Master Thesis

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Financial Economics

The Effect of Distracted Directors on Firm Valuation

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Abstract

The aim of this paper is to quantify the impact of director distraction on firm value by exploiting (plausibly) exogenous variation in the allocation of attention across the directorships of directors serving on multiple boards. This is done by constructing a distraction measure that considers attention-grabbing shocks in other industries where these directors hold additional board positions. Evidence shows that director distraction leads to a significant decrease in firm valuation, particularly when the distracted directors are independent. Results suggest that distracted directors spend less time and energy monitoring managers. As a result of this, managers take advantage at the expense of shareholders by behaving passively. No evidence is found in line with other potential channels through which director distraction could negatively influence firm value: managerial empire building and managers delaying decision-making due to lacking valuable advice from distracted directors. The negative impact of director distraction moderated post introduction of the Sarbanes-Oxley Act in 2002, whereas no significant change was seen during the financial crisis of 2007 – 2009.

Keywords: Director Distraction, Principal-Agent Problem, "Empire Building" Hypothesis, "Quiet Life" Hypothesis, "Delayed Decision-Making" Hypothesis

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1 Introduction

The principal (manager) not acting in the best interest of agents (shareholders) is known as the principal-agent problem (Myers, 2001). This problem arises because there is a separation between ownership and control where the people in control possess an informational advantage relative to the owners, and because interests are not be aligned between both parties. There are several ways in which managers take advantage at the expense of a firm's shareholders, also known as managerial expropriation.

Corporate governance entails numerous mechanisms by which corporations and its managers are governed. Not only does it aim to avoid managerial expropriation, it also deals with how shareholder value can be maximized in the case of aligned interests between both parties (Ravenscraft, 1996). One of the corporate governance mechanisms that is deployed by firms is a board of directors. This mechanism is known to be one of the core internal corporate governance mechanisms as the main responsibility of the board is to pursue the interests of a firm's shareholders. This can be split into two roles: a monitoring role in which they need to ensure managers act in the best interest of shareholders and an advisory role in which they provide high quality counsel to managers (Adams & Ferreira, 2007).

One important question asked about boards concerns the composition, namely whether it is beneficial to firms if its directors serve on more than one board, i.e. interlocking directorships. In such cases, the attention of directors will be divided between two or more firms, since attention is a resource in limited supply. Some argue that board interlocking has a positive effect on firm value as it brings along advantages such as easier access to resources, clients, and creditors (Mol, 2001). Furthermore, information can be shared on innovations made and effective methods implemented. Therefore, it is likely that directors will be able to perform their advisory role better. On the other hand, some argue that board interlocking can be detrimental to firm value as managers might lack valuable advice from these busy directors, considering they are not able to devote enough attention to a particular directorship (i.e. it may be hard for managers to schedule meetings with them for discussion and/or approval, or directors may be less informed about the firm's position). Also, serving on multiple boards may be associated with less effective monitoring due to increased time commitment elsewhere, one of their primary tasks besides advising a board (Cashman, Gillan, & Jun, 2012). Two problems may be associated with less effective monitoring, namely managers engaging in empire building and/or "enjoying a quiet life". Empire building is the tendency of managers to pursue their private objectives by increasing their power, rather than

maximizing the benefit to shareholders (Xuan, 2009), whereas "enjoying a quiet life" refers to managers shirking on their responsibilities. Jensen's agency theory suggests that managers will overinvest and make value-destroying investment decisions in order to build excessively large corporate empires (Jensen, 1986). The "quiet life" hypothesis predicts that managers avoid undertaking cognitively challenging activities (Bertrand & Mullainathan, 2003; Giroud & Mueller, 2010). Such managers would be reluctant to make decisions regarding shutting down and opening new plants. Managers are also likely to pay their workers high wages to buy "peace" and reduce the need to bargain with unions. This type of agency problem is foremost an issue for firms in non-competitive industries and firms insulated from hostile takeovers which face no pressure to improve efficiency (Giroud & Mueller, 2010).

This paper attempts to quantify the impact of limited director attention on firm value by exploiting (plausibly) exogenous variation in the division of time and energy across the directorships of directors serving on multiple boards. Considering attention is a resource in limited supply, a director's attention will drift away if other industries he/she holds a board position in experience attention-grabbing industry shocks. The management may subsequently be monitored less effectively and/or miss valuable advice from such directors and as a result, firm value will drop. Therefore, the main hypothesis is formulated as follows:

H0: Director distraction has no significant effect on firm value

Ha: Director distraction has a significant negative effect on firm value

Furthermore, this paper will look into the underlying mechanism(s) through which director distraction affects firm value. As mentioned before, two agency problems associated with less effective monitoring are managers engaging in empire building and "enjoying a quiet life". Alternatively, managers may miss valuable advice from distracted directors, as they are not able to devote enough attention to a particular directorship.

The takeaways of this research will be particularly of importance to policymakers since it will offer empirical support for regulations in corporate governance codes (Santos, Di Miceli da Silveira, & Ayres Barros, 2009). Furthermore, the results of this research can be of interest to a firm's (potential) shareholders as they will be able to better assess the corporate governance quality of the firm in question. Although previous literature has addressed endogeneity regarding the relation between director distraction and firm value, this paper makes an attempt to tackle endogeneity in a new empirical setting by considering attention-grabbing industry shocks. This paper empirically examines the impact of director distraction on firm value by exploiting (plausibly)

exogenous variation in how directors with multiple directorial positions allocate their time and energy across their directorships, whereas previous literature has often made the assumption that effort is distributed uniformly across directorships. Moreover, this paper looks into the underlying mechanism(s) through which director distraction affects firm value, which some previous papers have failed to do. The methodology used in this research is based on *Director attention and firm value* (Renjie & Verwijmeren, 2017), although this study considers a different industry classification to identify attention-grabbing industry shocks. This paper will additionally look into what role the financial crisis has played, as well as what influence changes in law can have, by looking into the effects of the Sarbanes-Oxley (SOX) act implemented in the U.S. in 2002.

It is found that firm value drops significantly when board members are distracted: As such, a change from no director distraction to the mean level leads to a decrease of $29.656 – $46.669 in Tobin's Q and a stock underperformance of 65.6 – 71.2 basis points, on average, ceteris paribus. When looking into which of the previously mentioned channels could be driving these result, it is found they are consistent with the "quiet life" hypothesis. Hence, board interlocking leads to less effective monitoring when other industries where directors hold additional board positions experience attention-grabbing shocks. This allows managers to shirk on their responsibilities, which in turn leads to a lower firm valuation. Although these findings are of value to policymakers and (potential) shareholders, it is hard to conclude whether the number of board positions one can have should be restricted by policymakers or how (potential) shareholders should view board interlocking: the distraction identification approach in this research does not consider that board interlocking may allow a director to perform its advisory duty better.

The paper is organized as follows: the second chapter will present the findings of previous literature, following which there will be a description of how the data is collected, as well as how the research sample is formed. Chapter 4 discusses the methodology of the research. The next chapter will test whether the data satisfies OLS assumptions. Results from the conducted analyses will be discussed in chapter 6. Finally, the last chapter will provide concluding remarks.

2 Previous literature

Previous literature on this topic has provided mixing results, mainly because endogeneity is a major concern and studies differ in the extent to which it is accounted for. Endogeneity occurs when an independent variable is correlated with the residual, which if not accounted for will lead to wrongly estimated causal relations (Wintoki, Linck, & Netter, 2012). Furthermore, studies do not always consider which underlying mechanism(s) drive the findings. Last, a lot of papers make the unfair assumption that time and energy is uniformly distributed amongst all board positions a director has.

Corporate governance, chief executive officer compensation, and firm performance by Core et al. (1999) suggest that board "busyness" negatively impacts firm value. They find that board busyness (measured as the percentage of non-employee directors who serve on three or more boards, six or more if the director is retired) significantly explains cross-sectional variation in CEO excess compensation, a function of board and ownership structure variables, in excess of several economic determinants of the level of CEO compensation. The positive sign of the coefficient of board busyness can possibly imply the lack of monitoring which allows the CEO to extract a greater compensation. Alternatively, if monitoring is difficult due to the board structure, the firm could choose a riskier pay package to incentivize the manager. If the manager is risk-averse, he/she will require a higher level of compensation to be compensated for the risk. In order to distinguish between these alternative explanations a regression analysis is performed in which the effect of the predicted CEO excess compensation on future stock performance is examined. Results indicate that a 40 percent increase in excess compensation is associated with a decrease in annual stock returns per year of 4.97, 2.82, and 1.78 percent, for one-year, three-year, and five-year stock returns, respectively. These figures suggest that busy directors are not able to effectively monitor management which allows them to extract a higher compensation. However, this interpretation should be viewed with caution as other components of the predicted CEO excess compensation could be driving this negative relation.

Independent director incentives: Where do talented directors spend their limited time and energy? by Mobbs and Masulis (2014) address an important implicit assumption made in the previous paper, namely that directors distribute their time and energy uniformly across directorships. This does not always hold in reality as directors will be more committed to their job and put in more effort if they believe the job helps them either preserve or enhance their reputation. The paper indicates that directors may positively influence firm value depending on these reputation incentives, i.e. how prestigious the director considers that directorship to be relative to his/her other directorships. In this research, firm value is measured by the natural logarithm of the market to book value ratio of

equity. The following variables are included to capture reputation incentive effects: the percentage of independent directors on the board that consider that directorship to be a highly (lowly) ranked directorship, i.e. a minimum of ten percent higher (lower) than its lowest (highest) ranked directorship, and a dummy variable which equals one when majority of the firm's independent directors consider that directorship to be a highly (lowly) ranked directorship. Note that relative rankings are based on a firm's market capitalization. Next, board busyness is measured as an indicator variable that equals one when majority of the independent directors hold three or more directorships. The model also includes several control variables relating to other board characteristics, firm characteristics, and CEO characteristics. Results show that higher reputation incentives lead to higher values of firm value, of which all coefficients are statistically significant at the one percent level. The effect of board busyness on firm value (industry-adjusted) falls short of significance. In order to capture true director busyness, a measure should have been constructed that combines both director responsibilities and reputation incentive effects. Also, another shortcoming of this paper is that it does not address the endogeneity concern that board busyness could reflect how talented and/or experienced the directors are, rather than busyness itself.

Adams et al. (2010) indicate that it is hard to disentangle "busyness" costs from the selection effects of holding interlocking directorships. Busyness costs refer to the costs that arise because multiple directorships leave directors with less time and energy to devote to each directorship, while selection effects arise because directors that hold director positions in several firms are likely to be talented and/or have more experience, and thus are considered to be busy. Therefore, it could be that director characteristics such as talent and experience are driving the relation between director busyness and firm valuation, even though there is no causal relationship. *Distracted directors: Does board busyness hurt shareholder value?* by Falato et al. (2014) tackles this endogeneity issue by considering an exogenous change in director attention, which in this case is the sudden deaths of directors. They formulate an attention shock hypothesis. In their research, they make use of a difference-in-difference methodology. Firstly, a director deaths sample is formed that contains deceased directors, after which all non-deceased interlocking directors are either assigned to Group A if they worked in the same committee as the deceased director or Group B if they did not. This is done because non-deceased directors working in the same committee must jointly take up the responsibilities of the deceased director, thereby increasing their workload. Following this, the treatment group is formed which consists of the other firms at which these non-deceased directors serving the same committee as the deceased director hold a board position. A control group is formed that consists of the other firms where these non-deceased directors not serving the same committee hold a directorial position. To quantify the average

treatment effect, the average change in firm value of the firms in the treatment group and control group is compared pre- and post- the death event of a director (first-difference), after which the first-difference of the control group is deducted from the first-difference of the treatment group. Taking this second-difference eliminates potential biases that would drive a change in firm value not relating to director distraction due to an increased workload. For instance, potential biases in this case would include talent and experience. Results show that in the treatment group, firm value drops by 1.55 percent on average (statistically significant at the one percent level), measured by the stock market reaction. Taking the second-difference results in a 1.74 percent decrease (statistically significant at the one percent level), on average. Therefore, director distraction negatively affects firm value. One shortcoming of this paper is that it does not look into which underlying mechanism could be driving the drop in firm valuation. Furthermore, it disregards the previously mentioned reputation incentives that could influence the distraction level of directors in the case of director deaths at other firms where they hold a position on the board.

CEO Involvement in the Selection of New Board Members: An Empirical Analysis by Shivdasani and Yermack (1999) investigate how the market reacts to the news of appointments of independent directors when CEOs (who simultaneously hold a directorial position) are involved in the selection process. They perform an event study in which they compute cumulative abnormal stock returns (CARs) over a three-day period running from one day prior to the appointment up until two days following the appointment. Results show that CARs are significantly negative with a magnitude of -0.92 percent (mean) and -0.71 percent (median) for appointments of independent directors in the case of CEO involvement. However, in order to assess differences in the quality of these appointees, it is important to realize that the news of this appointment may be confounded with other news. Hermalin and Weisbach (The determinants of board composition, 1988) show that the appointment of an inside director signals retirement of the CEO when he/she is involved in the selection process. This is because CEOs prefer insiders to take over their position after they retire. Hence, the appointment of an independent director will signal a reduced likelihood of retirement: stock price reactions will be negative if the public believes the CEO is entrenched or underperforming. They perform a multivariate regression analysis in which they regress CARs on a dummy reflecting CEO involvement in the selection process and include variables that proxy for the market's prior anticipation of CEO retirement. Results show that stock price reactions to independent director appointments are negative when the CEO is involved in the selection process: CARs are approximately 1.2 percent lower in these cases (on average), which are not driven by investors' expectations regarding CEO turnover. When examining the characteristics of the chosen independent directors, evidence is found that CEOs tend to appoint independent directors who fit

the previously described busy definition used by Core et al. (Corporate governance, chief executive officer compensation, and firm performance, 1999). This could explain why the public reacts negatively to independent director appointments: they view busy directors as less effective monitors. This highlights a mechanism potentially used by CEOs to reduce pressures that arise from monitoring by the board. This paper makes the unfair assumption that directors divide their time and energy equally across their directorships. As Mobbs and Masulis (2014) pointed out, this is not always the case in reality. Another shortcoming of this paper is that it does not account for the possibility that being busy might reflect director quality, rather than busyness. Therefore, the negative relation between CEO involvement in the selection process of independent directors and CARs may be driven by another factor besides lacking attention from busy directors.

Fifthly, *Are Busy Boards Effective monitors?*, by Fich and Shivdasani (2006) examine whether "busy" boards affect corporate governance quality. The regression uses a firm's market-to-book ratio as the dependent variable, measured as the market value of equity plus the book value of liabilities, divided by the book value of assets. A busy director is defined as a director that holds three or more directorships, six or more if retired. A busy board comprises one in which the majority of outside (i.e. non-employee) directors fit the busy definition. Furthermore, the model includes several control variables relating to other board characteristics and firm characteristics. They find that a busy board decreases the market-to-book ratio by 0.04 as compared to not having a busy board, on average, ceteris paribus (significant at the one percent level). Furthermore, when the percentage of busy outside directors increases by one percentage point, the market-to-book ratio declines as well, namely by 0.15, on average, ceteris paribus (significant at the one percent level). However, when they use another measure of board busyness, that is the average number of directorships per outside director, they find an insignificant relation. This shows that inferences about the effect of board busyness are sensitive to how it is measured. Fich and Shivdasani point out that an alternative hypothesis could be explaining the found relation between director busyness and firm value raising an endogeneity issue, namely a causal relation running in the opposite direction. For instance, it may be possible that firms employ busy directors in reaction to bad performance as they are viewed as being helpful in reversing poor performance due to their talent and/or experience (Fich & Shivdasani, 2006). Furthermore, it could be that busy, more reputable directors depart the firm in response to poor performance. However, re-estimating the regression using lagged values of board busyness shows that reverse causality is not a reason for concern as the statistical significance and sign of the correlation coefficients depicting the relation between the busy board measures and firm value remains unchanged. Fich and Shivdasani conclude that busy boards are not as effective at monitoring management as non-busy boards. One drawback of this

research is that it does not examine which underlying mechanism could be driving the negative relation; a lack of advice from busy directors could be driving the findings rather than less effective monitoring. Moreover, Fich and Shivdasani do not take a directorship's relative prestige into consideration which could influence how busy a director actually is.

Too Busy to Mind the Business? Monitoring by Directors with Multiple Board Appointments by Ferris et al. (2003) test the Busyness Hypothesis which postulates that multiple directorships places an excessive burden on the director which makes him/her incapable of effectively monitoring the management. Therefore, this hypothesis predicts a negative relation between serving on the board of multiple firms and subsequent firm value. To this this prediction, a regression analysis is performed in which a firm's market-to-book ratio (measured as the market value of common equity plus the book value of liabilities plus the book value of preferred stock, divided by the book value of assets) in 1997 is regressed against the number of directorships per (outside) director computed as of 1995. Lagged values are used in order to control for the possibility that a firm's prior performance can affect its ability to attract more reputable directors which tend to hold multiple directorships. Additionally, several control variables are included relating to other board characteristics, firm characteristics, and CEO characteristics. Results show that there is a positive but insignificant correlation between the number of directorships per (outside) director and subsequent market-to-book ratio, which is inconsistent with the Busyness Hypothesis. They also perform an event study in which the cumulative abnormal return is measured around the date of the appointment of a multiple director (i.e. a director holding three or more directorships). However, results suggest that the market does not believe the appointment of directors holding multiple board seats harms firm value, considering a positive abnormal return is found, although not significant. The next examination of the Busyness Hypothesis compares the participation of these multiple directors on board committees with that of directors holding only one or two board seats. The Busyness Hypothesis postulates that overcommitted directors will serve less frequently on committees and attend fewer committee meetings due to time constraints. Findings show that multiple directors in fact provide more committee service and attend more committee meetings. Furthermore, they are also more likely to serve as committee chair on these committees. Lastly, as a more direct examination of the Busyness Hypothesis, the effect of the number of directorships per (outside) director on the incidence of fraud is researched. A positive relation is predicted as multiple board appointments could leave directors with insufficient time and energy to monitor the accuracy of financial statements. Even though a positive effect is observed, it is not statistically significant. Therefore, there is insufficient evidence to say the monitoring capability of directors is harmed, when they serve on multiple boards. All in all, the findings offer no support in favour of

the Busyness Hypothesis. One limitation in this paper is that it does not account for reputation incentive effects, which could influence how much effort is put into a particular directorship. To explain why firms tend to hire directors that are considered to be busy (given that board busyness does not affect firm value, on average), they examine the effect of prior firm performance on the total number of board seats per director and on the ability to gain an additional board appointment. They find that a firm's prior performance has a positive effect on both the previously mentioned variables. This implies busyness reflects the quality of directors and are therefore considered beneficial to firms.

Lastly, contrary to previously mentioned literature, *Are busy boards detrimental?* by Field et al. (2013) find a positive relation between board busyness (using the measure constructed by Fich and Shivdasani (2006)) and firm value. They acknowledge the fact that busy directors might be less effective monitors due to time and energy constraints, but point out that these directors have a comparative advantage in their advisory duties, due to a better access to resources, clients, and creditors (Mol, 2001). Furthermore, such directors can share information on innovations and effective methods implemented. This advisory role of directors is particularly of importance for newly public firms, in contrast to more mature public firms. To account for endogeneity, Field et al. perform a two-stage OLS regression analysis on IPO firms using instrumental variables. A valid instrument should have the property that changes in this instrument should only lead to changes in the dependent variable through an indirect channel, i.e. changes in the independent variable (Cameron A. C.). The first instrument employed is a dummy variable equal to one if an IPO firm is located in either California, New York, or Massachusetts, zero otherwise. In the setting used in this paper, busy directors are more likely to be from venture capitalist firms (VC firms). Since there is a high volume of VC activity in the previously mentioned areas, a positive relation is expected at IPO firms between their board busyness and being located in one of these regions, i.e. a VC is more likely to serve on boards of firms which are within a close geographic proximity, in order to save travel time (Lerner, Chen, Gompers, & Kovner, 2010). Moreover, there is little reason to believe that this instrument is directly related to firm value. The second instrument used is the percentage of directors older than 60. Older directors are not as time-constrained as younger ones, and can therefore serve on more boards. It is expected that this instrument plays a significant role in explaining board busyness and has no direct influence on firm value. The regression uses a firm's market-to-book ratio as the dependent variable. The key variable of interest is an indicator variable equal to one when majority of the board holds three or more directorships, predicted in the first-stage. Furthermore, the model also includes several control variables relating to IPO and firm characteristics, as well as other board characteristics besides board busyness. Evidence is found

that IPO firms with busy boards are significantly higher valued (5.802 percent higher, on average, ceteris paribus). In line with their belief that the benefits of busy boards decline over the life of the firm as relative demand for monitoring versus advising increases, a weaker relation is expected between board busyness and firm value when firms grow older. In order to examine this, they re-estimate the regression five and ten years following the IPO. In contrast to the time of the IPO, they find no statistically significant relation between board busyness and the M/B ratio when firms are in a more mature phase. The validity of both instruments employed in this research is questionable as both could also influence firm value through another channel besides director busyness, namely director talent and/or experience. Furthermore, previously discussed reputation incentive effects are not considered in this paper.

3 Data

Panel data ranging from fiscal years 1996 to 2014 covering firms listed on U.S. stock exchanges (similar to *Director attention and firm value* (Renjie & Verwijmeren, 2017)) will be collected from Wharton Research Data Services (WRDS), a research platform that consists of several databases. Firstly, this research will make use of the Institutional Shareholder Services (ISS) database, which contains data on characteristics of individual directors. This data will then be matched with the CRSP (Center for Research in Security Prices)/Compustat Merged database which provides data on several firm characteristics. Furthermore, the CRSP database will be used to collect data on a firm's monthly stock returns, along with the Fama-French database which will be used to obtain data on the monthly risk-free rates and risk premiums. Next, data on M&A deal announcements and returns relating to the deal announcements will be collected from SDC and Eventus (WRDS), respectively. Lastly, the Thomson Reuters 13f database (WRDS) will be used to compute the stock ownership of institutional investors, whereas Compustat will be used to calculate the number of segments a firm operates in. In addition to WRDS and SDC, the data library of Kenneth R. French will be used which provides data on Fama-French 12 industry portfolio returns (an industry classification by Fama & French based on the 4-digit SIC code of firms). Utility companies will be omitted from the sample as the role of boards in such firms is limited due to the presence of government regulation (Yermack, 1996). Generally speaking, this also holds for financial companies, although boards of these companies did play a role during the global financial crisis, as such firms adapted the profile and composition of their boards in the wake of the crisis (Ladipo & Nestor, 2009). Therefore, financial companies will not be omitted from the sample.

4 Methodology

This paper attempts to quantify the contribution of distracted directors serving on multiple boards to firm value by performing OLS regression analyses in which (plausibly) exogenous variation is exploited in the division of time and energy across the directorships, as it is not possible to directly measure the time and energy directors put into a job. Considering attention is a resource in limited supply, a director's attention will drift away if other industries he/she holds a board position in experience unusually high volatility (used as a proxy for attention-grabbing industry shocks). Previously mentioned endogeneity concerns in which director characteristics such as talent and experience are driving the relation between director distraction and firm valuation are allayed as this research looks at the source of distraction at the industry level. A firm performing poorly could be attributed to the poor "quality" of a director, however it is unlikely that the performance of one director affects the performance of the entire industry. The main variable of interest will measure a firm's board distraction level. The distraction measure used is based on the distraction measure used by Kempf et al. (2017) that looks into the monitoring intensity of distracted investors (idem to *Director attention and firm value*). First, a distraction score is calculated for each outside director *i* with multiple directorships working at a firm *f* in fiscal quarter *t*:

$$D_{ift} = \sum_{j \in B_{it} \setminus \{f\}} w_{ijt} \times 1\left(Ind_{jt} \neq Ind_{ft}\right) \times IS_t^{Ind_{jt}}$$

where $B_{it} \setminus \{f\}$ represents all firms other than firm *f* in which director *i* holds a directorial position in fiscal quarter *t*. Inside directors are omitted from the directors' sample considering they are employed by the firm they oversee, thereby making it less likely for them to be distracted by other directorships. As pointed out by Mobbs and Masulis (2014), directors will be more committed to a job and put in more effort if they believe a particular directorship helps them either preserve or enhance their reputation. Therefore, the weight w_{ijt} will capture how important director *i* believes a directorship at firm *j* is in fiscal quarter *t* relative to all his/her board positions *k* in fiscal quarter *t*, based on the firm's market value of equity (*mve*), computed as follows:

$$w_{ijt} = \frac{mve_{jt}}{\sum_{k \in B_{it}} mve_{kt}}$$

This implies a director will be more distracted if he/she relatively views his/her other directorships as more valuable, all else equal. Considering there will not be a shift in the distribution of a director's attention as a result of unusually high industry volatility if firm *f* is in the same industry as firm *j* (ceteris paribus), an indicator variable is included in the director distraction measure $1\left(Ind_{jt} \neq Ind_{ft}\right)$ that equals one when both firm *f* and *j* are in different Fama-French 12

industries, zero if both are part of the same industry. $IS_t^{Ind_{jt}}$ is an indicator variable that denotes whether the industry of firm *j* can be considered attention-grabbing. First, abnormal volatility is computed for each FF12 industry *l* in each fiscal quarter *t*:

$$\Delta\sigma_{lt} = \frac{\sigma_{lt} - \hat{\sigma}_{lt}}{\hat{\sigma}_{lt}}$$

where σ_{lt} represents the daily volatility of the industry portfolio *l* in fiscal quarter *t* and $\hat{\sigma}_{lt}$ represents the daily volatility over the period [-283, -31] relative to the start of the fiscal quarter *t*. After ordering the 12 calculated abnormal volatilities, variable $IS_t^{Ind_{jt}}$ is set equal to one if the industry of firm *j* experiences a positive abnormal volatility in fiscal quarter *t* and is the highest amongst all 12 industries, zero if otherwise.

Next, to calculate a firm's board distraction level, the distraction scores of all outside directors *i* with multiple directorships working at firm *f* in fiscal quarter *t* will be summed up and divided by the total number of outside directors *N* at that firm, in that fiscal quarter:

$$Distraction_{ft} = \frac{1}{N_{ft}} \sum_{i \in \mathrm{B}_{ft}} D_{ift}$$

where B_{ft} represents the set of outside directors that hold multiple directorial positions at firm *f* in fiscal quarter *t*. Note that the board distraction level would be lower if boards would consist of more outside directors, all else equal.

The meeting attendance rate of directors serving on multiple boards will be researched to test whether the constructed measure of director distraction indeed captures director distraction. It is expected that directors will attend fewer meetings when they are distracted. To test this prediction, a dummy variable will be used as dependent variable which will equal one when a director *i* at firm *f* attends less than 75 percent of the meetings in fiscal year *x*. Since this variable is measured at the fiscal year level rather than fiscal quarterly level, a distraction measure at the fiscal year level will need to be constructed. This will be done by aggregating the distraction scores over the four fiscal quarters *t* for each director *i* working at firm *f* to attain the director's distraction level in fiscal year *x*:

$$Distraction_{ifx} = \sum_{t=1}^{4} D_{ift}$$

Different proxies for firm value will be used as dependent variable: Tobin's Q, a firm's cumulative excess stock returns, cumulative abnormal returns according to the CAPM model ($R_t - RF_t = \alpha + \beta_{mkt}(MKT_t - RF_t) + \varepsilon_{it}$), and cumulative abnormal returns according to the Fama-French 4 model ($R_t - R_{ft} = \alpha + \beta_{mkt}(MKT_t - RF_t) + B_{HML}HML_t + B_{SMB}SMB_t + B_{UMD}UMD_t + \varepsilon_{it}$) (refer to **Table A** in the Appendix for detailed variable descriptions). In order to compute the latter two, first the factor betas for each stock at the beginning of each fiscal quarter are estimated by performing monthly regressions on each stock using returns data of the past 36 months. Then, using these factor betas, the monthly abnormal returns are calculated as the excess returns over the product of the factor betas and risk premiums (the alpha term is zero under the assumption that financial markets are efficient and thus it is impossible to consistently "beat" the market (Fama, 1970)). Finally, these monthly abnormal returns are summed up over the months in a particular fiscal quarter to obtain cumulative abnormal returns.

Furthermore, as mentioned previously, this research will also examine what role the financial crisis and Sarbanes-Oxley Act have played on the causal effect of the board distraction level on firm value. In 2007 – 2009, firms were hit by the financial crisis as a result of the credit crunch (Acharya, Philippon, Richardson, & Roubini, 2009). After the Dot-Com bubble, the Federal Reserve set a low interest rate to stimulate the economy (Schifferes, 2007). Due to the abundance of cheap credit, purchasing houses became more affordable. On the other side, investment bankers were using borrowed money to buy mortgages from mortgage lenders in huge volumes from which they would receive mortgage payments (Baily, Litan, & Johnson, 2008). Following this, investment bankers pooled these mortgages together and repackaged it into tranches based on risk profiles (i.e. collateralized debt obligations) which was then sold to institutional investors. Although it was common for institutional investors to invest in Treasury Bills which was considered a safe investment, investing in CDOs seemed like a better option since these were also viewed as a safe investment and provided a higher return compared to what the Federal Reserve offered (Zandi, 2009). As demand for CDOs increased, the issuance of subprime mortgages began, which are mortgages provided to homeowners with low credit ratings. If homeowners would default on their mortgage, investment bankers received the house which they then sold and cashed-out (Baily, Litan, & Johnson, 2008). Houses had been increasing in value, therefore a value decrease was not expected (Baily, Litan, & Johnson, 2008). The issuance of subprime mortgages is today known as the trigger of the financial crisis. Homeowners failed to pay their mortgages which brought more houses for sale on the market than there was demand. House values dropped drastically and led to bankruptcies of banks and institutional investors throughout the country. A drop in personal

wealth and loss in consumer confidence led to businesses shutting down which in turn, led to an increase in unemployment.

A drop in overall investor confidence during the financial crisis is expected to increase the negative impact of director distraction on firm valuation (Tonkiss, 2009). The crisis had certain implications for the underlying mechanisms too. As there was less credit available and at higher interest rates during the credit crunch, it is less likely for managers to have been engaging in empire building. This means a weaker relation between director distraction and a firm's investment is expected during the crisis years. It is also less likely for managers to "enjoy a quiet life" when firms face the fear of bankruptcy since this type of agency problem is foremost an issue for firms in non-competitive environments (Giroud & Mueller, 2010). Furthermore, considering management tends to be highly overtaxed during crisis periods, boards' advisory duty becomes more prominent during periods of financial despair (Osler, 2016). As mentioned before, directors not having enough time and energy to advice managers can have two consequences: a manager may engage in value-destroying investment and M&A decisions or may delay making these important decisions. The fear of bankruptcy increases the need for informed and sound decision-making, making the latter consequence more probable.

Next, the role of the Sarbanes-Oxley Act on the causal effect of director distraction on firm value will be examined. This Act was implemented in 2002 as a response to corporate accounting scandals that occurred between 2000 and 2002, Enron and WorldCom being the most infamous ones (Clark, 2005). The objective of this act was to improve corporate governance in order to restore investor confidence (Securities and Exchange Commission, 2003). Provisions mandated by the SOX referring to board structure changes included (Clark, 2005) (Chen & Wu, 2016):

- Majority of the board must consist of independent directors, whereby the definition of an independent director became stricter
- Firms must minimally consist of the following committees: an audit committee, a compensation committee, and a governance committee
- The audit committee must solely comprise of independent directors of which at least one member can be considered a "financial expert"[1] (or the firm must disclose why it does not fulfil this requirement)

[1] A financial expert is someone who has an understanding of financial statements, GAAP, internal controls, procedures for financial reporting, and audit-committee functions, which has been acquired through his/her educational background and work experience (Securities Exchange Commission, 2003).

The audit committee is there to advice and monitor management such that the firm's objectives are achieved in a correct, efficient, and sustainable manner. This covers a firm's management of risk as well as a well-functioning internal control system (Chartered Institute of Internal Auditors). The internal control system includes all mechanisms employed by a firm to ensure effectiveness and efficiency of operations, adherence to laws, and reliable financial reporting (Rezaee, 2002). Furthermore, it is also charged with overseeing the financial reporting process which involves frequent contact with the external auditor (CFA Institute). The compensation committee deals with the compensation of top executives and other important human resource matters (Chen & Wu, 2016). The governance committee focuses on general governance matters and is often in charge of the nomination of directors and assigning directors to committees.

Another important change brought about by the SOX besides board structure changes referred to an increase in the responsibility of the CFO and CEO (or people performing equivalent functions if these function titles do not exist within the firm). The SOX requires these managers to certify the accuracy of financial statements and certify these statements provide a fair presentation of the company's financial condition (Cogan, Cobden, Peltz, & Wohl, 2002). Along with this, they need to certify they are responsible for the establishment and implementation of the firm's internal controls over financial reporting, and disclosure controls and procedures. Internal controls here refer to mechanisms employed by the firm to ensure the integrity of financial statements, whereas disclosure procedures and control entail are there to ensure the financial information required to be submitted is recorded, processed, summarized, and reported in a timely manner (Securities and Exchange Commission, 2003). Hence, internal controls are viewed as a subset of the firm's disclosure controls and procedures, given that reliable financial reporting is a prerequisite to be able to disclose this information. All annual financial reports must include an Internal Control Report where the management reports on the effectiveness of internal controls over financial reporting implemented, whether any significant changes were made to the controls, and whether fraud was committed by anyone with a substantial role in the firm's internal control system (Securities and Exchange Commission, 2003). The auditing firm must also report on this evaluation of the internal control system, besides its regular task of auditing the firm's financial statements.

The aim of the SOX was to improve overall investor confidence, which was shook as a result of the several accounting scandals that occurred. This implies that the negative impact of director attention is expected to reduce post introduction of the SOX. Considering management experienced an increase in their responsibilities, as a result of a more significant role in the internal control system, it is expected that managers are less likely to "enjoy a quiet life" as a result of

director distraction. Managers being held responsible for the integrity of the firm's financial statements implies that empire building is also less likely post SOX introduction. Not presenting the true financial condition of the firm could lead to heavy penalties for managers. This improvement in disclosure quality increases the ability of both shareholders and directors to monitor management investment and M&A decisions as they are better able to link these figures to managerial decision-making. Lastly, introduction of the SOX is not expected to influence managers delaying decision-making as a result of director distraction.

The role of the crisis and SOX introduction will be examined by adding interaction terms to the regression analyses between the firm level director distraction measure and time dummies. The crisis period will include the years 2007 to 2009, whereas the SOX period will run from 2002 to 2006, to ensure it does not capture the effect of the crisis. Moreover, several control variables will be included relating to firm and board characteristics: *Log(Assets)*, *Board size*, *Board busyness*, *Board independence*, *Growth opportunities*, and *Board stock ownership* (refer to **Table A** in the Appendix for detailed variable descriptions). In order to account for unobserved and/or unmeasurable characteristics, the models will include either firm fixed effects, industry fixed effects, quarter fixed effects, and/or industry x quarter fixed effects. Some model specifications will include time dummies denoting the period of the crisis and SOX rather than time-fixed effects to measure average differences between firm-fiscal quarter observations in these periods versus firm-fiscal quarter observations in other periods (all other variables being equal).

Next, this paper looks into the underlying mechanism(s) in which director distraction affects firm value. As stated before, two agency problems associated with less effective monitoring are managers engaging in empire building and "enjoying a quiet life". On the other hand, managers may lack valuable advice from busy directors, as they are not able to devote enough attention to a particular directorship. The first test examines whether director distraction allows managers to build an empire through overinvesting. Specifically, the regression models includes a firm's capital expenditure (*CAPEX*) and *Asset growth* as dependent variables (refer to **Table A** in the Appendix for detailed variable descriptions). Managers tend to actively participate in M&A decisions as they are large and non-regular undertakings and could be considered a means for them to build an empire. Therefore, the following test of managerial empire building researches whether firms are more likely to announce M&A transactions when their directors are distracted. The model also looks at cross-industry announcements in particular, as these are a common way for managers to reap personal benefits at the expense of shareholders. It increases the firms' dependency on them, thereby reducing human capital risk, and it allows them to enter industries they view as reputable (Amihud & Lev, 1981; Morck, Shleifer, & Vishny, 1990). In addition to this, 3-day cumulative

abnormal returns (CARs) are computed to examine whether M&A announcements are value-destroying for shareholders. Refer to **Table A** in the Appendix for detailed variable descriptions.

As mentioned before, besides monitoring the management, a board of directors is also supposed to provide high quality counsel to managers. Considering distracted directors may not be able to spend enough time and energy on a particular directorship, managers might have difficulty in planning meetings with them for discussion and/or approval or directors may be less informed about the firm's position. This could have two potential consequences: managers could engage in value-destroying investments or could simply postpone investments until distracted directors are able to devote more attention to the firm. In order to research this, a sample is formed which includes firms that have a distracted board (*Distraction* > 0) in two successive fiscal quarters, followed by two successive fiscal quarters in which there is no director distraction (*Distraction* = 0). The fiscal quarters with a positive board distraction level are addressed as the "before" period, and the following two fiscal quarters with no director distraction as the "after" period. A firm's *CAPEX*, asset growth, and M&A transaction announcements are compared between both these periods. One test will compare the means between both these periods, and the other test will conduct regression analyses to examine the effect of a dummy variable denoting the "after" period with the aforementioned variables as dependent variables. The "delayed decision-making" hypothesis predicts the mean of these variables to be significantly higher during the "after" period and the estimated coefficient of the dummy variable to be significantly positive.

The next test will consider the effect of director distraction from separate groups of directors. Different directors have different responsibilities and therefore their distraction could have a different impact on firm value. Being part of a committee is more time- and energy-consuming and could therefore mean that such directors destroy firm value more than non-committee members in the case of distraction. Moreover, director distraction could be more of an issue for audit-committee members compared to non-audit committee members, as the audit committee is likely the most demanding committee membership in terms of time (Falato, Kadyrzhanova, & Lel, 2014). Also, the effect of director distraction could differ between independent directors and grey directors, i.e. non-employee directors who are associated with the firm personally and/or economically; grey directors may not destroy firm value as much in the case of industry shocks elsewhere. The impact of director distraction will be examined separately for committee members from non-committee members, for audit committee members from non-audit committee members, for nomination committee members from non-nomination committee members, for compensation committee members from non-compensation committee members,

for independent directors from linked directors, and for corporate governance committee members from non-corporate governance committee members.

The next section will test whether explanations besides distraction of directors itself could be driving the results. One alternative explanation is that investor distraction could be driving the observed findings rather than director distraction. This is because the distraction measure used in this paper is based on the distraction measure created by Kempf et al. (2017) that looks into the monitoring intensity of distracted investors by considering shocks in other industries included in their portfolio. To examine whether this could be the case, regressions using Tobin's Q, stock performance, firm investment, and M&A decisions as dependent variables will be re-run including the investor distraction measure by Kempf et al. (2017) and *Institutional ownership* as control variables (refer to **Table A** in the Appendix for a detailed variable description). If the results are (partially) driven by investor distraction, the relation between director distraction and Tobin's Q, stock performance, firm investment, and M&A announcements will alter in terms of statistical significance and/or magnitude.

Another possible explanation is that findings are driven by the multi-segment structure of conglomerate firms. For instance, suppose a director works at a conglomerate firm *A* which operates in both the Consumer Non-Durables industry (primary segment) and Consumer Durables industry, and at firm *B* which only operates in the Consumer Durables industry. If the Consumer Durables industry experiences an industry shock, firm *A*'s board distraction level will change (all else equal) although this would not entirely be attributable to a shift in the allocation of director attention, as both firms are affected by this industry shock. To rule out this explanation, regressions looking at the effect of director distraction on Tobin's Q, stock performance, firm investment, and M&A decisions will be re-estimated using a sample consisting of single-segment firms only. If results are (partially) driven by the structure of conglomerate firms, the relation found between director distraction and Tobin's Q, stock performance, firm investment, and M&A announcements will change in statistical significance and/or magnitude.

One last possible concern is related to a bias in the selection of directors. This entails that firm *A* would employ a director that is also director at firm *B* because both firms' businesses are related, even though these firms are not part of the same industry. Therefore, director choice is endogenous, and the value of firm *A* would be affected if firm *B* experiences an industry shock, although not entirely attributable to director distraction. To tackle this concern, distraction originating from positive industry shocks (highest positive abnormal volatility amongst all Fama-French 12 industries and positive performance) and negative industry shocks (highest positive

abnormal volatility amongst all FF12 industries and negative performance) are considered separately. Industry shocks will spillover between firms when businesses are related; the direction of this spillover effect will be the same as the direction of the industry shock. If results are driven by this bias in director choice, the relation between director distraction (originating from positive industry shocks) and Tobin's Q, stock performance, firm investment, and M&A announcements will be significantly positive.

Lastly, nearest-neighbour and propensity-score matching methods will be used to test the robustness of findings. First, a treatment group will be formed which includes all firm-fiscal quarter observations that have a high board distraction level (higher than the mean value) and a control group that contains observations with no director distraction (*Distraction* $= 0$). Subsequently, each observation in the treatment group and control group will be matched to the "nearest" observation from the other group based on the following characteristics: *Log(Assets)*, *Board size*, *Board busyness*, *Board independence*, *Growth opportunities*, *Board stock ownership,* fiscal year and quarter, and Fama-French 12 industry. The nearest-neighbour matching method uses a weighted function of covariates (taking into account the scale the covariates are measured in as well as the correlation between covariates) to determine the nearest observation, whereas the propensity-score matching method makes use of a logistic and probit regression model to measure how "near" observations are to each other by estimating the probability of receiving the treatment, also known as the propensity-score (Stata) (Stata). This propensity-score will depend on the same covariates used in the nearest-neighbor matching method. The Average Treatment Effect (ATE) will quantify the effect of high director distraction by comparing the (potential) Tobin's Q, stock performance, firm investment, and M&A transaction announcements of firms if they receive the "treatment" with the (potential) outcome obtained by these firms if they would not receive it. Considering it is impossible to observe both outcomes of receiving and not receiving the treatment, the unobserved outcome is estimated by its nearest observation on the basis of the nearest-neighbor matching method or the computed propensity-score.

5 OLS assumptions

Before proceeding with the regression analyses, it is important to check whether the different datasets satisfy OLS regression assumptions (Institute for Digital Research and Education):

1) No outliers: outliers are observations that have large residuals: these could potentially affect regression coefficients. One way to deal with these observations is to winsorize, i.e. set tail values equal to some specified percentile of the data: in this case all continuous dependent variables (*Tobin's Q, cumulative excess returns, CAR* (CAPM and FF4), *CAPEX*, and *Asset growth*) are winsorized at the one percent level at both tails. Although outliers may be the result of an unusual event rather than error in the data, and thus may not need to be winsorized, losing information contained in these observations should not be a reason of concern given the size of the datasets.

2) Linear relationship between independent variables and dependent variable: this can be examined by plotting residuals from each regression model in its full form (including all independent variables besides the main variable of interest) against each of the predictor variables belonging to that model (Institute for Digital Research and Education). The (untabulated) residual plots show a random scatter of points for each of the predictor variables (except *Director age* and *Assets*), which suggests the linearity assumption is not violated in the data. The variables *Director age* and *Assets* have been transformed into logarithmic variables which reduces the deviation from non-linearity.

3) Independent and identically distributed residuals: this requires residuals not to be correlated to each other (autocorrelation) and have a constant variance (homoskedasticity). When this is not the case, standard errors will be biased, which in turn will bias test statistics and confidence intervals (Long & Ervin, 1998) (Williams, 2015). Not correcting for this issue will lead to incorrect conclusions about the significance of regression coefficients. Regressions are likely to suffer from dependent residuals when panel data is used, as it is likely that observations will be correlated to other observations that are close in time. In order to correct for this, clustered standard errors are used, which alter the significance of correlation coefficients (Cameron & Miller, 2015). Using clustered standard errors allows residuals to be correlated within clusters but should not be correlated between clusters. If residuals correlate in more than one way, for instance space and time, standard errors should be clustered at one level and fixed effects should be used on the other (Cameron & Miller, 2015). Similar to *Director attention and firm value* (2017), this research clusters standard errors at the space level and includes time-fixed effects

if necessary which absorb the fixed effect across entities in a particular time period. This reduces the correlation between residual terms to some extent. Beyond this, the assumption of zero correlation between residual terms is made. There may be more ways in which residuals can be clustered at: the consensus is to choose a level of clustering that will lead to larger, fewer clusters as this will lead to less bias in the standard errors (Cameron & Miller, 2015). However, choosing to cluster at a level too large may lead to a concern of having too few clusters. Since there is no solution to this trade-off, the level of clustering chosen in this research is based on the level chosen by Rex Wang Renjie and Patrick Verwijmeren (Director attention and firm value, 2017). Using clustered standard errors makes no assumption on the variance of residuals, which makes these standard errors heteroskedasticity-consistent.

4) The conditional mean of the residuals should be zero: this means that the expected value of the residuals should be zero given the value of the predictor variables. If this is not the case, results will be biased if the residuals are correlated with the effect of director distraction. There could be unmeasurable and/or unobserved factors which have power in explaining variation in the response variable. Results will be biased if these characteristics, excluded from the model and thus captured in the residual terms, are correlated with the effect of director distraction. The use of panel data allows to absorb the effect of such factors specific to an entity and/or time-period. Two frequently used models to analyse panel data include a fixed effects regression model and a random effects regression model. A fixed effects model assumes entities have a time-invariant value that have a time-invariant (i.e. fixed) effect on the dependent variable. Using this type of model has the downside that the fixed effect of the entity cannot be estimated, since including it as independent variable would lead to perfect multicollinearity with the entity-specific intercept. Furthermore, time-fixed effects can be added to a model if the effect is identical across entities for that particular time period but can also not be estimated due to multicollinearity issues (Fingleton). On the other hand, in a random effects model, the effect of these (time-invariant) entities is assumed to be random. An important requirement is that these effects cannot correlate with those of the predictor variables in the model, as random effects are captured in the disturbance term, which is a composite of the entity-specific effect and "traditional" residual term: correlation will lead to omitted variable bias. In order to test which of the two models to use, a Hausmann test is performed where the null hypothesis states that a random effects model is preferred over a fixed effects model. Results from the Hausmann tests (performed on models including (time-) fixed effects employed by Rex Wang Renjie and Patrick Verwijmeren in *Director attention and firm value* (2017)) indicate that fixed

effects models are preferred (at a significance level of 1%) in most of the cases (barring some cases where a random effects model is preferred, or where the model fails to meet the asymptotic assumption of the Hausman test). To be able to compare models with each other, the decision is made to use fixed effects models throughout the research. Moreover, the constructed distraction measure exploits (plausibly) exogenous variation in the allocation of director attention by considering shocks in unrelated industries, and includes several control variables as a precautionary measure. Beyond the examination of the previously discussed alternative explanations that could be driving the findings, it is assumed results are not be biased.

5) Normality of residuals: similarly like with independent and identically distributed residuals, it is required that residuals are normally distributed for valid hypothesis testing (Institute for Digital Research and Education). Normal distributions should have two properties: the data should be symmetrical (i.e. not skewed) and should have a central peak, which leads to a bell-shaped curve. According to the Central Limit Theorem, it can be accepted that the residuals in all datasets used in this study follow a normal distribution, given the size of the datasets (Dave).

6) No multicollinearity: a high correlation between independent variables leads to a high standard error, which in turn could lead to false conclusions regarding the significance of variables (Institute for Digital Research and Education). Under these conditions, it could be that none of the highly correlated variables are found to be statistically significant, even though their combined effect is significant. In many cases, multicollinearity is caused by an error made, for instance not excluding one of the dummy variable categories, including a variable that is already part of another summed variable in the model, or including variables that capture similar concepts. Variables being truly highly correlated should not pose a threat for this analysis given the size of the datasets, i.e. the large sample size makes it less likely for incorrect conclusions to be made regarding the significance of correlation coefficients (Leahy , 2001).

6 Discussion of results

6.1 Board meeting attendance of distracted directors

In order to test whether the constructed distraction measure used in this paper indeed captures director distraction, the board meeting attendance rate of the so-called distracted directors is examined. The attendance rate is captured by a dummy variable indicating whether a director has attended less than 75 percent of the meetings in a given fiscal year. **Panel B** from **Table B** in the Appendix shows that the effect of director distraction on the attendance dummy is not statistically significant in any of the cases, although positive in columns (1), (2), (5), and (6). As previously mentioned, the director distraction measure used in this research is based on the measure constructed in *Director attention and firm value* (Renjie & Verwijmeren, 2017), who identify attention-grabbing industry shocks using the Fama-French 49 industry classification. Considering this research employs a Fama-French 12 industry classification, the probability of a director serving in multiple industries is relatively lower. This explains why the yearly distraction score in this research is positively-skewed with values of zero in more than 75% of the sample (refer to **Panel A**). Since there is little variation in the distraction measure, the regression results do not depict the true relation between director distraction and board meeting attendance. However, rerunning this test considering directors serving in multiple industries only does not alter the statistical significance, since the distribution of the distraction score remains right-skewed (refer to **Panels C** and **D**). Nonetheless, it is concluded that the director distraction measure does capture changes in the distribution of attention of directors (although not as good as when a Fama-French 49 classification is used), as it probably underestimates the effect of director distraction on board meeting attendance due to lack of variation in the attendance dummy.

6.2 Main results

This section will look into the effect of director distraction on Tobin's Q and stock performance. Summary statistics of the board's distraction level, alternative measures of distraction, dependent variables, and control variables can be found in **Table 1**. As is shown, just like in the case of distraction scores measured on the fiscal year level, a board's quarterly distraction level is also positively-skewed, with a distraction level of zero in more than 75 percent of the sample. The distribution of the distraction level is relatively more symmetric when considering distraction levels with only positive values; with a distraction level of 0.11 for the 75th percentile. The figures and tables presenting the results from the conducted analyses can be found in Chapter 9.

Table 2 reports the effect of director distraction on firm value using Tobin's Q as the dependent variable. Columns (1) and (3) merely include the main variable of interest, whereas

columns (2) and (4) additionally include the following control variables: a firm's assets, board size, how busy board members are, the level of board independence, a firm's growth opportunities, and how much of the stock is owned by the board. Furthermore, columns (1) and (2) include quarter FE and firm FE which controls for the effect of unobserved and/or unmeasurable factors across all firms in a particular fiscal quarter, as well as time-invariant effects specific to each firm. Columns (3) and (4) include firm FE and industry x quarter FE where the latter isolates the effect of director distraction from any unobserved and/or unmeasurable factors within each industry and quarter pair. Standard errors are clustered at the firm level, akin to the level chosen in *Director attention and firm value* (Renjie & Verwijmeren, 2017). Results show that firm value is significantly lower when directors are distracted. The coefficient of *Distraction* varies from -0.380 to -0.598 in the regression models, of which all are statistically significant at the one percent level: a change from no distraction to the mean distraction level of 0.08 (disregarding distraction levels of zero) leads to a deduction of $29.656 – $46.669 in Tobin's Q (depending on the model specification), on average, ceteris paribus. **Figure 1** graphs the development of the mean value of Tobin's Q measured at the fiscal quarter level when the board distraction level is zero versus when it is higher than its mean level (0.08), along with ***, **, or * indicating whether the difference between these values is statistically significant at the 1% -, 5% -, or 10% - level, respectively. Results are in line with what is seen in **Table 2**: the average Tobin's Q is significantly lower when *Distraction* is > 0.08, where the negative impact is relatively larger earlier on in the sample. Additionally, **Table 2** considers the impact of the Sarbanes-Oxley Act and the financial crisis on the causal effect of director distraction on Tobin's Q, by including interaction terms between the director distraction measure and time dummies. Column (7) includes time dummies denoting the period of the crisis and SOX as control variables rather than including time-fixed effects. Moreover, firm FE and industry FE are incorporated into this model specification where the latter controls for time-invariant effects specific to each industry, and standard errors are clustered at the firm level. The result from column (2) shows that the negative effect of director distraction was significantly moderated post introduction of the SOX: a change from no distraction to the mean distraction level led to a decrease of $6.790 in Tobin's Q, on average, all else equal. This suggests that the board structure changes and increase in the responsibility of managers mandated by the SOX contributed positively to investor confidence. However, column (7) shows that overall investor confidence did not improve post introduction of the SOX, as the effect of *SOX* is significantly negative, nor was the negative impact of director distraction significantly different during this period. Results discard the notion that the negative impact of director distraction on firm valuation was significantly different during the financial crisis, as columns (2), (4), and (7) show that the coefficients of the interaction

terms between director distraction and *Crisis* are not significant. Columns (5) and (6) in **Table 2** address the concern that results are driven by a bias in the selection of directors by exploiting positive and negative industry shocks separately when constructing the firm level board distraction measure, including industry x quarter FE and firm FE, and clustering standard errors at the firm level. Results show that the concern findings are merely driven by this endogenous choice of directors can be mitigated when Tobin's Q is employed as dependent variable: the direction of the spillover effect is not the same as the direction of the industry shock in column (5). Although this spillover effect between firms cannot entirely be ruled out, considering the coefficient of *Distraction (positive)* is smaller (in absolute terms) than that of *Distraction (negative)*, it certainly is not the main driver of the results. Furthermore, both coefficients are smaller in magnitude in comparison to the other regression models in **Table 2**, bearing in mind that a lot of industry shocks are no longer considered attention-grabbing according to this new definition of an industry shock.

The next test considers different proxies for firm value, namely a firm's cumulative excess stock returns, cumulative abnormal returns according to the CAPM model ($R_t - RF_t = \alpha + \beta_{mkt}(MKT_t - RF_t) + \varepsilon_{it}$), and cumulative abnormal returns according to the Fama-French 4 model ($R_t - RF_t = \alpha + \beta_{mkt}(MKT_t - RF_t) + B_{HML}HML_t + B_{SMB}SMB_t + B_{UMD}UMD_t + \varepsilon_{it}$). **Table 3** reports the effect of director distraction on these variables controlling for quarter FE in columns (1) and (2), and additionally for stock FE in column (2). All models cluster standard errors at the stock level, in line with *Director attention and firm value* (Renjie & Verwijmeren, 2017). Moreover, besides the interaction terms and control variables included in **Table 2**, the returns of the FF-12 industry the firm is active in is added as control variable (refer to **Table A** in the Appendix for a detailed variable description). Results support what is seen in **Table 2**: stocks significantly underperform in the case of director distraction (**Panel A** shows that a change from no distraction to the mean distraction level leads to a decline of 65.6 – 81.2 basis points in cumulative excess returns (depending on the model specification), on average, ceteris paribus). Cumulative abnormal returns computed according to the CAPM model are significantly lower too, although a negative but insignificant relation is found when FF-4 cumulative abnormal returns are used (refer to **Panels B** and **C**, respectively). Column (3) additionally includes *Crisis* and *SOX* as control variables, where firm FE are incorporated into the model, and standard errors are clustered at the firm level. Similar to when Tobin's Q is employed as dependent variable, results support the conjecture that board composition changes and increase in the responsibility of managers mandated by the SOX contributed positively to investor confidence; **Panel A** shows that the negative impact of director distraction was significantly lower during this period. Surprisingly, all

panels exhibit that stock performance was supposedly better during the financial crisis, as the effect of *Crisis* is significantly positive in column (3) across all panels.

6.3 Underlying mechanisms

This section highlights the possible channels which could explain why firm value is significantly lower when directors shift away their attention to other directorships.

6.3.1 "Empire building" hypothesis

The first test examines whether director distraction allows managers to build an empire through overinvesting, which in turn leads to a lower firm valuation. Specifically, **Panel A** from **Table 4** includes a firm's capital expenditure to total assets (*CAPEX*) as dependent variable, whereas **Panel B** employs *Asset growth* as dependent variable. Column (1) looks into the effect of *Distraction* only, whereas columns (2), (3), and (4) include the interaction terms and control variables added in **Table 2** as well. Furthermore, columns (1) and (2) absorb quarter FE and firm FE, and columns (3) absorbs industry x quarter FE and firm FE. Column (4) additionally includes the previously mentioned crisis and SOX time dummies as control variables, where firm FE and industry FE are incorporated into the model. Standard errors are clustered at the firm level, consistent with *Director attention and firm value* (Renjie & Verwijmeren, 2017). Results reject the hypothesis that the agency problem of empire building (through overinvesting) is aggravated when directors are distracted: in fact, in all models a negative relation is found between director distraction and firm investment, of which they are significant in five models. A change from no distraction to the mean level of 0.08 leads to a decline of $702 – $1.561 in *CAPEX* and 8.6 – 18.7 basis points in asset base (depending on the model specification), on average, holding all else constant. Interestingly, results suggest that managers did in fact engage in empire building (through a growth in asset base) post introduction of the SOX. One would expect the ability for shareholders and directors to better monitor management as a result of managers being held responsible for the integrity of the firm's financial statements to limit empire building. A change from no distraction to the mean distraction level led to a growth of 12.5 – 36.7 basis points in asset base (depending on the model specification), on average, all else equal. Results disregard the belief that overinvesting was less likely during the financial crisis, as none of the columns show that the negative impact of director distraction was significantly different during this period.

The following test of managerial empire building researches whether firms are more likely to announce M&A transactions when their directors are distracted (**Table 5**). **Panel A** considers M&A announcements, whereas **Panel B** looks at diversifying M&A announcements in particular, as these are viewed as a common way for managers to reap personal benefits at the expense of

shareholders. 3-day cumulative abnormal returns (CARs) are computed in **Panel C** to examine whether these announcements destroy shareholder value. Column (1) in **Panels A** and **B** includes the interaction terms and control variables added in **Table 2**, and isolate the effect of *Distraction* on announcement likelihood from unobserved and/or unmeasurable factors within each industry and quarter pair. Column (2) in **Panels A** and **B** additionally includes firm FE in the models. Furthermore, column (3) in **Panels A** and **B** includes the previously mentioned crisis and SOX time dummies as control variables, where firm FE and industry FE are incorporated into the model. In conjunction with *Director attention and firm value* (Renjie & Verwijmeren, 2017), standard errors are clustered at the firm level. Results show that it is not more likely for firms to engage in empire building through M&A, nor diversifying M&A specifically, as the coefficient falls short of significance. Even though firms' announcement likelihood is unaffected in the case of director distraction, it is possible that the announcements being done destroy value for shareholders. This is tested in **Panel C** which includes a deal's relative size, whether the target is in another industry, and whether the target is a private firm in addition to previously added controls relating to board and firm characteristics (refer to **Table A** in the Appendix for detailed variable descriptions). Surprisingly, it can be seen that M&A announcement CARs are significantly higher when directors are distracted. However, this interpretation should be viewed with caution, since the sample size is small and could therefore lead to spurious inferences. Re-estimating the model excluding *Relative deal size* substantially increases the sample size, although it does not alter the statistical significance: the relation between *Distraction* and 3-day CARs remains significantly positive. Although it was more likely for managers to overinvest post introduction of the SOX (through asset growth), results show that the probability of firms to announce (diversifying) M&A transactions was not significantly different post introduction of the SOX, considering an insignificant relation is found between the interaction terms and dependent variables.

6.3.2 "Quiet life" hypothesis versus "delayed decision-making" hypothesis

Results in the previous subsection suggest that managers tend to "enjoy a quiet life" rather than maximize shareholder value. As mentioned previously, an alternative explanation of the results in the previous section could be that managers delay making important decisions when the firm's directors are busy elsewhere. **Table 6** compares a firm's *CAPEX*, asset growth, and M&A transaction announcements between the "before" period (two successive quarters with positive distraction) and "after" period (following two quarters with no distraction). **Panel A** compares the average values of these variables between both periods: the mean of these variables is equal during both the "before" and "after" period, which can therefore be viewed as proof against the "delayed decision-making" hypothesis. This implies that managers are likely to push investment decisions if

necessary, even though the directors are time- and/or energy-constrained. **Panels B** and **C** test whether this difference was significant during the financial crisis or in the period post introduction of the SOX. Results suggest that managers were more likely to postpone decision-making during the financial crisis, in line with what was predicted: asset base grew by 2.0 percent (on average) during the "after period" versus no growth (on average) during the "before" period and M&A announcement likelihood was 4.0 percent higher during the "after" period. No evidence in line with this hypothesis is found in the period post introduction of the SOX. **Panel D** conducts regression analyses to examine the effect of firms being in the "after" period on the aforementioned variables. Columns (1), (3), and (5) absorb quarter FE and firm FE, whereas columns (2), (4), and (6) include firm FE and industry FE. Standard errors are clustered at the firm level, equivalent to *Director attention and firm value* (Renjie & Verwijmeren, 2017). Besides *After* and the control variables (added in **Table 2**), two interaction terms are included between *After* and time dummies, denoting the period of the financial crisis and period post introduction of the SOX. Columns (2), (4), and (6) additionally include the previously mentioned crisis and SOX dummies. In line with the finding in **Panel B,** the effect of *After* is significantly positive during the financial crisis in most of the model specifications, suggesting managers were more likely to wait during this period with investment and M&A decisions until distracted directors could devote more time and energy to the firm: capital expenditures were $8000 - $17.000 higher during the "after" period (on average), the growth in asset base was 1.0 - 1.7 percentage points higher during the "after" period (on average), and M&A announcement likelihood was 3.7 - 5.2 percent higher. Although two of the model specifications in this panel show that the effect of *After* was significantly positive in the period post introduction of the SOX, it is not viewed as sufficient evidence consistent with the "delayed decision-making" hypothesis. Interestingly, two models in this panel display the opposite of what this hypothesis predicts: capital expenditures and asset growth were significantly higher during the "before" period.

Overall, results seem in line with the "quiet life" hypothesis; director distraction provides managers with leeway to shirk on their duties, which leads to a significant decrease in firm valuation. Moreover, the negative impact of director distraction was less pronounced in the period post introduction of the SOX, which proves the board structure changes and increase in the responsibility of managers mandated by the SOX contributed positively to investor confidence. Surprisingly, director distraction led managers to engage in empire building during this period through overinvesting in assets, contrary to what was predicted. Even though the effect of director distraction on firm value was not significantly different during the financial crisis, it did have

implications for one of the underlying mechanisms, namely it did lead managers to postpone certain investment and M&A decisions.

6.4 Effect from different groups of directors

Table 7 considers the effect of director distraction from different groups of directors. Column (1) examines the effect of director distraction separately for committee members from non-committee members, column (2) for audit committee members from non-audit committee members, column (3) for nomination committee members from non-nomination committee members, column (4) for compensation committee members from non-compensation committee members, column (5) for independent directors from linked directors, and column (6) for corporate governance committee members from non-corporate governance committee members. All models add previously used controls in **Table 2** relating to board and firm characteristics, control for industry x quarter FE and firm FE, and cluster standard errors at the firm level, akin to the level chosen in *Director attention and firm value* (Renjie & Verwijmeren, 2017). Furthermore, an *F*-test is performed in each regression model which tests whether there is a significant difference between the coefficients of *Distraction* from various groups of directors. The results for separate groups of directors are in line with what was seen in **Table 2**, barring for linked directors. The reason for this could be that distraction of linked directors matters less compared to that independent directors, given their association with the firm. The *Distraction* coefficients are significantly different from each other in the case of independent versus linked directors and audit versus non-audit committee members (significant at the ten percent level). Surprisingly, director distraction from non-audit committee members reduces firm value significantly more compared to that of audit committee members (a coefficient of -1.263 versus -0.723), although the audit committee is supposedly the most demanding committee membership in terms of time. Also, contrary to what was expected, committee members do not significantly decrease firm value more than non-committee members in the case of distraction (*p*-value of 0.641).

6.5 Alternative explanations

Results up till now suggest that managers tend to "enjoy a quiet life" when the firm's directors become distracted in the case of industry shocks elsewhere. Before jumping to conclusions, it is important eliminate alternative explanations that could be driving the findings besides distraction of directors itself.

6.5.1 Investor distraction

One alternative explanation is that investor distraction could be driving the findings rather than director distraction, since the distraction measure employed in this paper is based on the distraction

measure created by Kempf et al. (2017). **Table 8** researches this by re-running the regressions in **Table 2**, **Table 3**, **Table 4**, and **Table 5**, but including the investor distraction measure of Kempf et al. (2017) and institutional ownership as control variables. Furthermore, all models include the previously used controls in **Table 2** relating to board and firm characteristics. The effect of *Distraction* is isolated from industry x quarter FE and firm FE, and standard errors are clustered at the firm level, consistent with *Director attention and firm value* (Renjie & Verwijmeren, 2017). The relation between director distraction and Tobin's Q, stock performance (i.e. cumulative abnormal returns computed according to the CAPM model), firm investment, and M&A transaction announcements remains roughly unchanged in terms of statistical significance and equal in terms of direction of the relation, although overall larger in magnitude compared to the baseline results. Nevertheless, the concern that the initial results were driven by investor distraction rather than director distraction can be allayed. Interestingly, the correlation coefficient between the investor distraction measure and firm value is significantly positive (in most of the model specifications) which suggests distracted investors add to firm value.

6.5.2 Multi-segment structure of conglomerate firms

Another possible explanation is that findings are driven by the structure of conglomerate firms. To rule out this explanation, regressions in **Table 2**, **Table 3**, **Table 4**, and **Table 5** are re-estimated in **Table 9** using a sample consisting of firms operating in a single segment only. All columns add the previously employed controls in **Table 2** relating to board and firm characteristics. Quarter FE and firm FE are absorbed in all models, and standard errors are clustered at the firm level, just like in *Director attention and firm value* (Renjie & Verwijmeren, 2017). The relation between director distraction and Tobin's Q, stock performance, and M&A announcements remains roughly unchanged in terms of statistical significance and equal in terms of direction of the relation. Hence, the concern that the original results on these variables were driven by the structure of firms operating in multiple segments can be alleviated. The effect of director distraction on firm investment falls short of significance, though equal in terms of direction of the relation compared to the initial results. Notwithstanding, the conclusion drawn regarding managerial empire building (via overinvesting) still holds.

6.5.3 Endogeneity of director choice

One last possible concern is related to the bias in the selection of directors previously discussed. In **Table 2** it was concluded that results on Tobin's Q were not biased as a result of directors being chosen endogenously. **Panel A** from **Table 10** tackles this concern considering the effect of distraction originating from positive industry shocks and negative industry shocks separately on stock performance. **Table 2** controls relating to board and firm characteristics are added to all

models, as well as quarter FE and firm FE. Furthermore, standard errors are clustered at the firm level, in line with *Director attention and firm value* (Renjie & Verwijmeren, 2017). As can be seen in **Panel A**, an insignificant relation is found between *Distraction (positive)* and proxies for stock performance. This makes it hard to draw a conclusion on whether the original findings on stock underperformance were primarily driven by directors being selected endogenously. **Panel B** looks into the effect of director distraction on firm investment and M&A transaction announcements exploiting positive and negative shocks separately. Columns (1) to (6) include the same control variables as in **Panel A**, cluster standard errors at the firm level, and include industry x quarter FE and firm FE. Results observed here mitigate the concern that the baseline results relating to firm investment and M&A announcements were driven by this bias in director choice: a significantly negative correlation coefficient is found in all of the models.

6.6 Robustness check: Matching

Finally, nearest-neighbour and propensity-score matching methods are used to test the robustness of findings. **Table 11** quantifies the Average Treatment Effect (ATE) of high director distraction (*Distraction* > 0.08) on Tobin's Q, stock performance, firm investment, and M&A transaction announcements. **Panel A** reports the results when the nearest-neighbour matching strategy is used to determine the nearest observation, whereas in **Panels B** and **C** the logistic and probit propensity-score matching method is used, respectively. A significant negative relation is found in all of the panels when *Tobin's Q* and *CAPEX* are employed as the dependent variable, in line with what was observed in the original findings. When *CAR (CAPM)*, *Asset growth*, and *M&A* are included as the dependent variable, the estimated ATE is negative across all panels, though not (always) statistically significant. Nevertheless, the conclusions drawn concerning the effect of director distraction on firm valuation (i.e. Tobin's Q) and implications for potential channels still hold. One caveat of this paper is that the estimated ATE's are overall lower in magnitude compared to the initial results.

7 Conclusion

A firm's board of directors is viewed as one the core internal corporate governance mechanisms as the main responsibility of the board of directors is to pursue the interests of a firm's shareholders. Directors have to fulfil two duties: monitoring management in which they need to ensure managers act in the best interest of shareholders and advising management in which they provide high quality counsel.

It is likely that directors with multiple board positions are not able to fulfil these duties, given that they need to divide their attention amongst these directorships (i.e. attention is a resource in limited supply. On the other hand, some argue that board interlocking allows directors to perform their advisory duty better. This has led to a debate on whether board interlocking is beneficial to firms. The main research objective of this paper has therefore been to quantify the impact of limited director attention on firm value. Previous literature shows that it has been hard to disentangle the effect of director "busyness" from director quality, as multiple directorial positions could also reflect talent and/or experience. This paper contributes to the existing level on knowledge because it tackles this endogeneity concern in a new empirical setting. A distraction measure is constructed that exploits (plausibly) exogenous variation in the distribution of attention across directorships by considering attention-grabbing shocks in other industries where these directors hold additional board positions. Since the source of distraction is considered at the industry level, it is practically impossible that it is driven by the ability of a single director. Moreover, the employed measure takes a directorship's reputation incentive effects into account that previous papers have failed to do. Lastly, this paper has also considered the implications for the underlying mechanism(s) through which director distraction affects firm value.

Evidence shows that director distraction has a significant negative effect on firm value, particularly when distracted directors are independent. Results suggest that distracted directors spend less time and energy monitoring managers. As a result of this, managers take advantage at the expense of shareholders by behaving passively, consistent with the "quiet life" hypothesis. No evidence is found in line with other potential channels through which director distraction could negatively influence firm value: managerial empire building and managers delaying decision-making due to missing valuable advice from distracted directors. The negative impact of director distraction moderated post introduction of the Sarbanes-Oxley Act in 2002, whereas no significant change was seen during the financial crisis of 2007 to 2009. In particular, results suggest that managers engaged in empire building post introduction of the SOX and delayed certain investment and M&A decisions during the financial crisis until directors were no longer distracted.

Results provide new insights to the debate on whether board interlocking is beneficial to firms: board interlocking leads to less effective monitoring when other industries where directors hold additional board positions experience attention-grabbing shocks, which allows managers to shirk on their responsibilities, which in turn leads to a lower firm valuation. Even though this is valuable information to policymakers and (potential) shareholders, it is hard to comment on whether the number of directorial positions one can have should be restricted in corporate governance codes or how (potential) shareholders should interpret board interlocking. As such, one shortcoming of this paper is that the distraction identification approach does not allow to draw a conclusion on how well directors with multiple board positions perform their advisory duty, which supposedly could improve as a result of board interlocking. Therefore, future researchers should focus on constructing a measure that looks into both the monitoring and advisory role of directors holding multiple board positions, and does not make the unfair assumption that these directors allocate their time and energy uniformly across directorships. Another caveat of this paper is that the concern that results on stock performance are driven by the endogenous nature of director appointments cannot be ruled out.

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9 Results

Figure 1: Tobin's Q and director distraction over time

This graph graphs the development of the mean value of Tobin's Q measured at the fiscal quarter level when the board distraction level is zero versus when it is higher than its mean level (0.08), along with ***, **, or * indicating whether the difference between these values is statistically significant at the 1% -, 5% -, or 10% - level, respectively.

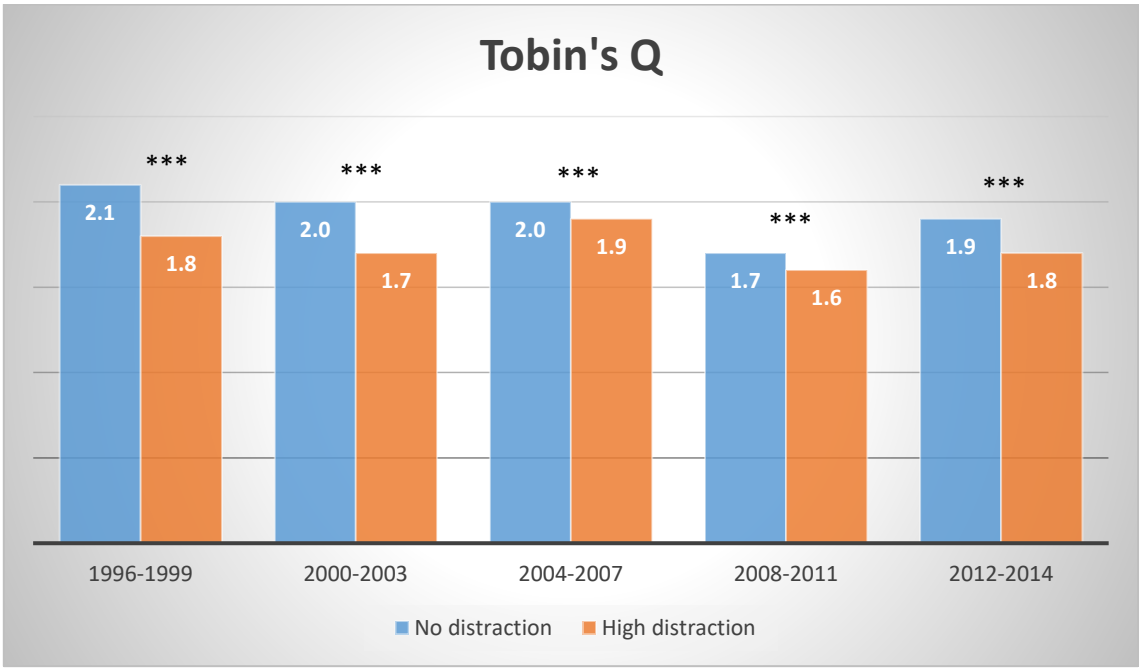

Table 1: Summary statistics

Summary statistics for the main sample of firm-fiscal quarter observations over the period of 1996 - 2014 are presented in this table. It includes the board's distraction level, alternative measures of distraction, dependent variables, and control variables which are used throughout this paper. All continuous dependent variables have been winsorized at the one percent level at both tails. Table A in the Appendix provides a list of detailed variable descriptions.

	N	Mean	Std. Dev.	Min.	p25	Median	p75	Max.
Dependent variables								
Tobin's Q	59,304	1.92	1.21	0.78	1.16	1.16	2.21	7.93
Cumulative excess returns	59,171	0.03	0.21	-0.61	-0.08	-0.08	0.14	0.66
CAR (CAPM)	59,171	0.00	0.16	-0.49	-0.06	-0.06	0.06	0.55
CAR (FF4)	59,171	0.00	0.17	-0.54	-0.06	-0.06	0.07	0.56
CAPEX	59,355	0.64	0.21	0.09	0.54	0.54	0.79	1.09
Asset growth	59,367	0.02	0.08	-0.18	-0.01	-0.01	0.04	0.47
M&A	59,380	0.08	0.28	0	0	0	0	1
Div. M&A	59,380	0.02	0.15	0	0	0	0	1
Main independent variables								
Distraction	59,380	0.01	0.04	0.00	0.00	0.00	0.00	0.99
Distraction (> 0)	9,626	0.08	0.08	0.00	0.02	0.02	0.11	0.99
Distraction * Crisis	59,380	0.00	0.02	0.00	0.00	0.00	0.00	0.49
Distraction * SOX	59,380	0.00	0.02	0.00	0.00	0.00	0.00	0.75
Alternative measures								
Distraction (positive)	59,380	0.01	0.04	0.00	0.00	0.00	0.00	0.99
Distraction (negative)	59,380	0.02	0.05	0.00	0.00	0.00	0.00	0.97
Distraction (committee)	59,380	0.01	0.04	0.00	0.00	0.00	0.00	0.99
Distraction (non-committee)	59,380	0.00	0.01	0.00	0.00	0.00	0.00	0.49
Distraction (audit)	59,380	0.01	0.03	0.00	0.00	0.00	0.00	0.99
Distraction (non-audit)	59,380	0.01	0.03	0.00	0.00	0.00	0.00	0.97
Distraction (nomination)	59,380	0.01	0.03	0.00	0.00	0.00	0.00	0.98
Distraction (non-nomination)	59,380	0.01	0.03	0.00	0.00	0.00	0.00	0.99
Distraction (compensation)	59,380	0.01	0.03	0.00	0.00	0.00	0.00	0.99
Distraction (non-compensation)	59,380	0.01	0.03	0.00	0.00	0.00	0.00	0.98
Distraction (corporate governance)	59,380	0.00	0.02	0.00	0.00	0.00	0.00	0.98
Distraction (non-corporate governance)	59,380	0.01	0.04	0.00	0.00	0.00	0.00	0.99
Distraction (independent)	59,380	0.01	0.04	0.00	0.00	0.00	0.00	0.99
Distraction (linked)	59,380	0.00	0.02	0.00	0.00	0.00	0.00	0.97
Control variables								
Crisis	59,380	0.15	0.36	0	0	0	0	1
SOX	59,380	0.27	0.45	0	0	0	1	1
Log(Assets)	59,380	7.98	1.71	2.73	6.73	6.73	9.02	14.76
Board size	59,380	8.87	2.84	2.00	7.00	7.00	11.00	34.00
Board busyness	59,380	0.48	0.19	0.05	0.33	0.33	0.63	1.00
Board independence	59,380	0.44	0.20	0.00	0.29	0.29	0.57	1.00
Growth opportunities	59,378	0.00	0.01	0.00	0.00	0.00	0.01	1.71
Board stock ownership	59,380	0.01	0.05	0.00	0.00	0.00	0.00	0.99
Industry returns	59,380	2.35	11.33	-42.77	-2.38	-2.38	9.18	43.52
Institutional ownership	59,380	0.68	0.22	0.00	0.59	0.59	0.84	1.00
Investor distraction	55,646	0.05	0.04	0.00	0.02	0.02	0.07	0.34

Table 2: Effect of director distraction on Tobin's Q

This table reports the effect of director distraction on firm value, proxied by Tobin's Q (both measured at the firm-fiscal quarter level). Table A in the Appendix provides a list of detailed variable descriptions. In columns (1) and (2) the models include quarter FE and firm FE. Columns (3) and (4) are estimated industry x quarter FE and firm FE. Column (7) additionally includes Crisis and SOX as control variables, and contains firm FE and industry FE. Columns (5) and (6) look into distraction originating from positive and negative shocks separately to test whether results are driven by a bias in the selection of directors and incorporate industry x quarter FE and firm FE. Standard errors are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

	Tobin's Q						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Distraction	-0.501***	-0.598***	-0.380***	-0.427***			-0.458***
	(-6.145)	(-5.883)	(-4.803)	(-4.439)			(-4.955)
Distraction * Crisis		0.190		0.089			0.311
		(0.725)		(0.338)			(1.253)
Distraction * SOX		0.511**		0.257			-0.221
		(2.511)		(1.354)			(-1.146)
Distraction (positive)					-0.182*		
					(-1.947)		
Distraction (negative)						-0.290***	
						(-4.022)	
Crisis							-0.189***
							(-9.878)
SOX							-0.109***
							(-4.599)
Log(Assets)		-0.477***		-0.476***	-0.476***	-0.476***	-0.462***
		(-10.329)		(-10.658)	(-10.659)	(-10.658)	(-11.122)
Board size		0.006		0.009	0.010	0.009	-0.004
		(0.762)		(1.225)	(1.235)	(1.227)	(-0.506)
Board busyness		-0.146		-0.016	-0.017	-0.015	-0.051
		(-0.884)		(-0.107)	(-0.112)	(-0.097)	(-0.312)
Board independence		-0.052		-0.067	-0.068	-0.067	-0.177
		(-0.345)		(-0.469)	(-0.476)	(-0.464)	(-1.150)
Growth opportunities		-1.655**		-1.356**	-1.363**	-1.362**	-1.778***
		(-2.538)		(-2.467)	(-2.464)	(-2.469)	(-2.579)
Board stock ownership		-0.641***		-0.505***	-0.502***	-0.504***	-0.736***
		(-3.346)		(-2.690)	(-2.672)	(-2.688)	(-3.765)
Observations	59,295	59,295	59,295	59,295	59,295	59,295	59,295
Adjusted R-squared	0.671	0.687	0.706	0.721	0.721	0.721	0.671
Quarter FE	Yes	Yes	No	No	No	No	No
Industry x quarter FE	No	No	Yes	Yes	Yes	Yes	No
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No	No	Yes	Yes

Table 3: Effect of director distraction on stock performance

This table states the effect of director distraction on firm value, proxied by a firm's stock performance (both measured at the measured at the firm-fiscal quarter level). Table A in the Appendix provides a list of detailed variable descriptions. Panel A employs a firm's cumulative excess returns as dependent variable, whereas Panels B and C consider cumulative abnormal returns according to the CAPM and FF-4 model, respectively. In column (1) the model is estimated with quarter FE, whereas column (2) controls for quarter FE and stock FE. Column (3) additionally includes Crisis and SOX as control variables, and contains firm FE. Standard errors are clustered at the stock level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

Panel A: Cumulative excess returns

	(1)	(2)	(3)
Distraction	-0.096***	-0.084***	-0.104***
	(-3.373)	(-2.869)	(-3.639)
Distraction * Crisis	-0.050	-0.058	-0.050
	(-0.910)	(-0.966)	(-0.872)
Distraction * SOX	0.093*	0.091*	0.088*
	(1.839)	(1.728)	(1.709)
Crisis			0.006***
			(3.184)
SOX			-0.001
			(-0.591)
Log(Assets)	-0.002***	-0.040***	-0.030***
	(-4.464)	(-16.919)	(-15.902)
Board size	0.001***	0.001*	0.004***
	(4.656)	(1.648)	(7.336)
Board busyness	-0.010	-0.005	-0.024*
	(-0.940)	(-0.402)	(-1.658)
Board independence	0.005	-0.002	0.029**
	(0.498)	(-0.189)	(2.222)
Industry returns	0.010***	0.010***	0.010***
	(64.297)	(63.916)	(78.359)
Growth opportunities	-0.341**	-0.323**	-0.315**
	(-2.446)	(-2.316)	(-2.305)
Board stock ownership	0.000	0.003	0.026
	(0.014)	(0.118)	(1.123)
Observations	59,169	59,160	59,160
Adjusted R-squared	0.303	0.311	0.294
Quarter FE	Yes	Yes	No
Stock FE	No	Yes	Yes

Panel B: CAR (CAPM)

	(1)	(2)	(3)
Distraction	-0.070***	-0.062**	-0.079***
	(-2.960)	(-2.539)	(-3.166)
Distraction * Crisis	-0.015	-0.016	0.096*
	(-0.299)	(-0.289)	(1.773)
Distraction * SOX	0.060	0.059	0.075
	(1.346)	(1.260)	(1.605)
Crisis			0.013***
			(6.683)
SOX			-0.000
			(-0.157)
Log(Assets)	-0.001***	-0.028***	-0.028***
	(-3.056)	(-12.630)	(-15.574)
Board size	0.001***	0.001	0.003***
	(3.186)	(1.286)	(4.794)
Board busyness	-0.014*	-0.011	-0.014
	(-1.665)	(-0.876)	(-1.022)
Board independence	0.011	0.002	0.007
	(1.340)	(0.154)	(0.519)
Industry returns	0.003***	0.003***	0.001***
	(17.457)	(17.144)	(11.571)
Growth opportunities	-0.303***	-0.286**	-0.273**
	(-2.597)	(-2.448)	(-2.524)
Board stock ownership	0.002	0.018	0.040**
	(0.136)	(1.106)	(2.231)
Observations	59,169	59,160	59,160
Adjusted R-squared	0.050	0.057	0.019
Quarter FE	Yes	Yes	No
Stock FE	No	Yes	Yes

Panel C: CAR (FF4)

	(1)	(2)	(3)
Distraction	-0.020	-0.012	-0.021
	(-0.809)	(-0.485)	(-0.854)
Distraction * Crisis	-0.098*	-0.095	-0.028
	(-1.777)	(-1.596)	(-0.481)
Distraction * SOX	-0.010	-0.008	0.040
	(-0.222)	(-0.164)	(0.843)
Crisis			0.003*
			(1.758)
SOX			-0.006***
			(-3.823)
Log(Assets)	-0.001***	-0.027***	-0.023***
	(-3.134)	(-11.197)	(-11.957)
Board size	0.001***	0.001**	0.002***
	(3.180)	(2.056)	(3.696)
Board busyness	-0.007	-0.005	-0.012
	(-0.762)	(-0.374)	(-0.908)
Board independence	0.003	-0.005	0.006
	(0.320)	(-0.363)	(0.481)
Industry returns	0.002***	0.002***	0.001***
	(11.147)	(10.932)	(5.977)
Growth opportunities	-0.252**	-0.236**	-0.224**
	(-2.423)	(-2.221)	(-2.191)
Board stock ownership	-0.000	0.024	0.031
	(-0.008)	(1.306)	(1.578)
Observations	59,169	59,160	59,160
Adjusted R-squared	0.014	0.022	0.011
Quarter FE	Yes	Yes	No
Stock FE	No	Yes	Yes

Table 4: Effect of director distraction on firm investment

This table shows the effect of direction distraction on firm investment (both measured at the firm-fiscal quarter level). Table A in the Appendix provides a list of detailed variable descriptions. Panel A includes a firm's capital expenditure to total assets (CAPEX) as dependent variable, and Panel B employs Asset growth as dependent variable. Columns (1) and (2) absorb quarter FE and firm FE. Columns (3) includes industry x quarter FE and firm FE. Column (4) contains firm FE and industry FE. Standard errors are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

Panel A: CAPEX

	(1)	(2)	(3)	(4)
Distraction	-0.019*	-0.020*	-0.020*	-0.009
	(-1.929)	(-1.760)	(-1.807)	(-0.821)
Distraction * Crisis		0.004	0.022	-0.010
		(0.132)	(0.638)	(-0.318)
Distraction * SOX		0.024	0.019	-0.027
		(0.872)	(0.716)	(-1.031)
Crisis				-0.012***
				(-5.651)
SOX				0.002
				(0.855)
Log(Assets)		0.045***	0.045***	0.024***
		(8.137)	(8.106)	(6.115)
Board size		-0.002**	-0.002*	-0.005***
		(-2.204)	(-1.955)	(-5.805)
Board busyness		-0.032*	-0.026	-0.003
		(-1.707)	(-1.391)	(-0.176)
Board independence		0.006	0.008	-0.043**
		(0.342)	(0.436)	(-2.469)
Growth opportunities		-0.234**	-0.227***	-0.264***
		(-2.553)	(-2.603)	(-2.632)
Board stock ownership		-0.015	-0.022	-0.023
		(-0.538)	(-0.812)	(-0.830)
Observations	59,347	59,345	59,345	59,345
Adjusted R-squared	0.844	0.849	0.853	0.845
Quarter FE	Yes	Yes	No	No
Industry x quarter FE	No	No	Yes	No
Firm FE	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes

Panel B: Asset growth

	(1)	(2)	(3)	(4)
Distraction	-0.011	-0.024**	-0.018*	-0.011
	(-1.319)	(-2.443)	(-1.781)	(-1.163)
Distraction * Crisis		0.023	0.012	0.011
		(1.130)	(0.554)	(0.547)
Distraction * SOX		0.071***	0.062***	0.027
		(3.083)	(2.623)	(1.203)
Crisis				-0.009***
				(-8.554)
SOX				0.001
				(1.254)
Log(Assets)		0.028***	0.029***	0.013***
		(14.802)	(15.029)	(9.410)
Board size		-0.001***	-0.001***	-0.004***
		(-3.167)	(-3.365)	(-9.663)
Board busyness		-0.010	-0.007	0.011
		(-1.380)	(-0.904)	(1.593)
Board independence		-0.000	-0.001	-0.036***
		(-0.039)	(-0.148)	(-5.450)
Growth opportunities		-0.181**	-0.175**	-0.201**
		(-2.476)	(-2.437)	(-2.464)
Board stock ownership		-0.019*	-0.021*	-0.027**
		(-1.766)	(-1.913)	(-2.454)
Observations	59,359	59,357	59,357	59,357
Adjusted R-squared	0.061	0.074	0.088	0.050
Quarter FE	Yes	Yes	No	No
Industry x quarter FE	No	No	Yes	No
Firm FE	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes

Table 5: Effect of director distraction on firm M&A decisions

Panels A and B consider the effect of direction distraction on (diversifying) M&A decisions (both measured at the firm-fiscal quarter level). Panel C examines the effect of director distraction on 3-day CARs of M&A transaction announcements. Table A in the Appendix provides a list of detailed variable descriptions. Column (1) in Panels A and B includes industry x quarter FE, and column (2) includes additionally includes firm FE. Column (3) in these panels incorporates firm FE and industry FE. Quarter FE and industry FE are included in Panel C. Standard errors are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

Panel A: M&A transaction announcements

	(1)	(2)	(3)
Distraction	-0.023	0.001	0.016
	(-0.782)	(0.035)	(0.559)
Distraction * Crisis	-0.024	-0.045	-0.009
	(-0.343)	(-0.602)	(-0.123)
Distraction * SOX	-0.000	-0.004	-0.040
	(-0.006)	(-0.044)	(-0.526)
Crisis			-0.019***
			(-5.240)
SOX			0.000
			(0.102)
Log(Assets)	0.019***	0.007	-0.004
	(10.856)	(1.445)	(-0.996)
Board size	-0.000	-0.001	-0.003**
	(-0.471)	(-0.629)	(-2.554)
Board busyness	-0.019	-0.001	0.018
	(-0.946)	(-0.054)	(0.682)
Board independence	0.011	0.012	-0.025
	(0.602)	(0.442)	(-0.991)
Growth opportunities	-0.154**	-0.120**	-0.133**
	(-2.394)	(-2.112)	(-2.296)
Board stock ownership	0.009	0.002	-0.012
	(0.294)	(0.074)	(-0.383)
Observations	59,378	59,369	59,369
Adjusted R-squared	0.020	0.060	0.057
Industry x quarter FE	Yes	Yes	No
Firm FE	No	Yes	No
Quarter FE	No	No	No
Industry FE	No	No	Yes

Panel B: Diversifying M&A transaction announcements

	(1)	(2)	(3)
Distraction	-0.011	-0.015	-0.012
	(-0.786)	(-0.897)	(-0.770)
Distraction * Crisis	-0.010	-0.022	-0.043
	(-0.246)	(-0.519)	(-1.048)
Distraction * SOX	-0.004	-0.000	-0.014
	(-0.084)	(-0.010)	(-0.300)
Crisis			0.001
			(0.550)
SOX			0.001
			(0.534)
Log(Assets)	0.005***	0.005**	0.001
	(4.369)	(2.142)	(0.627)
Board size	-0.001	-0.001	-0.001**
	(-1.428)	(-0.871)	(-2.199)
Board busyness	0.003	-0.005	-0.001
	(0.327)	(-0.373)	(-0.120)
Board independence	0.005	0.008	-0.001
	(0.428)	(0.693)	(-0.089)
Growth opportunities	-0.073**	-0.051**	-0.046**
	(-2.180)	(-2.011)	(-2.067)
Board stock ownership	0.016	0.015	0.015
	(0.785)	(0.666)	(0.657)
Observations	59,378	59,369	59,369
Adjusted R-squared	0.003	0.054	0.054
Industry x quarter FE	Yes	Yes	No
Firm FE	No	Yes	No
Quarter FE	No	No	No
Industry FE	No	No	Yes

Panel C: 3-day CARs

	(1)	(2)
Distraction	0.071**	0.048*
	(2.066)	(1.646)
Log(Assets)	0.001	-0.001
	(0.840)	(-0.916)
Board size	0.000	-0.000
	(0.526)	(-0.725)
Board busyness	0.003	0.017
	(0.134)	(1.510)
Board independence	-0.005	-0.023**
	(-0.213)	(-2.148)
Growth opportunities	-0.507	-0.491***
	(-1.095)	(-2.844)
Board stock ownership	-0.028	-0.004
	(-0.715)	(-0.287)
Relative deal size	0.000	
	(0.701)	
Diversifying deal	0.001	-0.000
	(0.291)	(-0.238)
Private target	0.008	0.001
	(1.438)	(0.728)
Observations	1,394	5,232
Adjusted R-squared	0.042	0.020
Industry x quarter FE	No	No
Firm FE	No	No
Quarter FE	Yes	Yes
Industry FE	Yes	Yes

Table 6: Testing the "delayed decision-making" hypothesis

This table examines the "delayed decision-making" hypothesis. Panel A compares the mean of firm investment and M&A transaction announcements between the "before" period (two successive quarters with positive distraction) and "after" period (following two quarters with no distraction). All variables are measured at the firm-fiscal quarter level. Table A in the Appendix provides a list of detailed variable descriptions. Panels B and C compare the mean of these variables during the financial crisis and in the period post introduction of the SOX, respectively. Panel D shows the results of conducted regression analyses where the effect of the "after" period on these aforementioned variables is considered. Columns (1), (3), and (5) absorb quarter FE and firm FE, and columns (2), (4), and (6) absorb firm FE and industry FE. Standard errors are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

Panel A: Difference in means

		Pos. distraction (before)	No distraction (after)	Difference After - Before
	N	Mean	Mean	*t*-stat.
CAPEX	6,077	0.60	0.60	-0.16
Asset growth	6,079	0.02	0.02	-0.90
M&A	6,080	0.09	0.09	0.18

Panel B: Difference in means during financial crisis

		Pos. distraction (before)	No distraction (after)	Difference After - Before
	N	Mean	Mean	*t*-stat.
CAPEX	551	0.61	0.62	0.45
Asset growth	551	0.00	0.02	2.08**
M&A	551	0.07	0.11	1.55*

Panel C: Difference in means post introduction SOX

		Pos. distraction (before)	No distraction (after)	Difference After - Before
	N	Mean	Mean	*t*-stat.
CAPEX	1,313	0.58	0.59	0.62
Asset growth	1,313	0.02	0.02	0.34
M&A	1,313	0.08	0.09	0.70

Panel D: OLS regressions

	(1) CAPEX	(2) CAPEX	(3) Asset growth	(4) Asset growth	(5) Acquisition	(6) Acquisition
After	-0.005	-0.005**	-0.003	-0.005**	-0.002	-0.005
	(-1.595)	(-2.128)	(-1.184)	(-2.186)	(-0.183)	(-0.510)
After * Crisis	0.008	0.017***	0.010*	0.017**	0.052*	0.037
	(1.107)	(2.726)	(1.656)	(2.572)	(1.704)	(1.424)
After * SOX	0.009	0.009**	-0.002	0.008*	0.022	0.018
	(1.532)	(2.201)	(-0.298)	(1.823)	(1.067)	(0.939)
Crisis		-0.020***		-0.016***		-0.039*
		(-2.600)		(-3.167)		(-1.936)
SOX		-0.009		-0.006		-0.013
		(-1.620)		(-1.539)		(-0.868)
Log(Assets)	0.035	0.023*	0.034***	0.016***	-0.001	-0.014
	(1.610)	(1.707)	(5.009)	(3.811)	(-0.064)	(-0.707)
Board size	-0.007**	-0.007***	-0.002**	-0.003***	-0.004	-0.007
	(-2.516)	(-2.990)	(-2.050)	(-3.491)	(-0.855)	(-1.473)
Board busyness	-0.008	-0.003	-0.023	0.005	-0.094	-0.059
	(-0.124)	(-0.053)	(-0.827)	(0.208)	(-0.874)	(-0.559)
Board independence	-0.007	-0.020	0.025	-0.016	0.046	0.007
	(-0.143)	(-0.470)	(1.014)	(-0.710)	(0.472)	(0.077)
Growth opportunities	-0.206	-0.207	0.091	0.101	0.044	0.050
	(-1.522)	(-1.318)	(0.359)	(0.382)	(0.403)	(0.449)
Board stock ownership	0.044	0.063	-0.042	-0.031	-0.045	-0.081
	(0.482)	(0.710)	(-0.743)	(-0.564)	(-0.405)	(-0.729)
Observations	6,077	6,077	6,079	6,079	6,080	6,080
Adjusted R-squared	0.873	0.871	0.088	0.066	0.049	0.046
Quarter FE	Yes	No	Yes	No	Yes	No
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes

Table 7: Effect of director distraction from different groups of directors

This table researches the effect of director distraction on firm value (proxied by Tobin's Q) from separate groups of directors (both measured at the firm-fiscal quarter level). Table A in the Appendix provides a list of detailed variable descriptions. All columns are estimated with industry x quarter FE and firm FE, in which standard errors are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively. At the bottom of the table, an *F*-test is performed in each model which tests whether there is a significant difference between the coefficients of Distraction from various groups of directors.

	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Distraction (committee)	-0.985***					
	(-5.354)					
Distraction (non-committee)	-0.813*					
	(-1.718)					
Distraction (audit)		-0.723***				
		(-2.835)				
Distraction (non-audit)		-1.263***				
		(-5.645)				
Distraction (nomination)			-1.306***			
			(-5.330)			
Distraction (non-nomination)			-0.763***			
			(-3.258)			
Distraction (compensation)				-1.065***		
				(-4.191)		
Distraction (non-compensation)				-0.845***		
				(-3.807)		
Distraction (independent)					-1.068***	
					(-5.512)	
Distraction (linked)					-0.308	
					(-0.876)	
Distraction (corporate governance)						-1.246***
						(-4.395)
Distraction (non-corporate governance)						-0.844***
						(-3.891)
Observations	59,304	59,304	59,304	59,304	59,304	59,304
Adjusted R-squared	0.199	0.199	0.199	0.199	0.199	0.199
Industry x quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
F-test for difference between coefficients:						
Statistic	0.218	3.034	2.540	1.144	3.694	0.944
p-value	0.641	0.082	0.111	0.285	0.055	0.331

Table 8: Results when controlling for investor distraction

This table re-estimates the effect of director distraction on firm valuation, firm investment, and M&A decisions including the investor distraction measure by Kempf et al. (2017) and Institutional ownership as control variables. Table A in the Appendix provides a list of detailed variable descriptions. Variables are measured at the firm-fiscal quarter level. All columns include industry x quarter FE and firm FE, in which standard errors are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

	(1) Tobin's Q	(2) CAR (CAPM)	(3) CAPEX	(4) Asset growth	(5) M&A
Distraction	-0.911***	-0.075***	-0.056**	-0.014*	-0.029
	(-4.906)	(-3.816)	(-2.185)	(-1.647)	(-1.057)
Investor distraction	1.310***	0.185***	-0.004	0.070***	0.089*
	(6.335)	(5.789)	(-0.167)	(3.974)	(1.705)
Log(Assets)	-0.086***	-0.001**	-0.030***	0.003***	0.020***
	(-4.612)	(-2.169)	(-9.605)	(6.904)	(10.670)
Board size	0.024***	0.001**	-0.008***	-0.001***	-0.000
	(3.000)	(1.986)	(-4.791)	(-2.666)	(-0.613)
Board busyness	0.222	-0.010	0.044	-0.019***	-0.012
	(1.037)	(-1.154)	(1.319)	(-3.681)	(-0.577)
Board independence	-0.006	0.008	-0.113***	-0.000	0.004
	(-0.029)	(0.917)	(-3.696)	(-0.052)	(0.204)
Institutional ownership	0.067	0.027***	0.149***	0.026***	0.038***
	(0.488)	(5.883)	(6.290)	(8.765)	(3.337)
Growth opportunities	-2.165***	-0.267**	0.356*	-0.252***	-0.124**
	(-2.720)	(-2.334)	(1.789)	(-2.785)	(-2.005)
Board stock ownership	-0.244	0.009	0.034	-0.009	0.016
	(-0.882)	(0.779)	(0.530)	(-1.173)	(0.497)
Observations	55,575	55,459	55,626	55,635	55,644
Adjusted R-squared	0.199	0.064	0.352	0.039	0.020
Industry x quarter FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes

Table 9: Results of single-segment firms

This table re-estimates the effect of director distraction on firm valuation, firm investment, and M&A decisions for the sample of firms operating in a single segment only. Table A in the Appendix provides a list of detailed variable descriptions. Variables are measured at the firm-fiscal quarter level. All columns incorporate quarter FE and firm FE, in which standard errors are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

	(1) Tobin's Q	(2) CAR (CAPM)	(3) CAPEX	(4) Asset growth	(5) M&A
Distraction	-0.566***	-0.059**	-0.015	-0.016	-0.019
	(-5.368)	(-2.304)	(-1.234)	(-1.542)	(-0.651)
Log(Assets)	-0.481***	-0.032***	0.043***	0.028***	0.009*
	(-9.161)	(-11.620)	(7.129)	(12.775)	(1.765)
Board size	0.005	0.001*	-0.002**	-0.001**	0.001
	(0.655)	(1.751)	(-2.186)	(-2.421)	(0.841)
Board busyness	-0.142	-0.015	-0.032*	-0.007	0.020
	(-0.755)	(-0.867)	(-1.720)	(-0.752)	(0.628)
Board independence	-0.076	0.007	0.007	-0.003	-0.001
	(-0.437)	(0.425)	(0.391)	(-0.408)	(-0.035)
Growth opportunities	-2.449**	-0.450**	-0.316***	-0.300***	-0.231***
	(-2.293)	(-2.095)	(-3.090)	(-3.152)	(-2.825)
Board stock ownership	-0.578***	0.024	0.018	-0.020*	-0.018
	(-2.632)	(1.297)	(0.613)	(-1.816)	(-0.646)
Observations	40,544	40,472	40,577	40,586	40,595
Adjusted R-squared	0.695	0.032	0.869	0.078	0.059
Quarter FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes

Table 10: Positive and negative shocks

Panel A re-estimates the effect of director distraction on stock performance exploiting positive and negative shocks separately in order to test whether results are driven by a bias in the selection of directors. The models in Panel A are estimated with quarter FE and firm FE. Panel B re-estimates the effect of distraction on firm investment and M&A decisions considering distraction originating from positive and negative shocks separately. The models in this panel include industry x quarter FE and firm FE. Table A in the Appendix provides a list of detailed variable descriptions. Variables are measured at the firm-fiscal quarter level. Standard errors in both panels are clustered at the firm level. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

Panel A: Stock performance

	(1) Cumulative excess returns	(2) Cumulative excess returns	(3) CAR (CAPM)	(4) CAR (CAPM)	(5) CAR (FF4)	(6) CAR (FF4)
Distraction (positive)	0.001		0.010		0.006	
	(0.040)		(0.598)		(0.331)	
Distraction (negative)		-0.062***		-0.027		-0.024
		(-2.939)		(-1.556)		(-1.295)
Observations	59,160	59,160	59,160	59,160	59,160	59,160
Adjusted R-squared	0.139	0.139	0.035	0.035	0.013	0.013
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Firm investment and M&A decisions

	(1) CAPEX	(2) CAPEX	(3) Asset growth	(4) Asset growth	(5) M&A	(6) M&A
Distraction (positive)	-0.022**		-0.014*		-0.058***	
	(-1.980)		(-1.693)		(-2.600)	
Distraction (negative)		-0.011		-0.009		-0.034
		(-1.159)		(-1.138)		(-1.517)
Observations	59,345	59,345	59,357	59,357	59,369	59,369
Adjusted R-squared	0.853	0.853	0.088	0.088	0.060	0.060
Industry x quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes

Table 11: Results from nearest-neighbor and propensity-score matching

This table tests the robustness of results using nearest-neighbour and propensity-score matching methods. Firm-fiscal quarter observations with a high director distraction (*Distraction* > 0.08) are included in the treatment group, whereas the control group consists of firm-fiscal quarter observations with no director distraction. Each observation in the treatment group and control group will be matched to the nearest observation from the other group based on the following characteristics: Log(Assets), Board size, Board busyness, Board independence, Growth opportunities, Board stock ownership, fiscal year and quarter, and Fama-French 12 industry. The Average Treatment Effect (ATE) quantifies the effect of high director distraction on firm value, firm investment, and M&A decisions, where ***, **, or * indicates whether the ATE is statistically significant at the 1% -, 5% -, or 10% - level, respectively. Panel A reports the results when nearest-neighbour matching estimation is used to determine the nearest observation, whereas in Panels B and C logistic and probit propensity-score matching estimation is used, respectively. Moreover, each panel reports the Abadie-Imbens standard error, corresponding *z*-statistic, and number of observations.

Panel A: Nearest-neighbor matching

	Tobin's Q	CAR(CAPM)	CAPEX	Asset growth	M&A
ATE	-0.205***	-0.003	-0.011***	-0.001	-0.001
S.E.	0.019	0.004	0.004	0.002	0.006
z-stat.	-10.58	-0.73	-2.96	-0.33	-0.15
N	3777	3763	3781	3781	3781

Panel B: (Logistic) Propensity-score matching

	Tobin's Q	CAR(CAPM)	CAPEX	Asset growth	M&A
ATE	-0.211***	-0.006	-0.012**	-0.005***	-0.011*
S.E.	0.022	0.004	0.005	0.002	0.005
z-stat.	-9.38	-1.44	-2.47	-2.75	-1.95
N	3777	3763	3781	3781	3781

Panel C: (Probit) Propensity-score matching

	Tobin's Q	CAR(CAPM)	CAPEX	Asset growth	M&A
ATE	-0.217***	-0.004	-0.010**	-0.005***	-0.012**
S.E.	0.023	0.004	0.005	0.002	0.005
z-stat.	-9.38	-1.44	-2.47	-2.75	-1.95
N	3777	3763	3781	3781	3781

10 Appendix

Table A: Detailed variable descriptions

Variable	Description
Dependent variables	
Tobin's Q	(Total assets + market value of common equity – book value of common equity) / total assets
Cumulative excess returns	(Return – risk-free rate) summed up over each fiscal quarter
CAR (CAPM)	Summed up monthly abnormal returns (excess returns over the product of the market beta and market risk premium (estimated according to the CAPM model)) over each fiscal quarter
CAR (FF4)	Summed up monthly abnormal returns (excess returns over the product of the factor betas and risk premiums (estimated according to the Fama-French 4 model)) over each fiscal quarter
CAPEX	Invested capital / lagged total assets
Asset growth	Growth in total assets versus last fiscal quarter
M&A	A dummy variable equal to one if a firm has announced a M&A transaction, zero otherwise. Only majority-stake M&A deals are taken into consideration with a minimum deal value of $10 million.
Div. M&A	A dummy variable equal to one if a firm has announced a cross-industry M&A, zero otherwise. Only majority-stake M&A deals are taken into consideration with a minimum deal value of $10 million.
Control variables	
Crisis	A dummy variable denoting the period of the financial crisis (2007 – 2009), zero otherwise
SOX	A dummy variable denoting the period post introduction of the Sarbanes-Oxley Act (2002 – 2006), zero otherwise
Log(Assets)	Logarithm of total assets
Board size	Number of directors on the board
Board busyness	Number of directors with multiple directorships / board size
Board independence	Number of independent directors / board size
Growth opportunities	Dividend / closing price at the end of the fiscal quarter
Board stock ownership	Fraction of the firm's stock owned by the board
Industry returns	Fama-French 12 industry portfolio returns
Investor distraction	Distraction level of a firm's institutional investors, constructed by Kempf et al. (2017)
Institutional ownership	Fraction of the firm's stock owned by institutional investors
Variables measured at the M&A announcement-firm-fiscal quarter level (Table 5 Panel C)	
CAR (-1, +1)	3-day cumulative abnormal returns computed according to the CAPM model where the market return is computed as the value-weighted return on all NYSE, AMEX, and NASDAQ stocks
Relative deal size	Deal value / net assets
Diversifying deal	A dummy variable equal to one if the deal is cross-industry, zero otherwise

Private target	A dummy variable equal to one if the target firm has a private status, zero otherwise

Variables measured at the director-firm-fiscal year level (Table B)

Attended < 75% board meetings	A dummy variable equal to one if a director has attended less than 75 percent of the board meetings, zero otherwise
Directorship ranking	Ranking that results from ordering the directorships according to their market value of common equity
Log(Director age)	Logarithm of director age
Independent	A dummy variable equal to one if a director is classified as independent, zero otherwise
Number of directorships	Number of board seats at public companies
Board size	Number of directors on the board

Table B: Director distraction and attendance of board meetings

This table reports the effect of director distraction on the board meeting attendance rate of directors with multiple board positions (both measured at the director-firm-fiscal year level). Table A in the Appendix provides a list of detailed variable descriptions. Panel A presents summary statistics. Panel B shows results from the OLS regressions. In columns (1) and (2) year FE and director FE are included, and standard errors are clustered at the director level. Columns (3) and (4) include firm x year FE and cluster standard errors at the firm level. Columns (5) and (6) incorporate year FE and director x firm FE, and cluster standard errors at the director x firm level. Panels C and D rerun this test considering directors serving in multiple industries only. *T*-statistics are presented in brackets under the corresponding correlation coefficients, along with ***, **, or * indicating whether the effect of the variable is statistically significant given a *p*-value of 0.01, 0.05, or 0.10, respectively.

Panel A: Summary statistics

	N	Mean	Std. Dev.	p25	Median	p75
Attended < 75% board meetings	54,697	0.02	0.13	0	0	0
Director distraction (year)	54,697	0.12	0.34	0.00	0.00	0.00
Log(Director age)	54,653	4.12	0.12	4.04	4.04	4.20
Independent	54,697	0.91	0.28	1	1	1
Number of directorships	54,697	3.08	1.19	2	2	4
Board size	54,697	9.87	2.78	8	8	11

Panel B: OLS regressions

	Attended < 75% board meetings					
	(1)	(2)	(3)	(4)	(5)	(6)
Director distraction (year)	0.002	0.001	-0.001	-0.001	0.000	0.000
	(1.168)	(0.808)	(-0.380)	(-0.536)	(0.207)	(0.206)
Directorship ranking		-0.005***		-0.005***		-0.002
		(-5.316)		(-4.536)		(-1.447)
Log(Director age)		-0.146**		-0.011		0.011
		(-2.036)		(-1.307)		(0.178)
Independent		0.002		-0.004		-0.002
		(0.513)		(-1.181)		(-0.496)
Number of directorships		0.001		0.003***		0.000
		(1.254)		(3.203)		(0.129)
Board size		0.001				0.001
		(1.499)				(1.234)
Observations	54,388	52,256	49,807	47,908	51,983	50,074
Adjusted R-squared	0.092	0.096	0.057	0.060	0.162	0.163
Year FE	Yes	Yes	No	No	Yes	Yes
Director FE	Yes	Yes	No	No	No	No
Firm x year FE	No	No	Yes	Yes	No	No
Director x firm FE	No	No	No	No	Yes	Yes

Panel C: Summary statistics (directors serving in multiple industries)

	N	Mean	Std. Dev.	p25	Median	p75
Attended < 75% board meetings	41,724	0.02	0.12	0	0	0
Director distraction (year)	41,724	0.14	0.36	0.00	0.00	0.00
Log(Director age)	41,686	4.13	0.11	4.06	4.06	4.20
Independent	41,724	0.92	0.28	1	1	1
Number of directorships	41,724	3.22	1.23	2	2	4
Board size	41,724	10.06	2.77	8	8	12

Panel D: OLS regressions (directors serving in multiple industries)

	Attended < 75% board meetings					
	(1)	(2)	(3)	(4)	(5)	(6)
Director distraction (year)	0.001	0.000	-0.002	-0.002	-0.001	-0.001
	(0.609)	(0.160)	(-0.737)	(-0.812)	(-0.359)	(-0.272)
Directorship ranking		-0.005***		-0.004***		-0.002*
		(-5.527)		(-2.927)		(-1.727)
Log(Director age)		-0.177**		-0.010		-0.074
		(-2.133)		(-0.975)		(-1.018)
Independent		0.003		-0.001		-0.000
		(0.777)		(-0.262)		(-0.020)
Number of directorships		0.000		0.002**		-0.001
		(0.270)		(2.272)		(-0.701)
Board size		0.001				0.001*
		(1.445)				(1.943)
Observations	41,724	40,100	36,336	34,978	39,595	38,167
Adjusted R-squared	0.085	0.090	0.068	0.070	0.162	0.164
Year FE	Yes	Yes	No	No	Yes	Yes
Director FE	Yes	Yes	No	No	No	No
Firm x year FE	No	No	Yes	Yes	No	No
Director x firm FE	No	No	No	No	Yes	Yes