

The Changing Nature of Corporate Board Activity¹

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Abstract

Boards are working harder over time, but they may not be working better. Using a comprehensive sample of board data from 1996 to 2010, we document that a large proportion of board activity is carried out by committees. Pre-SOX, 36% of board activity takes place in committees. This increases to 47% post-SOX. Since board activity levels have risen substantially over time, this means more board activity is carried out in the absence of insiders. This change does not appear to be value-enhancing. Board committees are relatively understudied, but our results suggest that ignoring them leads to a very incomplete picture of board governance.

JEL classification: G30; G34; G38

Keywords: Board; Committee; Sarbanes-Oxley; Delegation; Independence; Activity; Insiders

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Abstract

Boards are working harder over time, but they may not be working better. Using a comprehensive sample of board data from 1996 to 2010, we document that a large proportion of board activity is carried out by committees. Pre-SOX, 36% of board activity takes place in committees. This increases to 47% post-SOX. Since board activity levels have risen substantially over time, this means more board activity is carried out in the absence of insiders. This change does not appear to be value-enhancing. Board committees are relatively understudied, but our results suggest that ignoring them leads to a very incomplete picture of board governance.

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1 Introduction

Boards of directors are an important focus of policy responses to corporate scandals and crises. Yet, it is unclear that governance requirements resulting from political and regulatory action make boards better. Although boards became more independent and expanded their committee duties following the Sarbanes-Oxley Act of 2002 and changes in the NYSE and Nasdaq listing standards, many still blamed them for the financial crisis of 2007-2008. The academic evidence that these mandated changes improved board effectiveness is also inconclusive.

One possible explanation why boards may not appear to be getting better is that the reforms do not go far enough. Another explanation is that by targeting board structure and composition, reforms either do not change how the boards functions or change it in ways that reduce their effectiveness. For example, more independent boards may be more likely to question managers, but they may have fewer opportunities to do so if they spend more time on committees that are fully independent as per the listing rules. Similarly, if independent directors lack information, then more independent committees may be less effective. In this paper we examine these issues by using board and committee activity to measure the functioning of the board. We use publicly available data to construct quantifiable measures of activity that incorporate multiple dimensions of board structure. These measures enable us to establish the importance of committee activity and to show how boards have changed over time. We then examine whether these changes appear to be for the better.

To develop our measures of board activity, we build upon the common practice of using board meetings as a measure of board activity. This measure was used most prominently in Vafeas (1999), who showed that the number of board meetings increases following poor performance. Numerous other studies since include the number of meetings as a measure of activity. Because board size and composition change slowly over time for a given firm, we believe the number of meetings is a good indicator of activity levels within a firm. However, in cross-sectional comparisons it may also be important to factor in how many people are meeting. For example, it is not clear that a board with 5 directors who meet 10 times exerts more effort than a board of 10 directors who meet 5 times. Since most firms pay their directors both on a per-director basis and on a per-meeting basis (see e.g. Adams and Ferreira, 2007) the total amount of compensation the two firms pay their boards could be similar. This suggests that the amount of effort is similar. To factor in the number of people attending meetings we use the concept of a “Director-meeting”, which is simply a

director-meeting observation.^{3 4}

We construct measures of activity at both the board and director level. The first is a measure of total board activity. Next we construct a measure of delegation of activity to committees, “Committee focus”, which is the fraction of activity of the board that is performed by committees. We construct analogous measures of activity at the director level. Total activity at the director level is simply the total number of meetings a director attends. “Committee focus” at the director level is the proportion of committee meetings the director is scheduled to attend. Finally, we construct measures of how much activity directors devote to the different functions of the board. Boards should monitor management to protect the interests of shareholders. However, directors often describe that they also have a role in setting strategy (e.g. Mace, 1971; Lorsch and MacIver, 1989; Demb and Neubauer, 1992). In addition, the law in some states allows directors to consider the interests of non-shareholder stakeholders, such as employees and the community, in their decision-making. Thus, we broadly classify what boards do into three, not necessarily mutually exclusive, categories of monitoring, providing strategic advice and dealing with non-shareholder stakeholders (see e.g. Pfeffer and Salancik, 1978; Zahra and Pearce, 1989; the American Bar Association, 1994; Dallas, 1996, Johnson, et al., 1996 and Jensen, 2001).

In developing these measures, we assume that the set of committees the board has indicates the tasks the board performs on a regular basis. We assume that their committee work reflects the board’s day-by-day activities because committee structure appears to be fairly stable over time. Thus the work of committees is likely to be routine work that the board feels comfortable delegating. In accordance with this view, a director interviewed by Lorsch and MacIver (1989, p. 59) remarked: “In my experience, I have observed that the work of the board is done in committees.” Similarly a director of Sears, Roebuck and Company remarked in 1999: “A company is run by and large by its committees. The full board only deals with exceptional circumstances.” Furthermore, the American Bar Association’s Corporate Director’s Guidebook (1994) emphasizes that the audit, compensation and nominating committees are the main committees in which directors carry out their oversight duties (see also the Committee on Corporate Laws, 1979).

To examine trends in how boards function, we assemble the most complete database

³We do not currently take into account that some directors may have missed meetings. Proxies generally disclose only enough information to enable us to calculate the number of scheduled meetings, not the exact attendance of directors for each type of committee. Attendance problems of directors have decreased post-SOX, thus the rise in activity between the pre-SOX period and the post-SOX period that we document is likely to be underestimated.

⁴Because we cannot measure the length of a meeting, we weight all meetings equally.

on US boards and their committees we are aware of. The two most commonly used data sets in the board literature are Riskmetrics and BoardEx. While both are useful, they each have limitations. Riskmetrics has a longer time dimension but only covers S&P 1500 firms. Boardex has a bigger cross-section but a shorter time dimension. To minimize the time-series limitations of Boardex and the cross-sectional limitations of Riskmetrics, we take the union of the unregulated firms in these two samples as our base sample.⁵ We then fill in missing data by using grammatical learning algorithms to search the text of proxy statements and extract information. Since we discard all committee data from Riskmetrics-for reasons we elaborate on later-this requires collecting complete data on committees for all Riskmetrics firms that are not also in Boardex. This also requires collecting the number of meetings for all committees. Our final sample contains complete data on board structure, director characteristics, committee type, membership and activity for between 1500 and 5000 firms every year from 1996 to 2010.

We first show that board structure is extremely stable over time, but board activity is not. Total board activity has increased substantially over time, driven primarily by an increase in monitoring committee meetings. Next we document that board committee activity represents a large percentage of total board activity. For our full sample, it shifts from 36% percent in the pre-SOX time period to 47% percent in the post-SOX time period. For S&P 1500 firms it shifts from 36% to 52% post-SOX. Coupled with the rise in board independence post-SOX, this means independent directors are meeting more often in the absence of insiders. The percentage of committee activity that is carried out without any insiders in S&P 1500 firms is 21% pre-SOX and 41% post-SOX. Moreover, independent directors are working harder on a per-person basis.

Next, we examine whether board activity appears to be a good proxy for the functioning of the board. If so, in line with Vafeas (1999), we would expect activity to increase following poor performance. We show that our activity measures are significantly negatively related to stock returns at the firm level. This correlation also holds at the director level even after including firm and director effects. What this tells us is that directors allocate more of their activity to relatively underperforming firms in their directorship portfolios. In contrast, we do not find that committee focus is correlated with stock returns. Consistent with the fact that board structure appears stable over time, firms do not appear to set up new committees or change their membership in response to performance shocks.

We then examine whether more active boards are better and the role of committee

⁵We exclude financials and utilities because their boards have different types of committees and potentially slightly different functions. We analyse these types of firms separately.

focus. We regress a standard proxy for Tobin's Q on activity and focus measures and various firm-level controls. To address endogeneity problems, we include firm fixed effects and conduct instrumental variable analyses. To construct an instrument we leverage the cross-sectional dimension of the data by using the history of each firm's directors on other boards. For each director-firm-year we compute the director's average total activity at other firms prior to the observation year. Our instrument is the board-level average of individual directors' activity history outside the firm. The rationale behind our instrument is that we believe a board's activity should be influenced by individual directors' experiences. But because these experiences occur outside the firm-and primarily in the past-we believe it is unlikely they are correlated with performance except through variables already included in our regressions. One might argue that directors with a history of more activity may be attracted or attractive to firms with certain characteristics. We control for this to the best of our ability by including firm fixed effects, proxies for firm size, leverage, diversification, volatility and diversification. To examine the role of delegation when activity increases, we control for committee focus but also interact committee focus with activity measures. Because committee focus appears "sticky", we do not separately instrument our committee focus measures in these specifications.

We find that working harder does not mean boards work better. Board activity is negatively related to firm performance. The negative relationship appears to be concentrated in firms with more committee focus, particularly those in which there are fewer interactions between independent directors and insiders. Our results suggest a different unintended side effect of SOX than mentioned in previous literature. SOX dramatically increased total board activity. But increases in activity are not sufficient to improve board functioning. In the presence of delegation, more activity can lead to worse decision-making.

We contribute to the literature in several ways. To our knowledge this is the first paper with data on firms' entire committee structure in a panel setting. Thus, we believe we are the first to document that the number of committees has not changed much over time, but that the activity of committees and the type of activities have changed significantly. Second, we complement existing studies of board activity that rely on board structure measures by using novel measures of board activity. These measures account for multiple dimensions of board structure at the same time and also enable us to categorize board activity according to different board functions. We believe our results suggest that these measures may provide additional insights into what boards do. Such measures may also prove more useful for testing theories about specific functions of the board than measures of board size and composition. For example, many argue that board size and independence are proxies for both monitoring

and advising. Because the two roles cannot be disentangled for these proxies, it is difficult to interpret empirical results for board size and composition in terms of specific theories of board functions.

2 Data

We analyze how the activity and delegation of a firm’s boards of directors responds to performance and affects value using a large panel of publicly traded U.S. firms. The core of our data consists of a unique dataset on the composition and activity of boards of directors. For each firm-year in the sample, we collect board-level data consisting of (i) directorial appointments to the board, (ii) the names of all committees of the board and their composition, and (iii) the number of meetings held by the board and each committee.

Much of these data is not compiled by widely available datasets, but instead can only be found in the definitive proxy statements (DEF 14A) that each firm is required to file annually with the SEC under Section 14(a) of the Securities Exchange Act of 1934. To operationalize this large-scale data collection, we employ natural language processing (NLP) algorithms that analyze the underlying grammatical structure of sentences, identifying the contextual interrelationships among words. This technique, to our knowledge, has not been used previously in the finance or economics literature.

We supplement the board-level information with data on firm financial performance and stock returns. We take firm financial information from the Compustat’s annual fundamentals table. Stock return and volatility data are derived from The Center for Research in Security Prices (CRSP) daily data. Details on the construction of the dataset follow.

2.1 Sample Construction

Our sample consists of unregulated firms found in two boards of directors databases, BoardEx and RiskMetrics Directors Data (RiskMetrics). For each firm-year, BoardEx details all the directors of the board, the name of all committees, and the membership of all committees. RiskMetrics also provides the names of the directors of the board. However, there are several issues with the way RiskMetrics presents information on the committees of the board, which are described in detail below. Neither BoardEx nor RiskMetrics provides information on the activity of boards of directors or committees.

The sample of years and firms covered by the two databases differ as well. BoardEx begins with annual reports filed in 2000; RiskMetrics begins with annual reports filed in 1995. However, while the RiskMetrics data covers a longer time period than BoardEx, it

contains a smaller number of firms. The RiskMetrics universe emphasizes firms found in the S&P 1500 (in some fiscal years the sample includes 400 to 500 widely held companies not included in the S&P 1500). BoardEx, on the other hand, contains information on a wider cross-section of firms for much of the sample. For its first three years (2000-2002), BoardEx contained data on between 1,500 and 2,000 firms. The number of firms covered increased considerably in the following two years, growing to approximately 3,800 in 2003 and to approximately 4,700 in 2004. Beginning with 2005, the number of firms in BoardEx is relatively stable, remaining in a range between 5,000 and 6,000 firms.

We take the union of firm-years found in the two databases to minimize the time-series limitations of BoardEx and the cross-sectional limitations of RiskMetrics. As the BoardEx data is more detailed and accurate at the committee-level, we use the BoardEx observation whenever a firm is in both databases in a single year. When a firm only appears in RiskMetrics for a given year, we use the database's information on the directors, but correct the committee data as described below.

Databases are merged to Compustat data using CUSIP codes whenever possible. In many cases, BoardEx firm CUSIP codes do not match those found in Compustat. We match BoardEx firms without a CUSIP match based on firm name. Our BoardEx data uses the most current name for all firm observations in the database; historical records are updated to reflect any change in name. However, BoardEx provides a full history of the firm's name. We use all these options to perform a name match. Whenever a match on name is unsuccessful, we use Internet searches to identify the Compustat observation that corresponds to the BoardEx firm. Compustat matches are not available for over a hundred firms in BoardEx, which are either private or headquartered outside the United States.

The sample excludes firms in the financial services and utilities sectors. The structure of boards and committees in financial services firms differs greatly from those in other industries. Financial services conglomerates often contain separate boards of directors for each subsidiary bank. A large company may report the activities of several distinct boards of directors. As it is unclear how to aggregate director activity for these firms to create an activity measure comparable to that for industrial firms, we drop these firms from the sample. Utility firms, due to strict regulations, have unique board and committee activity characteristics and are also dropped from the sample.

2.2 Directorial Appointments

BoardEx and RiskMetrics both contain data on the directors of each firm. We classify these directors into three categories: (i) inside directors, (ii) affiliated directors, and (iii) independent directors. RiskMetrics directors are identified using similar classifications. An inside director is classified as “E”(executive director), an affiliated director is classified as “L”(linked director), and independent directors are marked as “I”. Our BoardEx data does not include such clean classifications, instead splitting directors into executive and non-executive directors and provided a description of the director’s role. We consider an independent director to be someone whose board role includes the word “independent” and an inside director to be someone with an ED (executive director) director type. All other directors are consider affiliated.

We match directors across the database to ensure we have a full history of each director’s experience. RiskMetrics reuses director identifiers and, therefore, these identifiers are unsuitable to determine the unique set of directors in the database. Consequently, we build our own unique set of directors in the combined dataset. To do so, we begin by taking the unique director name identifiers from BoardEx. Then, we match RiskMetrics directors to BoardEx directors. For each director-observation in both databases, we build a list of companies with which the director was associated. Initially, we define a match between BoardEx and RiskMetrics to occur when director names exactly match and the directors share a company association. The company association need not occur in the same year, which allows us to bridge the time between the start of RiskMetrics data and that of BoardEx. If a director match is not found using this approach, we perform a fuzzy match on the director’s name using both edit distance (Damerau-Levenshtein) and sound-based (Metaphone) algorithms, while maintaining the requirement that the director share a firm history. The remaining unmatched directors in RiskMetrics are then matched to BoardEx by name only, which matches approved by reviewing the affiliated companies’ proxy statements to ensure the potential match refers to the same person. Finally, any remaining directors in RiskMetrics are assumed to be unique to the database and are added to our sample without a matching director in BoardEx.

2.3 Committees and their Composition

In order to build an accurate picture of board activity, we require detailed information on all the committees supporting the board of directors of each firm. There is a large degree of heterogeneity in the number and types of committees. While the median firm in our

sample had three committees during a fiscal year, several firms maintained a far greater number. The board of directors of United Airlines, for example, maintained 10 committees (Executive, Audit, Compensation, Compensation Administration, Competitive Action Plan, Labor, Independent Director Nomination, Outside Public Director Nomination, Pension and Welfare Plans Oversight, and Transaction Committees) for the 1998 fiscal year.⁶

While BoardEx provides the full list of committees and their members, RiskMetrics committee data is both restrictive and (potentially) misleading. RiskMetrics provides committee memberships for four types of committee functions: Audit, Compensation, Governance and Nominating. Committees that fall outside of these designated functions are not recorded in the data. Many of the aforementioned United Airlines committees would not be recorded in the data. In addition, when multiple committees have similar functions, RiskMetrics often one as a representative committee. For example, United Airlines had an Independent Director Nomination Committee and an Outside Public Director Nomination Committee. The committee membership presented in BoardEx is for the Outside Public Director Nomination Committee, committee members of the Independent Director Nomination Committee do not have a nomination role in the database. Moreover, RiskMetrics disaggregates committees with multiple functions into multiple observations. For example, the proxy statement filed by Briggs and Stratton for the 1998 fiscal year indicates that the firm had two committees, an Audit Committee and a Nominating, Compensation and Governance Committee.⁷ Members of the single Nominating, Compensation and Governance Committee are recorded as having these three distinct committee functions in RiskMetrics. Therefore, naive use of RiskMetrics data can result in an overstatement of the number of committees of a firm.

Given the limitation of RiskMetrics committee data, we collect information on the committees of boards of directors by manually reviewing proxy statements for all the firms in our sample whose source data is from RiskMetrics. While we use RiskMetrics to provide the names and classifications of the members of the board of directors, we ignore all other information provided by RiskMetrics. Committee data is used as-is for sample firm-years with source data from BoardEx.

We classify each committee across three core functional responsibilities: (i) monitoring, (ii) strategy, and (iii) stakeholder engagement. While most firm use mundane committee names that clearly enumerate group responsibilities, other firms use esoteric names that

⁶This proxy statement may be accessed at <http://edgar.sec.gov/Archives/edgar/data/100517/0000950137-99-000464.txt>

⁷This proxy statement may be accessed at <http://www.sec.gov/Archives/edgar/data/14195/0000950124-98-004843.txt>.

obfuscate committee roles. Since 2004, Marriott International’s Board of Directors has included a Committee for Excellence, which has a charter to promote diversity throughout the company. We categorize the committee functions using both committee name and source documents. Initially, for each committee, we split the committee name into its list of enumerated responsibilities. A "Nominating, Governance, and Compensation" committee, for example, is considered to have three defined roles. Each of these roles is then classified based on name into monitoring, strategy, and stakeholder engagement. We review source proxy statements when the committee role is unclear. After each constituent role has been categorized, we aggregate the committee functions into a measure of the committees responsibility, assuming that each role listed in the committee name has an equal share of the committees work. The committee-level measure is consequently an average of the categorical ranking of its constituent role. For example, a committee that had two monitoring functions, one strategic function, and one stakeholder function would be considered to be 50% monitoring, 25% strategy, and 25% stakeholder engagement.

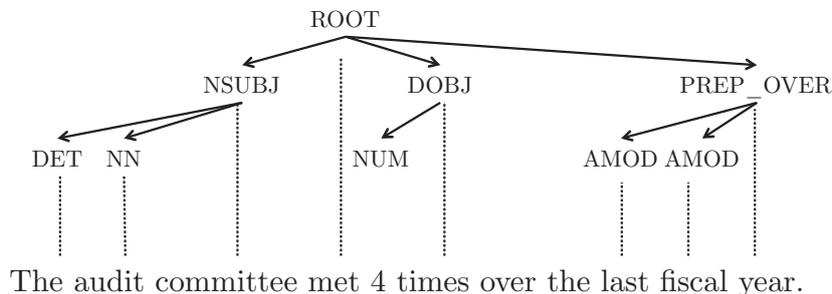
2.4 Boards and Committee Activity

We use advances in computation linguistics to overcome the difficulty in collecting data on the for our full panel of firm-year observations. Our technique analyzes the underlying grammatical structure of proxy statements. The technique used differs significantly from natural language processing techniques commonly used in finance. Commonly used textual analysis tools in finance, such as key word searches or tonal analysis, analyze words out of context. However, given the innumerable ways firms can articulate information, these techniques are generally unable to extract numerical data in a robust manner. By grammatically analyzing sentences, we are able to consider words in context, identifying their usage and interrelationships for communicating information.

The Stanford CoreNLP, created by the Stanford Natural Language Process Group, is the software that permits our analysis. The CoreNLP software embeds a computer learning algorithm that has been trained to parse sentences, providing the grammatical interrelationships between words. For each pair of words forming a grammatical relationship in a sentence, the “dependencies” output of the CoreNLP yields the (i) governing word, (ii) the dependent word, and (iii) the type of grammatical relationship between the governing and dependent words.

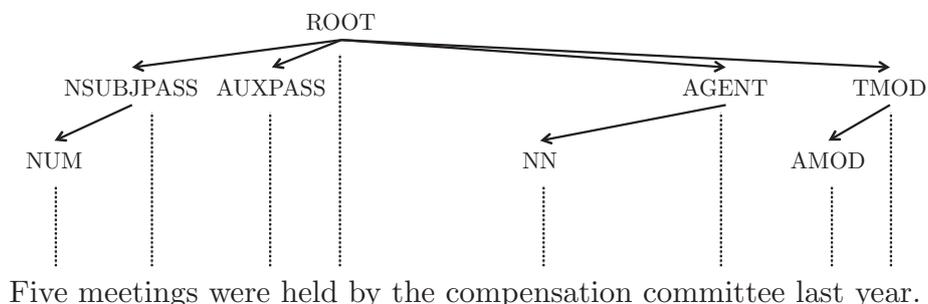
A few examples will make the power of this approach clear. Consider a basic sentence describing the activity of a committee: “The audit committee met 4 times over the last

fiscal year.”The dependency output from the CoreNLP can be visually represented by the following tree:



The tree identifies the verb “met” as the root of the sentence. It shows that there is a relationship between the subject “committee”, which is marked with a nominal subject (*nsubj*) grammatical type, and the object “times”, which is marked with a direct-object (*doobj*) grammatical type. The type of committee, “audit,” is identified by the noun compound modifier relationship (*nn*) and the number of meetings, “4,” is identified as a numeric modifier (*num*).

Similar relationships between words holds even if the sentence structure changes significantly. For example, consider a simple passive voice sentence:



Despite the differences in sentence structure between the passive voice and active voice examples, the grammatical structures are remarkably similar. In the passive voice, a committee, marked as the agent of the root verb, held meetings, marked as the passive nominal subject (*nsubjpass*). As with the active voice case, the type of committee, “compensation,” is a noun compound modifier and the number of meetings, “five,” is a numeric modifier.

2.4.1 Benefits of Grammatical Analysis

There are three key benefits of this approach. First, grammatical analysis reduces the number of ways of conveying information. While there are a myriad of ways of verbalizing

information about the activity of boards and committees, there is, in effect, only one underlying grammatical structure linking an entity with the number of meetings it holds. Whereas naive NLP techniques may need to adapt to each possible formulation of key sentences, grammatical techniques can be focus on a few key structures. This focus makes grammar-based parsing robust and accurate.

Second, this approach does not suffer from issues that plague naive NLP techniques. Grammatical analysis considers words and the context in which they are used. Naive NLP techniques, on the other hand, generally look at words without context. Naive techniques often incorporate ad-hoc rules designed to patch this intrinsic shortcoming. For example, key word searches are frequently used to find information in documents. However, these searches necessitate that researchers place an upper bound on the number of words between key words. Such bounds are designed to allow for flexibility in the way sentences are structured, but can create false positives. Grammatical techniques, on the other hand, are able to identify clauses that intervene between the governing words and its dependent. Such great distances make keyword searches not viable, as they may lead to an algorithm that picks up a large amount of non-relevant information. However, the grammatical parsing technique still identifies the simple grammatical relationship.⁸

Third, grammatical analysis easily allows for sentences that contain multiple pieces of information. Firms often disclose all the meetings of its committees in a single sentence. One such example is “During the last fiscal year, the Audit Committee met five times, the Compensation Committee met three times, and the Nominating and Governance committee met once.” Grammatical parsing of this sentence creates a nested structure. Each clause discussing a committee and its meetings is recognized individually and, therefore, can be easily identified as containing relevant information for our study.

2.4.2 Grammatical Data Collection

Mathematically, the grammatical structure of a sentence is most easily represented by a labelled directed graph. The vertices (or nodes) of the graph are the words of the sentence. The edges of the graph link the words from governing word to dependent word and are

⁸For example, Bruker Corp.’s proxy statement for the 2008 fiscal year included the following statement: “The Audit Committee of the board of directors, which is currently comprised of Brenda J. Furlong, Collin J. D’Silva and Richard A. Packer, each of whom satisfy the applicable independence requirements of the SEC rules and regulations and NASDAQ Marketplace Rules, met six times during the 2008 fiscal year.” Naive word pattern rules will have trouble with this sentence as there are 38 words between the subject “committee” and the root verb “met”. The grammatical parsing technique can eliminate clauses that are not of interest. In essence, a grammatical rule simplifies the meeting-related content in this complex sentence to “The Audit Committee met six times.”

labelled by the type of grammatical relationship. The tree structure, which presents a direct hierarchy from governing word to dependent word, is a useful expositional tool. However, it does not permit all possible sentence grammars. Two words may share both a governing-dependent and a dependent-governing relationship, either directly or indirectly through other words. Such cyclical relationships break the tree structure, but are allowed in directed graphs.

After representing sentences as a directed graph, we identify key grammatical relationships between words in sentences describing either board or committee activity. The words and relationships mirror those described in the examples above. We allow for a several other words to comprise the information about board or committee meetings. But, we always keep the number of words modest to ensure we do not generate false data, never allowing for more than a few alternative of a word. Similarly, as the Stanford CoreNLP contains a descriptively rich set of grammatical relationships, we modestly expand on the types of permitted grammatical relationships beyond those in the examples.

For example, in the active voice grammatical pattern, we look for a nominative subject of either a board or committee. The root verb may be met, held, or conducted. And the object is the singular meeting, time, or occasion, or their pluralized forms. The object may appear as either a direct object, a clausal complement (*ccomp*), temporal modifier (*tmod*), or a preposition of the word “on” (*prep_on*).

We use four grammatical relationships to find data in a proxy statement on the number of meetings held by the board of directors or its committees. These include the active voice grammatical pattern described previously. We have a second pattern that looks at passive voice sentences. Two other grammar patterns process cases when a committee did not meet during a fiscal year.

Once a relationship has been identified, we extract the number of committee meetings. These generally show up as a numeric modifier of the object. However, when a committee meets infrequently (e.g., “the committee met once”), an object will not be present. Instead the number of meetings is found in the word “once” or “twice,” which appear as adverbial modifiers or indirect objects of the verb. Additionally, a committee that matches one of the patterns for a non-meeting committee will not have a number of meetings and is instead assigned zero meetings for the fiscal year.

The type of committee is found by looking at words that are dependent noun compound modifiers or adjectival modifier (*amod*) of the governing word “committee.” In the case of a committee with multiple roles, all descriptive words link directly to the governing “committee.” So, for a Nominating and Governance Committee, “nominating” and “governance” will

both be direct dependents of “committee.” Companies often name committees using the preposition “on”, as in a Committee on Governance. In these cases, the type of committee is marked with the prepositional-on relationship (*prep_on*) by CoreNLP. Finally, in some cases, a firm may spend a paragraph discussing the composition, charter, and activity of a committee. As such, the sentence discussing activity may be referred to the entity generically as “the committee.”

In order to extract data on the number of meetings for both the board of directors and committees from a proxy statement, we first split each filing into its constituent sentences. As grammatical parsing of a sentence is the most computational intensive part of our approach, we screen the sentences to ensure they have words comprising one of the candidate grammatical patterns described above. Sentences passing the filter are grammatically parsed. Our grammatical patterns are matched to the parsed sentence data using an exhaustive sub-graph search and the information from any matching labelled directed sub-graph is recorded.

2.5 Descriptive Statistics

- Insert Table 1 about here -

Table 1 reports the number of firms in the sample on an annual basis and in aggregate. Annual counts are based on the year in which a firm’s fiscal year ends. The sample begins in 1996 and ends in 2010. For the period from 1996 through 1999, the sample is almost entirely composed of observations from RiskMetrics. The sample composition transitions to BoardEx data, which is available for a large number of firms beginning with fiscal year ends in 2000. The sample consists of 65% firm-year observations from BoardEx and 35% from RiskMetrics in 2000. The BoardEx share increases to approximately 81% in 2001 and to approximately 84% in 2003. Beginning with 2004, BoardEx is responsible for the majority of the firm-year observations with 98% of the observations in the combined sample. RiskMetrics provides less than 10 unique observations not covered by BoardEx beginning with fiscal year ends in 2006.

- Insert Table 2 about here -

Table 2 reports summary statistics on board activity and firm financial performance. In Panel A, activity is defined as the total number of director-meetings that occurred in a fiscal year. It is the product of the size of entity (board or committee) multiplied by the number of members. So, a board with seven directors that met five times over a fiscal year would have an activity measure of 35 director-meetings. On average, board activity was 60.5 director-meetings for the full sample. Committee meetings were also a significant part of

activity. The average firm committee activity was 50.1 director-meetings. Panel B presents these figures, indicating the average activity of directors on boards. The average board's director had 7.3 board meetings and 6.0 committee meetings each fiscal year.

Panel C provides an indication that director activity is dependent on the type of director. Committee Focus is the average director's percent of total annual meetings spent with committees. The average director has 43.8% of her meetings in committees. Fully Independent Committee Focus is the average director's percent of total annual meetings spent with committees composed entirely of independent directors. The average Fully Independent Committee Focus is 0.315. By construction, Fully Independent Committee Focus is 0 for all inside and affiliated directors. Therefore, this figure suggests that independent directors have a significant number of meetings separate from the firm's inside and affiliated directors.

The descriptive averages on activity in Table 2, Panels A, B, and C do not provide sufficient information on how director activity has changed over time. Nor do these descriptive statistics provide a good sense of the underlying heterogeneity in director activity across inside, affiliated, and independent directors. In the next section, we explore time-series trends in the time series of board and director activity, explicitly examining the impacts of mandatory changes to board activity imposed by the Sarbanes-Oxley Act of 2002 and differences in the activity of inside, affiliated, and independent directors. Inside directors tend to focus on board meetings, having limited exposure to committees of the board. Independent directors tend to focus on committee meetings. These differences became more pronounced after Sarbanes-Oxley.

3 Trends in Board Structure and Activity

Our data allows us an unparalleled view of the evolution of corporate board structure and activity over a 15 year period that contained corporate scandals as well as a financial crisis. In Figures 1 through 4, we present a visual history of board structure over this period. To minimize the impact of changes in sample composition in the years we combine Riskmetrics and BoardEx data, we restrict ourselves to the Riskmetrics sample for the purpose of illustrating the major trends. Results using the full sample are similar. Since we rely on BoardEx to classify directors as independent from 2000 on, the graphs involving independent directors are less smooth than the other graphs. We indicate the classification switching point in the figures.

-Insert Figure 1 about here-

In Figure 1, we document basic trends in the two most commonly studied features of

board structure-board size and board composition. As expected, board independence increases around the passage of SOX and the changes in the NYSE and Nasdaq listing standards. But, average board size is very stable over time. The stability is mirrored in committee structure. Figure 2 shows trends in average committee numbers, size and independence by type-monitoring (solid line), strategy (dashed line) and stakeholder (dotted line). The averages are conditional on having committees of a given type. Despite the emphasis in SOX and the listing standards on audit, nominating/governance and compensation committees,⁹ Panel A suggests that rather than adding new committees, firms expanded committee duties. Panel B shows that, like board size, average committee size has remained stable over time. Panel C shows that the increase in board independence following SOX and the listing standards flowed into committee composition.

-Insert Figure 2 about here-

In Figure 3, we examine meeting frequency and delegation of activity to committees (“Committee focus”). Panel A shows the average number of meetings by type-board (grey line), monitoring (solid line), strategy (dashed line) and stakeholder (dotted line). Panel B shows “Committee focus” and Panel C shows “Independent Committee focus”. Panel A shows that except for monitoring meetings the average number of meetings did not change much. Monitoring meetings increased dramatically around SOX. Consistent with the stability of board and committee structure and the increase in monitoring meetings around SOX, committee focus exhibits a step shape; it is stable over time but shifts upward around SOX.

-Insert Figure 3 about here-

In Figure 4, we examine the activity levels of individual directors broken down by type of director and type of activity. Even before SOX, insiders did very little monitoring. Even so, the trend in monitoring by insiders is slightly negative. The downward trend is far more pronounced for affiliated directors. This is more than outweighed by an upward trend in monitoring by independent directors.

-Insert Figure 4 about here-

These figures provide several new insights into board governance. First, they illustrate the importance of committee activity. Second, they show that board structure remains stable over time but that the governance reform occurring around SOX led boards to change board

9

In their listing standards (see http://nysemanual.nyse.com/LCMTools/PlatformViewer.asp?selectednode=chp_1_4&manualsections%2F), the NYSE lists the following three committee requirements: 1) Listed companies must have a compensation committee composed entirely of independent directors. 2) Listed companies must have an audit committee that satisfies the requirements of Rule 10A-3 under the Exchange Act. 3) Listed companies must have a nominating/corporate governance committee composed entirely of independent directors.

composition and increase activity. The result of the change in board composition is that more board activity is being carried out by independent directors-much of it in committees.

4 Are Boards Working Better?

While the figures demonstrate that board and committee activity has changed over time, key questions remains. Have the changes in board structure and activity altered board effectiveness and had a measure impact on firm value? Sarbanes-Oxley mandated that firms alter the structure of key committees. Most notably, audit committees could no longer include inside directors. At the same time, additional disclosure requirements from the bill necessitate more activity. Monitoring committee activities increased sharply between 2002 and 2004.

In this section, we explore how the changes in board activity necessitated by Sarbanes-Oxley have affected firm value. We begin with an analysis of the relationship between board activity and stock returns. The results demonstrate the activity reacts to firm performance, but committee structure does not change with firm performance. Using these results, we then perform ordinary least squares (OLS) and instrumental variable (IV) panel data analysis to see how the changes in board and committee structure have affected firm value.

4.1 Variation in Activity and Committee focus

-Insert Table 3 about here-

Table 3 presents results of OLS regressions of activity measures on stock returns. The regressions control for board characteristics, such as the number of directors and the percent of independent directors, that a large body of finance research suggests may be associated with board effectiveness and stock return. We also control for firm characteristics that should be correlated with both returns and activity. These include measures of firm complexity, such as firm size (assets), research and development, firm age, the number of employees, and the number of operating segments. Boards in complex firms should be, on average, more active than boards managing simple firms. Our controls also include the volatility of stock returns, which should be correlated with uncertainty and returns.

Table 3, columns (1) through (3) shows a strong statistical relationship between total board activity and stock returns. All specifications include firm and year fixed effects. Standard errors are clustered by firm. Column (1) shows that boards respond to negative firm performance by holding more meetings of the board of directors. Similarly, column (2) demonstrates that committee activity also increases with poor stock returns. A one standard

deviation negative stock return results in an increase of 0.97 director-meetings annually and 0.43 committee meetings. Finally, column (3) shows that the above relationships hold for total activity. A one standard deviation negative return results in 1.36 additional meetings combined.

-Insert Table 4 about here-

It is important to demonstrate that the responses in board activity to stock returns arise from director-level activity and not from changes in board compositions. Directors may prefer certain levels of activity. These preferences may be correlated with firm fixed effects in equilibrium. The dependent variables in columns (4) through (6) of Table 4 are director activity measures; all specifications include firm, director, and year fixed effects. Standard errors are double clustered by firm and director. Columns (4), (5), and (6) demonstrate statistically significant relationships between stock returns and board meetings, committee meetings, and total meetings, respectively. The effect, however, is not particularly important economically. A one standard deviation negative annual return results in approximately 0.17 additional meeting annually for a director. This point estimate corresponds with the board level measures given an average board size of about 7.5 directors in the sample; 0.17 additional meetings for 7.5 directors yields 1.275 total director-meetings annually.

The committee focus measures do not appear to change with stock returns. Table 4, columns (1) and (2) present estimation results from regressions analyzing board level committee focus variables. Both specifications include firm and year fixed effects with standard errors clustered by firm. Column (1) shows that the average percent of time directors spend on committees does not exhibit a statistically significant relationship with stock returns. Column (2) demonstrates that the average percent of time directors spend on committees composed entirely with independents also does not change with returns. Columns (3) and (4) repeat the analysis using director-level data. We only analyze the values for independent directors, as these are the types of directors who can be on fully independent committees. Both specifications include firm, director, and year fixed effects with standard errors double clustered by firm and director. The committee focus variables do not show a statistically or economically meaningful relationship with stock returns.

These results are consistent with a view in which board and committee respond to firm performance, but do so in way that does not alter important structural characteristics with the board. In untabulated results, we find no evidence that boards create or eliminate committees depending on stock returns. The composition of these committees also does not change. Therefore, the evidence suggests that boards hold more meetings when firms are

performing poorly. However, economically this effect is very small. Critically, the roles of the firm’s directors do not appear to change. Activity increases proportionally across of a board’s functional roles. The average director’s division between board and committee meetings is statistically unchanged depending on stock returns. Moreover, independent directors maintain a constant focus on committee meetings in which insiders are absent.

4.2 The Impact of Committee Focus on Firm Value

Ilgen, Hollenbeck, Johnson, and Jundt (2015) review findings from psychological research on important relationships between team structure and team performance. The research suggests that splitting director activity across different functional roles can have negative effects on performance. Functional team structures, such as those imposed by Sarbanes-Oxley, are less able to cope in challenging environments than flat team structures in which team members share responsibilities. Hollenbeck et. al. (2002) argue that the strong performance of teams with flat structures in complex environments arises because flat structures ensure all team members form complete mental models of the problem. Therefore, mandating that only independent directors are eligible to serve on audit committees, for example, can make it difficult for non-independent directors to incorporate important monitoring related information in their decision making.

Given this research, we hypothesize that boards in which directors focus on committee activities to be less effective than those in which directors focus on board activities. Importantly, this prediction should hold in equilibrium. Whereas firms were relatively unconstrained before Sarbanes-Oxley, the bill introduced requirements that forced boards to dramatically shift the effort and structure of key committees. The figures presented earlier suggest that the changes in committee effort and structure occurred during the SOX transition period between 2002 and 2004. Moreover, these changes appear to be persistent. Pre- and post-SOX measures of committee focus are relatively constant.

The previous regression results suggest that boards respond to negative firm performance through additional meetings. Therefore, it is difficult to empirically test the above hypothesis due to endogeneity between firm value and committee activity. To address this concern, we implement an instrumentation technique that leverages the cross-sectional and time-series information in our panel.

Our instrumentation approach relies on the assumption that a director’s past experience outside the firm influences is unrelated to their current activity their beliefs regarding optimal levels of activity. Alternatively stated, this assumption requires that a firm’s current

value shock is unrelated to the past value shocks of other firms where directors are also board members. This assumption simply requires semi-strong market efficiency. Historical value shocks to other companies are publicly known and, therefore, should not impact a firm's current value. Similarly, activity of boards are publicly disclosed in end-of-year proxy statements. Consequently, past board activities should be incorporated into current market prices.

For each director of a firm, we find all past activity of the director while serving as a director of another firm. These past activity measures are averaged to yield a measure of the director's activity history. This approach will yield a unique historical average for each firm with which the director is associated. Hence, the historical average is a director-firm-year measure. The instrument is the average across the board members of the individual director-firm-year historical activity measures.

The instrument is only available when a firm's board includes at least one director's that has served on the board of another firm in our sample. Due to our use of a large cross-section and long time-series, the majority of boards in our sample meet this requirement. The number of observations in our instrumental variable specifications is approximately 87% of the total number of observations in the ordinary least squares specifications.

-Insert Table 5 about here-

Tables 5 and 6 presents the results testing the hypothesis that functional board structures reduce firm value. The dependent variable in both tables is firm value, as measured by the natural log of Tobin's Q. Tobin's Q is the market value-to-book value ratio of assets, where the market value of assets is the book value of assets, net of the book value of common/ordinary equity, plus the market value of equity. If a functional structure board structure impairs performance, then regressions should show a negative coefficient on an interacted variable of board activity and functional delegation.

Table 5 tests the hypothesis using meetings in both board and committee meetings. Total Activity is the average number of board and committee meetings attended by directors over a fiscal year. We use an average activity measure instead of total board-director meeting to ensure the variable does not mechanically proxy for board size and induce multicollinearity problems in estimation. Columns (1) through (4) use Committee Focus to measure the degree to which a firm uses a functional board structure; columns (5) through (8) use Fully Independent Committee Focus.

The results suggest that functional structures hurt board effectiveness and firm value. Columns (2), (4), (6), and (8) demonstrate a negative relationship on the interaction between

Total Activity and committee focus measures. This effect is statistically significant in both instrumental variable specifications (columns (4) and (8)). It is also statistically significant for the OLS specification using Fully Independent Committee Focus (column (6)).

The economic significance of an increase committee focus is also significant. We focus on the coefficients in the column (8) instrumental variables estimate; the coefficients in column (4) may be inflated due to the weakness of the instrument in that specification. After SOX, Fully Independent Committee Focus increased by approximately 0.151 for the average firm in the sample. The average director in the sample was involved in 13.279 total meetings in a fiscal year, as seen in the summary statistics. Therefore, the impact of a change in Fully Independent Committee Focus is to decrease log Tobin's Q by -0.007 (this estimate is found by estimating the impact using the above values and the coefficient estimate on the interaction between total activity and committee and the coefficient estimate on committee focus). Hence, firm value decreased by approximately 0.7%.

Finally, the results suggest that activity is not always beneficial. Specifications in columns (1) through (3) and (5) through (7) show a statistically significant negative relationship between board activity and value. However, the statistical significance of this effect disappears in both instrumental variable specifications that include interacted activity and committee focus regressors.

-Insert Table 6 about here-

The prior results use Total Activity as the proxy variable for board effort. It is possible, however, that total meetings are not critical to board functioning and firm value. Stakeholder engagement committees, for example, do not make material strategic decisions. To focus on meetings in which strategic decisions are most likely to occur, we repeat the analysis of Table 5 using Board Meetings as the measure of activity. Table 6 present the results. The results continue to support the hypothesis that functional board structures, as measured by committee focus variables, hurt firm performance. As the measure of firm activity is different between tables 5 and 6, it is not appropriate to compare the relative magnitude of the coefficient estimates. Moreover, the instrumental variables seem to suffer from weak instrument problems, suggesting that a director's historical total activity outside the firm is a better predictor of current total activity than board activity. Therefore, we estimate the economic significance estimate using the coefficients in the OLS specification. The average firm in the sample held 7.312 board meetings per year. Hence, the observed increase in Fully Independent Committee Focus over time the average firm's Tobin's Q by 2.9%.

5 Conclusion

We provide the first in-depth analysis of board committee structure using complete data on board structure from 1996 to 2010. Pre-SOX, 36% of board activity takes place in committees. This increases to 47% post-SOX. While boards and directors are working harder over time, they do not appear to be working better. We argue one reason for this is precisely that much of the increase in activity takes place in a delegated environment.

Our results suggest that board committees are important for board functioning and can no longer be ignored. While collecting data on committee structure and constructing our proxies for board behavior involves a substantial amount of work, the increasing use of web-based data extraction methods-such as the ones we use in this paper-should reduce the costs of constructing these proxies in the future. We believe the effort is worth it as the proxies are able to provide a more nuanced picture of what happens in the boardroom than traditional measures of board structure.

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A Variable Definitions

A.1 Activity and Delegation Measures

Board Activity is total number of director-board meetings for a firm over a fiscal year, calculated as the number of meetings of the board multiplied by the number of directors.

Total Activity is the total number of director-meetings for a firm over a fiscal year. Meetings may occur with either the board of directors or with a committee of the board. The board component is computed as described above under Board Activity. The committee activity component is the total over all a firm's committees of the product of the number of committee meetings and the number of committee members.

Committee Focus is the average director's percent of total annual meetings spent with committees. It is initially computed for each director-firm-year observation as the number of meetings with committees divided by the total number of meetings (board and committees). These director-level values which are averaged over all members of a board of directors to calculate the firm-year Committee Focus value.

Fully Independent Committee Focus is the average director's percent of total annual meetings spent with committees composed entirely of independent directors. It is initially computed for each director-firm-year observation as the number of meetings with committees composed entirely of independent directors divided by the total number of meetings (board and committees). These director-level values which are averaged over all members of a board of directors to calculate the firm-year Fully Independent Committee Focus value. By construction, Fully Independent Committee Focus is 0 for all insider and affiliated directors.

A.2 Dependent and Control Variables

Book Leverage is the total book value of long-term and current debt over the book value of total assets.

Board Size is the natural log of one plus the number of directors on the firm's board.

Log Firm Age is the natural log of the firm's age, where firm age is defined as the number of years since the firm's financial data entered Compustat.

Log Assets is the natural log of the book value of total assets.

Log Number of Employees is the natural log of one plus the number of employees (in thousands) of the firm.

Log Number of Segments is the natural log of one plus the number of operating business segments reported in the Compustat Segments database.

Percent Independent Directors is the number of independent directors on the board over the total number of directors.

R&D is total annual R&D expenditures normalized by the book value of total assets at the start of the fiscal year.

R&D Indicator is defined to be 1 if the firm had non-zero R&D expenditures over the fiscal year and 0 otherwise.

Return on Assets is operating income before depreciation, normalized by the book value of total assets at the start of the fiscal year.

Tobin's Q is the market value-to-book value ratio of assets. The market value of assets is taken as the book value of assets, net of the book value of common/ordinary equity, plus the market value of equity, defined as closing share price at the end of the fiscal year multiplied by the number of common shares outstanding.

Stock Return is the cumulative annual stock return including dividends over the fiscal year.

Stock Volatility is the annualized standard deviation of daily stock returns over the fiscal year.

Figure 1: Board Structure

The plots show annual averages of board characteristics for sample firms in the S&P 1500, excluding those in the financial services and utilities sectors. Observations are averaged based on the calendar year in which a firm's fiscal year ends. Tick marks on the horizontal axis indicate December 31 of each year. Vertical lines mark two key dates related to the Sarbanes-Oxley Act (SOX): July 30, 2002, the day the bill was signed into law, and June 15, 2004, the fiscal year end date after which public companies with a market capitalization greater than \$75 million were required to be compliant with the legislation. Panel (a) shows the average number of directors appointed to the boards of directors of sample firms. Panel (b) shows the average independence of boards, where a board's independence is measured by the percent of the board's directors that are classified as independent. Director classifications are based on those provided by BoardEx and RiskMetrics. RiskMetrics provides all classifications through 1999. Beginning in 2000, the sample shifts towards BoardEx director classifications. The vertical line marks this transition date.

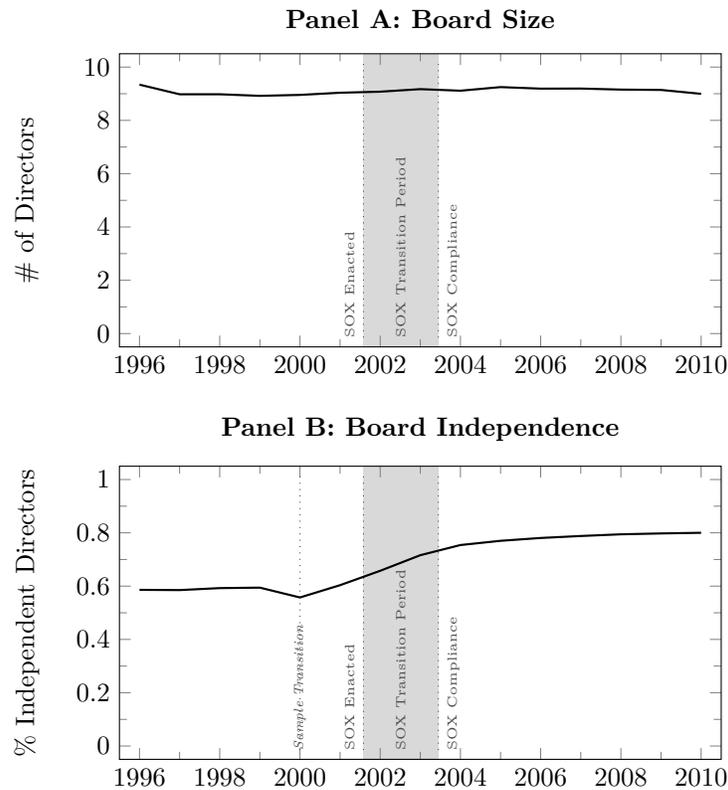


Figure 2: Committee Structure

The plots show annual averages of committee characteristics for sample firms in the S&P 1500, excluding those in the financial services and utilities sectors. Observations are averaged based on the calendar year in which a firm's fiscal year ends. Tick marks on the horizontal axis indicate December 31 of each year. Vertical lines mark two key dates related to the Sarbanes-Oxley Act (SOX): July 30, 2002, the day the bill was signed into law, and June 15, 2004, the fiscal year end date after which public companies with a market capitalization greater than \$75 million were required to be compliant with the legislation. Panel (a) shows the average number of committees per sample firm serving three functional areas: monitoring, strategy, and stakeholder engagement. Committees are categorized based on name or manual review of proxy statements when a committee's functional role is unclear. Panel (b) shows the average size of these committees grouped by functional area. Panel (c) shows the average independence of these committees, where a committee's independence is measured by the percent of the committee's directors that are classified as independent. Director classifications are based on those provided by BoardEx and RiskMetrics. RiskMetrics provides all classifications through 1999. Beginning in 2000, the sample shifts towards BoardEx director classifications. The vertical line marks this transition date.

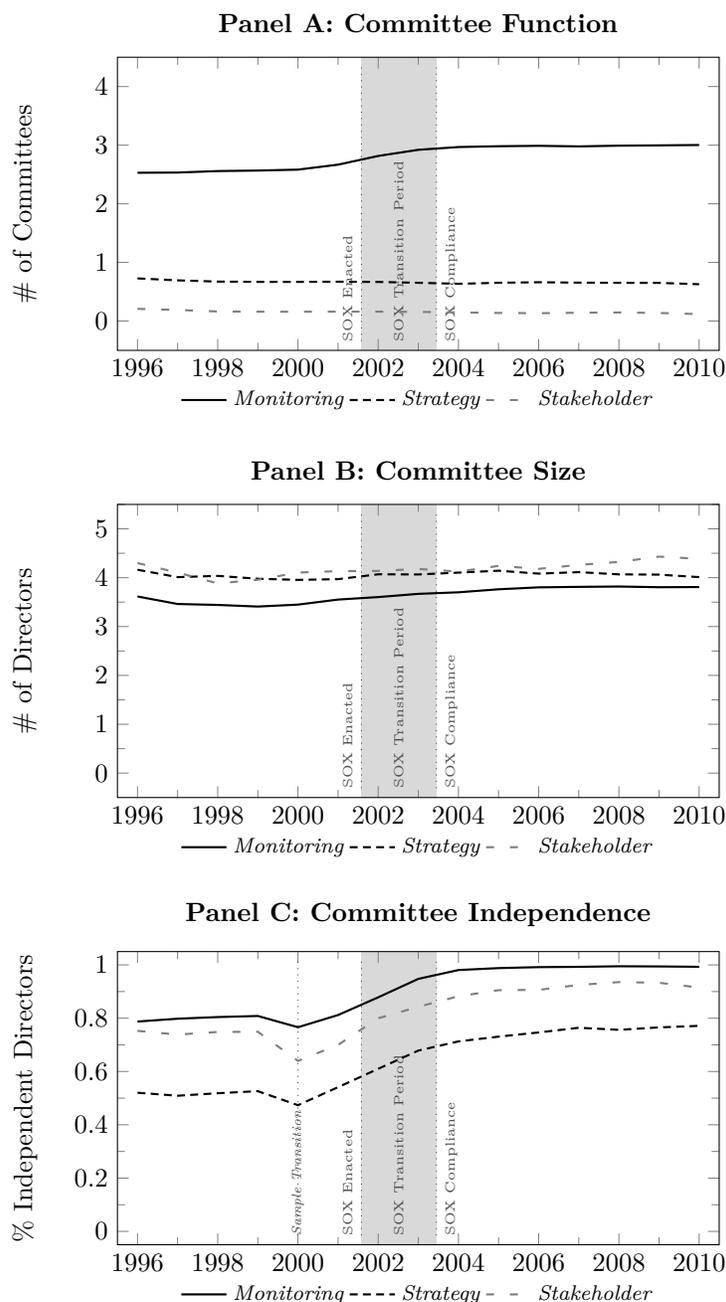
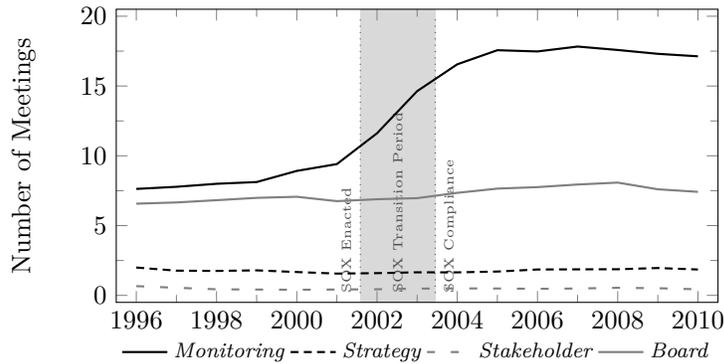


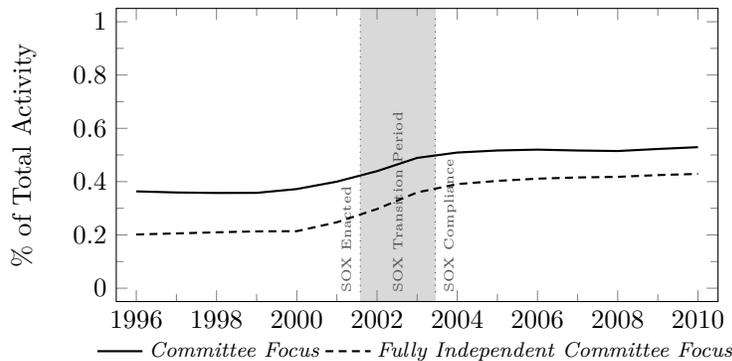
Figure 3: Board Activity and Committee Focus

The plots show annual averages of activity and committee focus measures for sample firms in the S&P 1500, excluding those in the financial services and utilities sectors, and their boards of directors. Observations are averaged based on the calendar year in which a firm's fiscal year ends. Tick marks on the horizontal axis indicate December 31 of each year. Vertical lines mark two key dates related to the Sarbanes-Oxley Act (SOX): July 30, 2002, the day the bill was signed into law, and June 15, 2004, the fiscal year end date after which public companies with a market capitalization greater than \$75 million were required to be compliant with the legislation. Panel (a) shows the average number of annual meetings per sample firm for the board of directors and for committees serving three functional areas: monitoring, strategy, and stakeholder engagement. Firms may have multiple committees in a functional group; the total number of meetings of all functionally similar committees is used. Committees are categorized based on name or manual review of proxy statements when a committee's functional role is unclear. Panel (b) shows the average committee focus for the sample firms. A firm's committee focus represents the average director's percent of total annual meetings spent with committees. Fully independent committee focus represents the average director's percent of total annual meetings spent with committees composed entirely of independent directors. These two measures are initially computed for each director-firm-year observation, which are averaged over all members of a board of directors to calculate the firm-year value. Director classifications are based on those provided by BoardEx and RiskMetrics. Panel (c) shows the average committee focus for the independent directors in the sample. It is computed as the average of the director-firm-year observations.

Panel A: Total Annual Meetings by Function



Panel B: Committee Focus (Board Average)



Panel C: Committee Focus (Independent Directors)

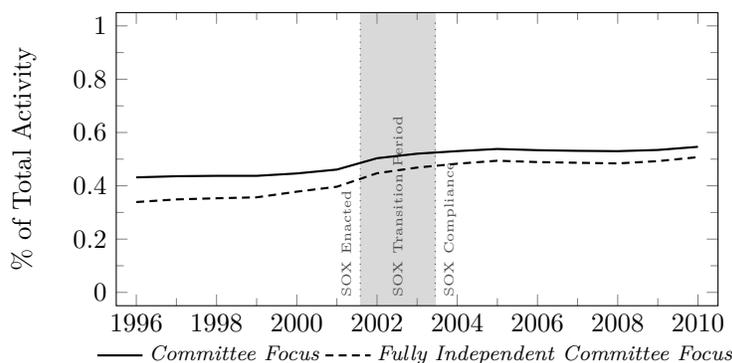
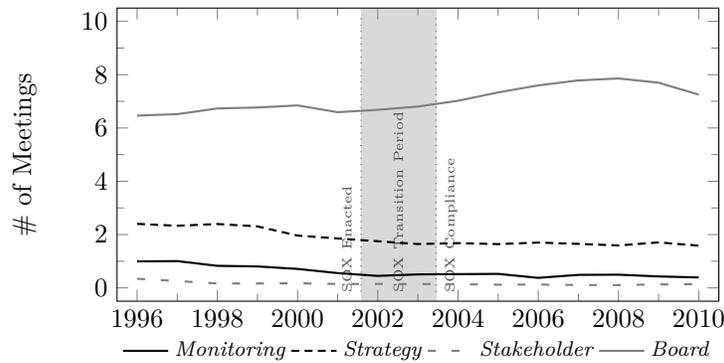


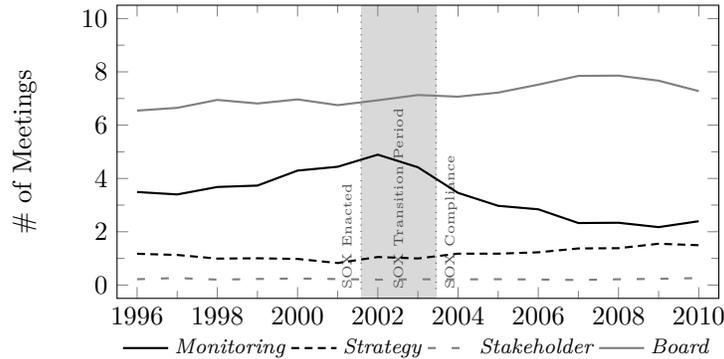
Figure 4: Director Activity

The plots show annual averages of activity for directors of sample firms in the S&P 1500, excluding directors of firms in the financial services and utilities sectors. Observations are averaged based on the calendar year in which a firm's fiscal year ends. Tick marks on the horizontal axis indicate December 31 of each year. Vertical lines mark two key dates related to the Sarbanes-Oxley Act (SOX): July 30, 2002, the day the bill was signed into law, and June 15, 2004, the fiscal year end date after which public companies with a market capitalization greater than \$75 million were required to be compliant with Each panel shows the average number of annual meetings of directors. These meetings are grouped by board meetings and committee meetings serving three functional areas: monitoring, strategy, and stakeholder engagement. Observations are based on directorships, indicating the level of activity of a director at a firm. A director may serve as a board member of multiple firms; in such cases, each directorship is considered separately. Within a firm, a director may serve on multiple committees within a single functional group; the total number of meetings of all functionally similar committees is used. Committees are categorized based on name or manual review of proxy statements when a committee's role is unclear. Panels (a), (b), and (c) show the number of meetings for inside, affiliated, and independent directors, respectively. Director classifications are based on those provided by BoardEx and RiskMetrics.

Panel A: Inside Director Activity



Panel B: Affiliated Director Activity



Panel C: Independent Director Activity

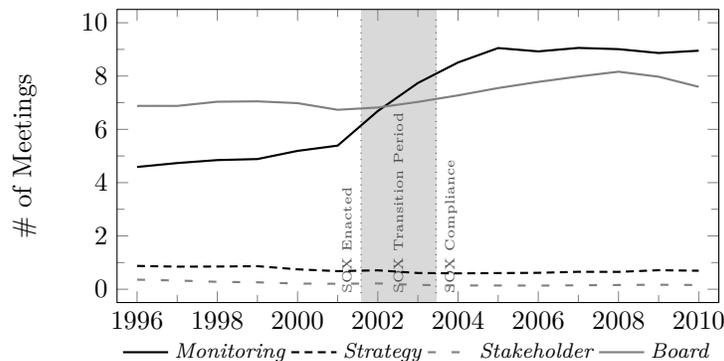


Table 1: Annual Observations by Database

The table reports the number of firms in the sample on an annual basis and in aggregate. Annual counts are based on the year in which a firm's fiscal year ends. The BoardEx and RiskMetrics column indicates the number of sample firms that were covered by these databases. BoardEx data is used whenever available for director names and classifications, committees of the board, and committee memberships. When BoardEx data is not available, RiskMetrics is used for the names and classifications of directors only; committee names and committee composition are collected manually. The parenthesized numbers in the RiskMetrics column indicate the number of unique observations not covered by BoardEx.

Year	Number of Observations		
	Total	BoardEx	RiskMetrics
1996	1085	0	1085 (1085)
1997	1278	0	1278 (1278)
1998	1301	0	1301 (1301)
1999	1297	51	1296 (1246)
2000	1630	1062	1362 (568)
2001	1650	1337	1158 (313)
2002	1640	1385	1115 (255)
2003	2666	2532	1113 (134)
2004	3132	3072	1113 (60)
2005	3205	3174	1090 (31)
2006	3145	3142	1032 (3)
2007	3147	3143	1045 (4)
2008	2859	2855	1028 (4)
2009	2768	2760	1090 (8)
2010	2246	2246	953 (0)
Total	33049	26759	17059 (6290)

Table 2: Summary Statistics

The table presents summary statistics on 33,049 firm-year observations. *Mean, SD*, and *Median* reports the means, standard deviations, and medians. *p1*, *p25*, *p75*, and *p99* show the 1st, 25th, 75th, and 99th percentile values, respectively. In Panel A, *Board Meetings*, *Committee Meetings*, and *Total Meetings* report the total number of director-entity meetings (calculated as the total over all relevant entities of the product of the number of meetings and the number of members) for board, committees, and combined entities, respectively. In Panel B, these values are averaged over the number of directors in the firm. In Panel C, *Committee Focus* is average director's percent of total annual meetings spent with committees and *Fully Independent Committee Focus* is the average director's percent of total annual meetings spent with committees composed entirely of independent directors. In Panel D, *Log Board Size* is the natural log of one plus the number of directors on the firm's board and *Percent Independent Directors* is the number of independent directors on the board over the total number of directors. In Panel E, *Book Leverage* is the total book value of debt over the book value of total assets; *Log Assets* is the natural log of the book value of total assets; *Log Firm Age* is the natural log of the firm's age; *Log Number of Employees* is the natural log of one plus the number of employees (in thousands) of the firm; *Log Number of Segments* is the natural log of one plus the number of operating business segments; *R&D* is total annual R&D expenditures normalized by the book value of total assets; *R&D Indicator* is defined to be 1 if the firm had non-zero R&D expenditures over the fiscal year and 0 otherwise; *Return on Assets* is operating income before depreciation, normalized by the book value of total assets; *Log Tobin's Q* is the log market value-to-book value ratio of assets; *Stock Return* is the cumulative annual stock return including dividends; and *Stock Volatility* is the annualized standard deviation of daily stock returns.

	Mean	SD	Distribution				
			p5	p25	Median	p75	p95
Panel A: Activity Measures (Board Total)							
<i>Board Meetings</i>	60.484	32.816	21.000	36.000	54.000	77.000	121.000
<i>Committee Meetings</i>	50.098	33.493	12.000	25.000	42.000	67.000	115.000
<i>Total Meetings</i>	110.610	56.986	40.000	69.000	99.000	141.000	219.000
Panel B: Activity Measures (Per Director)							
<i>Board Meetings</i>	7.312	3.350	4.000	5.000	7.000	9.000	14.000
<i>Committee Meetings</i>	5.966	3.405	1.500	3.429	5.400	7.889	12.429
<i>Total Meetings</i>	13.279	5.421	6.000	9.333	12.429	16.333	23.571
Panel C: Committee Focus Measures (Board Average)							
<i>Committee Focus</i>	0.438	0.142	0.197	0.340	0.444	0.538	0.660
<i>Fully Independent</i>	0.315	0.131	0.095	0.222	0.317	0.409	0.528
Panel D: Board Structure							
<i>Log Board Size</i>	2.070	0.287	1.609	1.946	2.079	2.303	2.565
<i>Percent Independent Directors</i>	0.683	0.168	0.375	0.571	0.714	0.818	0.889
Panel E: Firm Financials and Performance							
<i>Book Leverage</i>	0.215	0.298	0.000	0.011	0.169	0.327	0.611
<i>Log Assets</i>	2.678	0.850	1.255	2.118	2.691	3.233	4.117
<i>Log Firm Age</i>	2.795	0.713	1.792	2.303	2.708	3.401	3.937
<i>Log # of Employees</i>	0.248	0.928	-1.319	-0.409	0.302	0.898	1.716
<i>Log # of Segments</i>	1.396	0.829	0.000	1.099	1.099	2.197	2.708
<i>Log Tobin's Q</i>	0.604	0.594	-0.137	0.186	0.490	0.913	1.736
<i>R&D Indicator</i>	0.639	0.480	0.000	0.000	1.000	1.000	1.000
<i>R&D</i>	0.089	2.206	0.000	0.000	0.005	0.076	0.323
<i>Return on Assets</i>	0.024	0.392	-0.435	0.006	0.081	0.148	0.292
<i>Stock Return</i>	0.041	0.277	-0.364	-0.105	0.028	0.159	0.477
<i>Stock Volatility</i>	0.551	0.336	0.222	0.346	0.478	0.673	1.112

Table 3: Does Board and Committee Activity Respond to Stock Returns?

The table reports estimation results from fixed-effects models examining the relationship between board and committee activity and stock returns. The dependent variable in column (1) is the total number of director-board meetings for a firm over a fiscal year, calculated as the number of meetings of the board multiplied by the number of directors. The dependent variable in column (2) is the total number of director-committee meetings, calculated as the total over all a firm's committees of the product of the number of committee meetings and the number of committee members. The dependent variable in column (3) is the sum of the activity measures in columns (1) and (2). The dependent variables in columns (4) through (6) are the total number of meetings for directors over a fiscal year. Observations are based on directorships, indicating the level of activity of a director at a firm. A director may serve as a board member of multiple firms; in such cases, each directorship is considered separately. Columns (4), (5), and (6) report results for board meetings, committee meetings, and all meetings, respectively. *Stock return* is the cumulative annual stock return including dividends over the fiscal year. All other controls are as defined in Appendix A and are measured contemporaneously with the activity and stock return variables. All specifications include firm fixed effects. Specifications in columns (4) through (6) also include director fixed effects. Standard errors in columns (1) through (3) are clustered by firm; standard errors in columns (4) through (6) are double clustered by firm and director. *t*-statistics are reported in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5% and 10% level, respectively.

	Total Annual Director-Meetings per Firm			Annual Meetings per Director		
	Board	Committee	Total	Board	Committee	Total
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Stock Return</i>	-3.508*** (-6.789)	-1.539*** (-4.115)	-4.919*** (-7.073)	-0.414*** (-3.549)	-0.204*** (-3.518)	-0.618*** (-4.197)
<i>Log Board Size</i>	60.124*** (40.659)	31.987*** (23.086)	92.144*** (40.595)	-0.288 (-1.514)	-1.398*** (-7.809)	-1.686*** (-5.779)
<i>Percent Independent Directors</i>	-1.020 (-0.544)	22.974*** (12.091)	22.192*** (7.604)	-0.146 (-0.603)	0.333 (1.450)	0.188 (0.525)
<i>Book Leverage</i>	3.920** (2.048)	-0.351 (-0.233)	3.565 (1.200)	0.685*** (2.890)	0.348* (1.759)	1.033*** (2.827)
<i>Log Assets</i>	4.035*** (2.821)	4.417*** (3.660)	8.359*** (3.945)	0.669*** (3.177)	0.609*** (3.629)	1.278*** (4.235)
<i>Log Firm Age</i>	5.225*** (3.154)	5.622*** (3.234)	10.949*** (4.031)	1.217*** (5.686)	0.870*** (4.197)	2.086*** (6.245)
<i>Log # of Employees</i>	-2.274 (-1.544)	3.685*** (2.764)	1.404 (0.636)	-0.500** (-2.367)	0.242 (1.415)	-0.258 (-0.870)
<i>Log # of Segments</i>	-0.229 (-0.566)	-0.455 (-1.024)	-0.670 (-0.997)	-0.025 (-0.535)	-0.036 (-0.768)	-0.061 (-0.847)
<i>R&D Indicator</i>	1.023 (0.818)	-1.856 (-1.180)	-1.111 (-0.479)	0.068 (0.461)	-0.375** (-2.176)	-0.308 (-1.215)
<i>R&D</i>	0.798 (1.222)	-1.096** (-2.220)	-0.388 (-0.439)	0.047 (0.513)	-0.159** (-2.049)	-0.113 (-0.890)
<i>Return on Assets</i>	-0.903* (-1.697)	-0.369 (-1.083)	-1.273* (-1.764)	-0.175* (-1.866)	-0.073 (-1.199)	-0.248* (-1.895)
<i>Stock Volatility</i>	9.321*** (5.547)	2.280*** (3.589)	11.737*** (5.428)	1.367*** (5.297)	0.239*** (3.037)	1.606*** (5.226)
<i>Firm FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Director FE</i>	-	-	-	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Clustering</i>	Firm	Firm	Firm	Firm/ Director	Firm/ Director	Firm/ Director
<i>N</i>	32026	32026	32026	268023	268023	268023
<i>R²</i>	0.171	0.412	0.361	0.580	0.580	0.580

Table 4: Does Committee Focus Respond to Stock Returns?

The table reports estimation results from fixed-effects models examining the relationship between committee focus measures and stock returns. The dependent variable in column (1) is board-level *Committee Focus*, which represents the average director's percent of total annual meetings spent with committees. The dependent variable in column (2) is board-level *Fully Independent Committee Focus*, which captures the average director's percent of total annual meetings spent with committees composed entirely of independent directors. Director classifications are based on those provided by BoardEx and RiskMetrics. The two committee focus measures are initially computed for each director-firm-year observation and averaged for all members of a board of directors to calculate the firm-year value. Director-level *Committee Focus* and *Fully Independent Committee Focus* are the dependent variables in columns (3) and (4), respectively. A director may serve as a board member of multiple firms; in such cases, each directorship is considered separately. *Stock return* is the cumulative annual stock return including dividends over the fiscal year. All other controls are as defined in Appendix A and are measured contemporaneously with the committee focus and stock return variables. All specifications include firm fixed effects. Specifications in columns (3) and (4) also include director fixed effects. Standard errors in columns (1) and (2) are clustered by firm; standard errors in columns (3) and (4) are double clustered by firm and director. *t*-statistics are reported in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5% and 10% level, respectively.

	Board		Independent Directors	
	Committee Focus	Fully Independent Committee Focus	Committee Focus	Fully Independent Committee Focus
	(1)	(2)	(3)	(4)
<i>Stock Return</i>	0.003 (1.170)	-<0.001 (-0.066)	0.003 (1.073)	0.002 (0.844)
<i>Log Board Size</i>	-0.071*** (-11.114)	-0.014*** (-3.160)	-0.066*** (-8.982)	-0.071*** (-9.503)
<i>Percent Independent Directors</i>	0.112*** (11.579)	0.901*** (127.509)	-0.034*** (-3.231)	-0.024** (-2.204)
<i>Book Leverage</i>	-0.024*** (-3.477)	-0.010** (-2.341)	-0.019*** (-2.676)	-0.022*** (-3.012)
<i>Log Assets</i>	0.008 (1.174)	-0.011** (-2.085)	0.003 (0.491)	-<0.001 (-0.033)
<i>Log Firm Age</i>	0.070*** (8.938)	-0.001 (-0.104)	0.057*** (5.909)	0.049*** (4.869)
<i>Log # of Employees</i>	0.031*** (4.324)	0.011* (1.818)	0.035*** (4.395)	0.038*** (4.852)
<i>Log # of Segments</i>	-0.001 (-0.603)	0.001 (0.871)	-0.002 (-0.751)	-0.002 (-0.759)
<i>R&D Indicator</i>	-0.007 (-0.933)	0.001 (0.308)	-0.013* (-1.809)	-0.007 (-1.067)
<i>R&D</i>	-0.007** (-2.202)	-<0.001 (-0.160)	-0.006 (-1.396)	-0.005 (-1.249)
<i>Return on Assets</i>	0.006*** (2.723)	0.001 (0.965)	0.007** (2.372)	0.007** (2.453)
<i>Stock Volatility</i>	-0.016*** (-4.165)	0.002 (1.001)	-0.020*** (-4.063)	-0.017*** (-3.822)
<i>Firm FE</i>	Yes	Yes	Yes	Yes
<i>Director FE</i>	-	-	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes
<i>Clustering</i>	Firm	Firm	Firm/ Director	Firm/ Director
<i>N</i>	31889	31778	183861	183861
<i>R</i> ²	0.274	0.792	0.592	0.596

Table 5: Firm Value and Committee Focus

The table reports estimation results from both ordinary least squares (OLS) and instrumental variables (IV) fixed-effects models examining the relationship between firm value, board of director activity, and committee focus. The dependent variable in all specification is *Tobin's Q*, defined as the market value of assets divided by the book value of assets. The market value of assets is the market value of equity, defined as closing share price at the end of the fiscal year multiplied by the number of common shares outstanding, plus the book value of assets, net of the book value of common/ordinary equity. *Total Activity* is the average number of total meetings (board and committee) attended by the firm's directors in a fiscal year. *Committee Focus* in columns (1) through (4) is the average director's percent of total annual meetings spent with committees. *Fully Independent Committee Focus* in columns (5) through (8) is the average director's percent of total annual meetings spent with committees composed entirely of independent directors. The committee focus variables are defined in Table 4. The specifications in columns (3), (4), (7), and (8) use instrumental variables to control for endogeneity between total activity and firm value. The instruments leverage the cross-sectional information in the panel, using the history of the firm's directors activity outside the firm. For each director-firm-year observation, we initially compute the average total activity over the director's prior history at other firms. The instrument is the average of the individual board members' prior other-firm average total activity. Directors that did not serve on the board of another firm are ignored. The instrument is also interacted with the committee focus measures to instrument for the activity-committee focus interacted explanatory variable. All other controls are as defined in Appendix A and are measured contemporaneously with the firm value, total activity, and committee focus variables. All specifications include firm fixed effects and standard errors are clustered by firm. *t*-statistics are reported in parentheses. R^2 values are suppressed for IV specifications. *Kleibergen-Papp* weak instrument statistics are reported for IV specification. Coefficients marked with ***, **, and * are significant at the 1%, 5% and 10% level, respectively.

	Committee Focus		IV	Fully Independent Committee Focus				
	OLS			OLS		IV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Total Activity</i> × <i>Committee Focus</i>		−0.001 (−0.180)		−0.100** (−2.338)		−0.013*** (−2.638)		−0.012** (−2.078)
<i>Total Activity</i>	−0.008*** (−10.014)	−0.008*** (−3.934)	−0.067** (−2.265)	−0.020 (−1.101)	−0.008*** (−9.982)	−0.008*** (−9.664)	−0.067** (−2.265)	−0.016 (−0.570)
<i>Committee Focus</i>	0.029 (1.025)	0.039 (0.598)	−0.122 (−1.595)	1.266** (2.325)	0.032 (0.852)	0.163** (2.211)	−0.295* (−1.880)	0.112 (0.569)
<i>Log Board Size</i>	−0.037 (−1.534)	−0.037 (−1.536)	−0.174** (−2.394)	−0.174** (−2.386)	−0.035 (−1.451)	−0.044* (−1.654)	−0.188** (−2.385)	−0.063 (−0.858)
<i>Percent Independent Directors</i>	0.103*** (3.115)	0.103*** (3.118)	0.268*** (2.856)	0.264*** (2.839)	0.092*** (2.628)	0.102*** (2.709)	0.361*** (2.616)	0.136 (1.023)
<i>Book Leverage</i>	−0.069 (−1.447)	−0.069 (−1.445)	−0.026 (−0.550)	−0.017 (−0.346)	−0.072 (−1.506)	−0.051 (−1.013)	−0.030 (−0.624)	−0.048 (−0.946)
<i>Log Assets</i>	−0.432*** (−14.073)	−0.432*** (−14.070)	−0.409*** (−9.197)	−0.414*** (−9.536)	−0.431*** (−13.995)	−0.463*** (−13.898)	−0.410*** (−9.281)	−0.456*** (−11.162)
<i>Log Firm Age</i>	−0.322*** (−9.649)	−0.322*** (−9.637)	−0.128 (−1.334)	−0.176** (−2.119)	−0.322*** (−9.694)	−0.301*** (−8.495)	−0.130 (−1.371)	−0.278*** (−3.074)

(Continued)

Table 5: Continued

	Committee Focus				Fully Independent Committee Focus			
	OLS		IV		OLS		IV	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Log # of Employees</i>	0.110*** (3.651)	0.110*** (3.651)	0.146*** (3.633)	0.141*** (3.529)	0.109*** (3.612)	0.125*** (3.835)	0.150*** (3.682)	0.129*** (3.566)
<i>Log # of Segments</i>	-0.004 (-0.535)	-0.004 (-0.536)	-0.008 (-0.942)	-0.008 (-0.879)	-0.003 (-0.457)	-0.003 (-0.473)	-0.008 (-0.963)	-0.004 (-0.531)
<i>R&D Indicator</i>	0.004 (0.154)	0.004 (0.152)	-0.015 (-0.482)	-0.021 (-0.648)	0.004 (0.168)	-0.006 (-0.232)	-0.015 (-0.483)	-0.007 (-0.270)
<i>R&D</i>	0.118* (1.691)	0.118* (1.691)	0.095* (1.655)	0.094* (1.673)	0.118* (1.694)	0.100 (1.621)	0.095* (1.657)	0.099 (1.627)
<i>Return on Assets</i>	0.120*** (3.679)	0.120*** (3.678)	0.098*** (3.024)	0.094*** (2.903)	0.120*** (3.694)	0.107*** (3.088)	0.099*** (3.040)	0.106*** (3.069)
<i>Stock Volatility</i>	-0.064*** (-4.010)	-0.064*** (-4.002)	0.004 (0.096)	-0.017 (-0.497)	-0.064*** (-4.015)	-0.072*** (-3.894)	0.003 (0.069)	-0.062 (-1.559)
<i>Firm FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Clustering</i>	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
<i>N</i>	31864	31864	27723	27723	32000	28159	27723	27723
<i>R²</i>	0.729	0.729	-	-	0.729	0.731	-	-
<i>Kleibergen Papp</i>	-	-	13.29	6.60	-	-	13.30	12.16

Table 6: Firm Value and Committee Focus

The table reports estimation results from both ordinary least squares (OLS) and instrumental variables (IV) fixed-effects models examining the relationship between firm value, board of director meetings, and committee focus. The dependent variable in all specification is *Tobin's Q*, defined as the market value of assets divided by the book value of assets. The market value of assets is the market value of equity, defined as closing share price at the end of the fiscal year multiplied by the number of common shares outstanding, plus the book value of assets, net of the book value of common/ordinary equity. *Board Meetings* is the number of board meetings held during a firm's fiscal year. *Committee Focus* in columns (1) through (4) is the average director's percent of total annual meetings spent with committees. *Fully Independent Committee Focus* in columns (5) through (8) is the average director's percent of total annual meetings spent with committees composed entirely of independent directors. The committee focus variables are defined in Table 4. The specifications in columns (3), (4), (7), and (8) use instrumental variables to control for endogeneity between the number of board meetings and firm value. The instruments leverage the cross-sectional information in the panel, using the history of the firm's directors activity outside the firm. For each director-firm-year observation, we initially compute the average number of board meetings over the director's prior history at other firms. The instrument is the average of the individual board members' prior other-firm average number of board meetings. Directors that did not serve on the board of another firm are ignored. The instrument is also interacted with the committee focus measures to instrument for the board meeting-committee focus interacted explanatory variable. All other controls are as defined in Appendix A and are measured contemporaneously with the firm value, board meeting, and committee focus variables. All specifications include firm fixed effects and standard errors are clustered by firm. *t*-statistics are reported in parentheses. R^2 values are suppressed for IV specifications. *Kleibergen-Papp* weak instrument statistics are reported for IV specification. Coefficients marked with ***, **, and * are significant at the 1%, 5% and 10% level, respectively.

	Committee Focus				Fully Independent Committee Focus			
	OLS		IV		OLS		IV	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Board Meetings</i> × <i>Committee Focus</i>		-0.032*** (-4.683)		-0.645** (-2.213)		-0.035*** (-4.161)		-0.630*** (-2.656)
<i>Board Meetings</i>	-0.013*** (-9.279)	-0.002 (-0.772)	-0.104* (-1.772)	0.130** (2.425)	-0.012*** (-9.198)	-0.003 (-1.096)	-0.115* (-1.702)	0.085** (1.976)
<i>Committee Focus</i>	-0.142*** (-4.055)	0.047 (0.887)	-1.541* (-1.738)	2.543** (2.484)	-0.146*** (-3.293)	0.065 (0.980)	-2.135* (-1.671)	2.368** (2.484)
<i>Log Board Size</i>	-0.034 (-1.413)	-0.036 (-1.514)	-0.148** (-1.965)	-0.175* (-1.756)	-0.034 (-1.406)	-0.036 (-1.505)	-0.207* (-1.853)	-0.188* (-1.675)
<i>Percent Independent Directors</i>	0.100*** (2.999)	0.107*** (3.213)	0.241** (2.402)	0.338** (2.152)	0.133*** (3.702)	0.146*** (4.037)	0.847* (1.839)	0.824* (1.716)
<i>Book Leverage</i>	-0.071 (-1.486)	-0.069 (-1.445)	-0.041 (-0.861)	0.006 (0.105)	-0.074 (-1.546)	-0.071 (-1.503)	-0.046 (-0.973)	-0.005 (-0.113)
<i>Log Assets</i>	-0.433*** (-14.077)	-0.433*** (-14.091)	-0.414*** (-8.720)	-0.436*** (-8.990)	-0.433*** (-14.064)	-0.434*** (-14.103)	-0.419*** (-8.888)	-0.450*** (-10.428)
<i>Log Firm Age</i>	-0.321*** (-9.586)	-0.316*** (-9.478)	-0.112 (-0.888)	-0.059 (-0.350)	-0.328*** (-9.888)	-0.325*** (-9.844)	-0.155 (-1.445)	-0.171 (-1.574)

(Continued)

Table 6: Continued

	Committee Focus				Fully Independent Committee Focus			
	OLS		IV		OLS		IV	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Log # of Employees</i>	0.110*** (3.660)	0.111*** (3.685)	0.147*** (3.656)	0.166*** (3.283)	0.109*** (3.629)	0.109*** (3.627)	0.153*** (3.608)	0.142*** (3.285)
<i>Log # of Segments</i>	-0.003 (-0.523)	-0.004 (-0.548)	-0.008 (-0.903)	-0.013 (-1.157)	-0.003 (-0.437)	-0.003 (-0.503)	-0.008 (-0.925)	-0.018 (-1.593)
<i>R&D Indicator</i>	0.005 (0.184)	0.005 (0.212)	-0.008 (-0.253)	0.004 (0.108)	0.006 (0.227)	0.007 (0.271)	-0.004 (-0.147)	0.015 (0.474)
<i>R&D</i>	0.119* (1.689)	0.118* (1.693)	0.096 (1.630)	0.087* (1.713)	0.119* (1.698)	0.119* (1.701)	0.101* (1.717)	0.094* (1.760)
<i>Return on Assets</i>	0.121*** (3.690)	0.121*** (3.704)	0.104*** (3.153)	0.098*** (3.108)	0.121*** (3.700)	0.121*** (3.716)	0.104*** (3.158)	0.107*** (3.258)
<i>Stock Volatility</i>	-0.063*** (-3.957)	-0.065*** (-4.062)	0.011 (0.209)	-0.052 (-1.235)	-0.063*** (-3.960)	-0.065*** (-4.059)	0.030 (0.442)	-0.052 (-1.034)
<i>Firm FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Clustering</i>	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
<i>N</i>	31864	31864	27723	27723	32000	32000	27723	27723
<i>R²</i>	0.728	0.729	-	-	0.728	0.729	-	-
<i>Kleibergen Papp</i>	-	-	9.22	2.88	-	-	7.38	3.81