]	[0.233]
Tobin's Q	0.176***	0.097	0.016***	0.014
	[0.000]	[0.139]	[0.000]	[0.210]
Patents(t)	-0.067	0.016	-0.010	-0.011
	[0.572]	[0.834]	[0.294]	[0.254]
Constant	-4.320	-0.062	-0.091	-0.002
	[0.375]	[0.985]	[0.801]	[0.997]
Year fixed effect	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y
Observations	1,381	1,264	1,381	1,264
R-squared	0.171	0.174	0.205	0.172

Table 6: Powerful CEO, empire building investments in tangible assets and SOX

This table represents results of the analyses of the empire building strategy of Powerful CEOs. Models Non-Compliant Firms of S&P1500 firms from 1992-2014 with available information to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. The dependent variable in models (1) to (3) include log[Capital Expenditures(t+1)/ Capital Expenditures(t)]. The dependent variable in models (4) to (8) include log[Property, plant and equipment(t+1)/ Property, plant and equipment (t)]. 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. All models include year fixed effects and firm level controls. Models (1) and (4) include industry fixed effects. Models (2), (3), (5) and (6) include firm fixed effects. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**CAPX Growth**			**PPE Growth**		
Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
SOX * CEO Power	-0.020***	-0.025***		-0.009**	-0.007**	
	[0.009]	[0.006]		[0.025]	[0.046]	
SOX *CEO power Top Q			-0.058**			-0.031**
			[0.042]			[0.046]
CEO Power	0.016***	0.012		0.012***	0.008**	
	[0.004]	[0.103]		[0.000]	[0.014]	
CEO power Top Q			0.036			0.018
			[0.180]			[0.230]
SOX	0.534***	0.490***	-0.306***	-0.106***	-0.051***	-0.113***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Constant	0.183***	0.108	0.224***	0.038	-0.004	0.013
	[0.000]	[0.127]	[0.000]	[0.487]	[0.855]	[0.777]
Firm level controls	Y	Y	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y	Y	Y
Industry fixed effect	Y	N	N	Y	N	N
Firm fixed effect	Y	Y	Y	Y	Y	Y
Observations	8,400	8,400	8,400	7,966	7,966	7,966
R-squared	0.128	0.130	0.145	0.240	0.464	0.218

Table 7: Powerful CEO, M&A deals and SOX

This table represents results of the analyses of M&A deals of Powerful CEOs. Models include Non-Compliant Firms of S&P1500 from 1992-2012 with available information of M&A deals and to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. The dependent variable in models (1) and (2) is *CAR* which is five-day cumulative abnormal return calculated using the market model. The dependent variable in models (3) and (4) include acquisition count- the number of acquisitions per firm per year. 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'Relative deal size' is transaction value over acquirer's market capitalization on 11 day before the announcement date. 'Subsidiary target' is one if the target company is a subsidiary company, otherwise zero. 'Cross boarder deal' is one if the target company is a foreign company, otherwise zero. 'Serial bidder is one if the acquirer makes at least 3 deals in a year, otherwise zero. All models include year fixed effects and firm level controls. Models (1) and (2) include firm fixed effects. Models (3) and (4) are pooled time-series Poisson regressions and include industry fixed effect. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**CAR(-2,2)**		**Acquisition count**	
Models	**(1)**	**(2)**	**(3)**	**(4)**
SOX * CEO Power	0.006**		-0.076**	
	[0.032]		[0.028]	
SOX *CEO power Top Q		0.020**		-0.262**
		[0.029]		[0.043]
CEO Power	-0.004*		0.029	
	[0.070]		[0.255]	
CEO power Top Q		-0.010		0.076
		[0.229]		[0.380]
SOX	0.044**	-0.031**	-0.225	-0.391**
	[0.023]	[0.028]	[0.245]	[0.030]
Relative deal size	-0.014	-0.015	-0.441***	-0.436***
	[0.233]	[0.412]	[0.000]	[0.000]
Subsidiary target	0.001	0.001	-0.081	-0.070
	[0.770]	[0.722]	[0.659]	[0.704]
Cross boarder deal	0.002	0.001	-0.078**	-0.077**
	[0.716]	[0.574]	[0.039]	[0.039]
Serial bidder	0.006	0.006*	-0.049	-0.051
	[0.223]	[0.096]	[0.335]	[0.320]
Constant	0.103**	0.097*	-0.960**	-0.896**
	[0.015]	[0.055]	[0.025]	[0.037]
Firm level controls	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
Firm fixed effect	Y	Y	N	N
Observations	1,905	1,905	1,905	1,905
R-squared	0.035	0.033		

Table 8: Powerful CEOs, dividend policy and firm value

This table represents results for examining the impact of powerful CEOs on firm's dividend policy and significance of higher dividends on firm's value. Models include Non-Complaint S&P1500 firms from 1992-2014 with available information to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. The dependent variable in models (1) and (2) is 'dividend payout ratio' measured by dividend scaled by total assets in period (t+1). The dependent variable in models (3) and (4) is Tobin's Q in period (t+1). 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'Tobin's Q' is market value of assets over book value of assets. All models include firm, year fixed effects and firm level controls. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**Dividend payout ratio $_{(t+1)}$ x100**		**Tobin's $Q_{(t+1)}$**	
Model	(1)	(2)	(3)	(4)
SOX * CEO Power* Dividend			0.676**	
			[0.016]	
SOX *CEO power Top Q * Dividend				1.348**
				[0.042]
SOX * CEO Power	0.098**		-0.015	
	[0.042]		[0.240]	
SOX *CEO power Top Q		0.517***		-0.091**
		[0.008]		[0.020]
SOX * Dividend			-1.611*	-0.275
			[0.064]	[0.712]
CEO power * Dividend			-0.446*	
			[0.069]	
CEO power Top Q * Dividend				-0.008
				[0.990]
CEO Power	-0.086**		0.015	
	[0.021]		[0.174]	
CEO power Top Q		-0.406**		0.043
		[0.010]		[0.307]
SOX	-0.092	0.058	-0.238***	-0.150***
	[0.643]	[0.740]	[0.000]	[0.003]
Dividend/Asset			1.852**	0.736
			[0.019]	[0.371]
Constant	0.361	0.149	0.008	-0.069
	[0.275]	[0.647]	[0.940]	[0.502]
Firm level controls	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y
Observations	8,495	8,495	8,495	8,495
R-squared	0.069	0.073	0.174	0.155

Table 9: Powerful CEOs in the Compliant Firms

This table represents results for examining the relationship between Compliant Firms with powerful CEOs and corporate policies. Models include Complaint S&P1500 firms from 1992-2014 with available information to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. The dependent variable in models (1) and (5) is R&D expenditures$_{(t+1)}$ scaled by total assets$_{(t)}$. The dependent variable in models (2) and (6) include log[Capital Expenditures(t+1)/ Capital Expenditures(t)]. The dependent variable in models (3) and (7) include log[Property, plant and equipment(t+1)/ Property, plant and equipment (t)]. The dependent variable in models (4) and (8) is 'dividend payout ratio' measured by dividend scaled by total assets in period (t+1). 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'CEO power Top Q' is an indicator variable equals one if the value of CEO Power is in the top quartile of the industry. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. All models include firm, year fixed effects and firm level controls. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**[RD(t+1)/ Asset(t)] x 100**	**CAPX Growth**	**PPE Growth**	**Dividend payout ratio $_{(t+1)}$ x100**	**[RD(t+1)/ Asset(t)] x 100**	**CAPX Growth**	**PPE Growth**	**Dividend payout ratio $_{(t+1)}$ x100**
Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
SOX * CEO Power	0.046	-0.001	-0.002	0.103*				
	[0.522]	[0.874]	[0.704]	[0.054]				
SOX *CEO power Top Q					0.251	0.008	-0.015	0.252
					[0.395]	[0.826]	[0.359]	[0.587]
CEO Power	-0.129*	-0.015*	0.005	-0.070				
	[0.092]	[0.075]	[0.257]	[0.136]				
CEO power Top Q					-0.356	-0.038	0.012	0.058
					[0.278]	[0.296]	[0.461]	[0.919]
SOX	0.161	-0.011	0.003	-0.769*	0.750**	-0.008	-0.003	0.059
	[0.680]	[0.847]	[0.905]	[0.065]	[0.035]	[0.887]	[0.873]	[0.906]
Constant	6.857***	0.533***	0.523***	-1.894*	7.673***	0.509***	0.218***	-1.300
	[0.000]	[0.000]	[0.000]	[0.059]	[0.000]	[0.000]	[0.000]	[0.235]
Firm level controls	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Observations	5,338	5,231	4,965	5,260	5,338	5,231	4,965	5,260
R-squared	0.361	0.191	0.222	0.644	0.376	0.190	0.426	0.028

Table 10: Robustness test using E-index to measure quality of governance

This table represents results of robustness test of our hypothesis using E-index. The analysis includes all S&P1500 firms from 1992-2014 with available information to construct E-index from Bebchuk et al. (2009), powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. Columns (1), (3), (5), (7) (9) and (11) represent the firms with powerful CEOs having E-index value above meidan (>2) in pre-SOX period. The dependent variable in models (1) and (2) include R&D expenditures$_{(t+1)}$ scaled by total assets$_{(t)}$. The dependent variable in models (3) and (4) is log [Capital Expenditures$_{(t+1)}$/ Capital Expenditures$_{(t)}$]. The dependent variable in models (5) and (6) is log Property, plant and equipment$_{(t+1)}$/ Property, plant and equipment$_{(t)}$]. The dependent variable in models (7) and (8) is dividend scaled by total assets in period (t+1). 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. All models include firm and year fixed effects. All control variables are from baseline regressions. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels: *=10%; **=5%; ***=1%.

Dependent variable	**[RD(t+1)/Asset(t)] x 100**		**CAPEX Growth**		**PPE Growth**		**Dividend payout ratio $_{(t+1)}$ x100**	
	E-Index>2	**E-Index<=2**	**E-Index>2**	**E-Index<=2**	**E-Index>2**	**E-Index<=2**	**E-Index>2**	**E-Index<=2**
Model	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
SOX * CEO Power	0.174***	0.082	-0.022***	-0.013	-0.012***	-0.006	0.145***	0.055
	[0.002]	[0.349]	[0.005]	[0.129]	[0.009]	[0.119]	[0.000]	[0.440]
CEO Power	-0.155***	-0.082	0.016**	0.001	0.014***	0.004	-0.107***	-0.061
	[0.007]	[0.275]	[0.026]	[0.838]	[0.000]	[0.197]	[0.000]	[0.324]
SOX	0.445	1.160***	-0.245***	-0.273***	-0.111***	-0.107***	-0.627***	0.634**
	[0.109]	[0.005]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.034]
Constant	6.023***	9.137***	-0.190***	-0.108	-0.053	-0.165**	0.705***	0.931
	[0.000]	[0.000]	[0.001]	[0.282]	[0.151]	[0.016]	[0.000]	[0.150]
Firm level controls	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y	Y	Y	Y	Y
Observations	10,645	7,618	10,349	7,475	9,767	7,103	10,456	7,547
R-squared	0.251	0.244	0.079	0.108	0.174	0.532	0.081	0.028

Table 11: Powerful CEOs, alternative sources of CEO power, firm level controls and governance measures
This table represents results of the analyses of the corporate policies of Non-Complaint firms with powerful CEOs after controlling alternative measures of CEO power, other firm level controls and governance variables. All models include Non-Compliant S&P1500 firms from 1992-2014 with available information to construct powerful CEO index and excluded regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. The dependent variable in model (1) includes R&D $expenditures_{(t+1)}$ scaled by total $assets_{(t)}$. The dependent variable in model (2) is log [Capital $Expenditures_{(t+1)}$/ Capital $Expenditures_{(t)}$]. The dependent variable in model (3) is log Property, plant and $equipment_{(t+1)}$/ Property, plant and $equipment_{(t)}$]. The dependent variable in model (4) is dividend scaled by total assets in period (t+1). 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'CPS' is the CEO pay slice- the percentage of the total compensation to the top five executives that goes to the CEO (see, Bebchuk et al. (2011)). 'Only insider' is an indicator equals one if CEO is the only insider of the board. 'Institutional holdings' is proportional ownership of institutional investors. 'Dual Class' is an indicator equals one for firms with dual class shares, zero otherwise. 'Board size' is total number of board members of the firm. 'Cash/Asset' is total amount of cash holdings scaled by assets. Leverage is long-term debt divided by total assets. All models include base-line firm level controls, year and firm fixed effects. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels are: *=10%; **=5%; ***=1%.

Dependent variable	**[RD(t+1)/Asset(t)] x 100**	**CAPX Growth**	**PP&E Growth**	**Dividend payout ratio $_{(t+1)}$ x100**
Models	**(1)**	**(2)**	**(3)**	**(4)**
SOX * CEO Power	0.159***	-0.021**	-0.012**	0.095**
	[0.006]	[0.035]	[0.047]	[0.034]
CEO Power	-0.117**	0.007	0.006	-0.088**
	[0.014]	[0.394]	[0.177]	[0.017]
SOX	1.208***	-0.502***	-0.148***	-0.333*
	[0.001]	[0.000]	[0.000]	[0.052]
Cash/Asset	0.033	0.665***	0.453***	0.852
	[0.975]	[0.000]	[0.000]	[0.113]
Leverage	-0.466	-0.023	-0.089	-0.842***
	[0.334]	[0.698]	[0.120]	[0.004]
CPS	0.278	0.128**	0.066*	-0.574***
	[0.460]	[0.041]	[0.087]	[0.002]
Only insider	-0.276***	0.024	0.023**	0.053
	[0.005]	[0.161]	[0.047]	[0.375]
Institutional holdings	-0.008*	-0.000	0.000	-0.002
	[0.071]	[0.679]	[0.540]	[0.439]
Dual class	-0.323	0.011	-0.025	0.067
	[0.562]	[0.778]	[0.326]	[0.734]
Board size	-0.019	-0.015***	-0.009***	0.085***
	[0.606]	[0.004]	[0.009]	[0.006]
Constant	6.980***	-0.077	-0.146	0.393
	[0.000]	[0.462]	[0.106]	[0.463]
Baseline firm level controls	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y
Observations	5,684	5,543	5,244	5,614
R-squared	0.270	0.124	0.158	0.069

Table 12: Powerful CEO and SOX: Industry-Year interacted joint fixed effects with firm fixed effects

This table represents results of the analyses of the corporate policies of Non-Complaint firms with powerful CEOs using alternative econometric specifications. The analysis includes all Non-Compliant S&P1500 firms from 1992-2014 with available information to construct powerful CEO index and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. The dependent variable in model (1) includes R&D expenditures$_{(t+1)}$ scaled by total assets$_{(t)}$. The dependent variable in model (2) is log [Capital Expenditures$_{(t+1)}$/ Capital Expenditures$_{(t)}$]. The dependent variable in model (3) is log Property, plant and equipment$_{(t+1)}$/ Property, plant and equipment$_{(t)}$]. The dependent variable in model (4) and (8) is dividend scaled by total assets in period (t+1). 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. All models include industry- year interacted joint fixed effects with firm fixed effects. All control variables are from baseline regressions. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels are indicated: *=10%; **=5%; ***=1%.

Dependent variable	**[RD(t+1)/Asset(t)] x 100**	**CAPX Growth**	**PP&E Growth**	**Dividend payout ratio $_{(t+1)}$ x100**
Model	(1)	(2)	(3)	(4)
SOX * CEO Power	0.135**	-0.020**	-0.013**	0.110**
	[0.026]	[0.027]	[0.014]	[0.042]
CEO Power	-0.124***	0.010	0.009*	-0.058
	[0.004]	[0.185]	[0.076]	[0.189]
SOX	-4.859***	0.241***	-0.036	-2.344***
	[0.000]	[0.000]	[0.118]	[0.000]
Constant	10.620***	-0.254**	-0.425***	-0.323
	[0.000]	[0.040]	[0.000]	[0.565]
Firm level controls	Y	Y	Y	Y
Industry x year fixed effect	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y
Observations	8,604	8,400	7,955	8,495
R-squared	0.391	0.251	0.260	0.224

Table 13: Powerful CEOs and overconfidence

This table represents results of the analyses of the corporate policies of Non-Complaint firms with powerful CEOs after controlling the effect of overconfidence. The table includes all Non-Compliant S&P1500 firms from 1992-2014 with available information to construct powerful CEO index, overconfidence indicator and exclude regulated, financial and utilities firms and firms experiencing CEO turnover around the SOX period. The dependent variable in model (1) include $RD_{(t+1)}$ / $R\&D_{(t)}$. The dependent variable in model (2) is log [Capital $Expenditures_{(t+1)}$/ Capital $Expenditures_{(t)}$]. The dependent variable in model (3) is log Property, plant and $equipment_{(t+1)}$/ Property, plant and $equipment_{(t)}$]. The dependent variable in model (4) and (8) is dividend scaled by total assets in period (t+1). 'CEO Power' is an index: sum of five indicators- whether CEO is founder, CEO is chairman, CEO holds both chairman and president positions, tenure of CEOs is above the median tenure of CEOs in industry-year distribution of CEO tenure and ownership of CEOs is above the median of the CEO's ownership in industry-year distribution of CEO ownership. 'SOX' is an indicator that equals one if the observation occurs in 2002 or later and zero otherwise. 'Confidence 67' is a measure of CEO's overconfidence defined in Banerjee et al (2015). All models include year and firm fixed effects. All control variables are from baseline regressions. Standard errors are clustered at firm level. P-values are in parentheses. Significance levels are indicated: *=10%; **=5%; ***=1%.

Dependent variable	**[RD(t+1)/Asset(t)] x 100**	**CAPX Growth**	**PP&E Growth**	**Dividend payout ratio (t+1)**
Models	**(1)**	**(2)**	**(3)**	**(4)**
SOX * CEO Power	0.174***	-0.018**	-0.010**	0.091**
	[0.005]	[0.048]	[0.026]	[0.046]
CEO Power	-0.128***	0.010	0.009**	-0.052
	[0.003]	[0.151]	[0.018]	[0.140]
SOX	1.094***	-0.201***	-0.123***	-0.169
	[0.001]	[0.000]	[0.000]	[0.453]
SOX x Confidence_67	0.007	-0.032	-0.050**	0.407***
	[0.945]	[0.177]	[0.011]	[0.000]
Confidence_67	-0.096	0.050**	0.088***	-0.407***
	[0.407]	[0.014]	[0.000]	[0.000]
Constant	4.861***	-0.171**	-0.139**	1.526***
	[0.000]	[0.024]	[0.039]	[0.000]
Baseline controls	Y	Y	Y	Y
Year fixed effect	Y	Y	Y	Y
Firm fixed effect	Y	Y	Y	Y
Observations	7,108	6,945	6,610	7,008
R-squared	0.337	0.079	0.177	0.097