Span of Control and Span of Attention

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Working Paper

12-053

April 30, 2014

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December 19, 2013

Abstract

Using novel data on CEO time use, we document the relationship between the size and composition of the executive team and the attention of the CEO. We combine information about CEO span of control for a sample of 65 companies with detailed data on how CEOs allocate their time, which we define as their span of *attention*. CEOs with larger executive teams do not save time for personal use, or to cultivate external constituencies. Instead, CEOs with broader spans of control invest more in a "team" model of interaction. They spend more time internally, specifically in pre-planned meetings that have more participants from different functions. The complementarity between span of control and the team model of interaction is more prevalent in larger firms.

I. Introduction

"...managers devote much more time and energy to the problems of managing their coalition than they do to the problems of dealing with the outside world."

Cyert and March (1963; p. 205-6)

At least since Fayol (1918) the notion of span of control has occupied a central position in management, both in scholarly analysis and practical implementation. Span of control plays an important role in organizations and has implications for organizational structure, how decisions are made, the interactions between supervisors and subordinates and is an important aspect of a manager's coalition. Early studies on span of control seek to determine how many subordinates a manager can supervise (e.g., Simon, 1945, Urwick, 1956, and Woodward, 1965). While these articles were written more than fifty years ago, the notion of span of control remains relevant for organizations today. For instance, the Boston Consulting Group has a federal trademark for the term "delayering" for its distinctive approach to flattening the corporate pyramid which involves the broadening of spans of control for managers at all levels.

Traditionally, span of control is defined and measured as the number of direct subordinates a manager supervises. Since all managers "manage" at least one subordinate, span of control applies to managers at all levels throughout the organization. In this paper, we focus on the top of the organization—the span of control of the Chief Executive Officer (CEO). This is arguably the most critical locus of decision making for organizations, since the CEO and his direct subordinates are the senior executives that comprise the top management team and corporate headquarters – i.e., the governing body that is responsible for setting strategy and allocating resources (Mintzberg, 1979). Moreover, top team structure is a reflection of the underlying organizational structure of the firm (e.g., Chandler, 1962; Beckman and Burton, 2011;

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Li, Guadalupe, Wulf, 2013). Importantly, there is a large body of research in management that documents relationships between characteristics of the top management team (TMT) and firm performance.[1]

This paper uses novel data to better understand the role of the CEO and the relationship to his executive team as represented by the CEO's span of control. We collect detailed time use information for a large sample of CEOs and use it to characterize how CEOs allocate their time. We document how this new and comprehensive measure – *span of attention* – is related to span of control, and in doing so, shed light on the relationship between formal and informal structure. We ask two questions: What is the relationship between the size of the executive team and CEO attention? Does this relationship vary by team composition and firm characteristics?

While previous work used time-use analysis to describe patterns of behavior of top executives, the sample size was always limited. To the best of our knowledge, the largest observational dataset on top executives is Kotter (1999), which includes 15 general managers, who were selected for being successful and is based on data from the late 1970s. Bandiera, Guiso, Prat, and Sadun (2011) collected time-use information on a sample of 94 CEOs of top-600 Italian firms, but lacked detailed organizational chart information. Rajan and Wulf (2006) document dramatic increases in CEO span of control over the past two decades in a sample of 300+ large US firms, and Guadalupe, Li and Wulf (2013) document a shift in the composition of the top management team toward functional managers (CFO, CHRO, General Counsel). However, the data used for these latter two studies lacked information on CEO attention.

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[1] Much of the TMT literature focuses on the characteristics of the individual manager (e.g., tenure, education, experience) and evaluates group diversity (see Finkelstein, Hambrick and Canella, 2009, Chapter 5, for a survey). Instead, we focus on the structure of the top management team -- both the size and composition of the executive team -- as represented by CEO span of control. For recent empirical papers on the size and structure of the executive team, refer to Guadalupe, Li and Wulf (2013), Wulf (2012), and Neilson and Wulf (2012).

The idea that the use of time can be informative about CEOs' allocation patterns, and hence their role within the firm, resonates with a number of distinct literatures. One of Drucker's (1966) main themes is the importance of time allocation in determining the effectiveness of top management. Ocasio (1997) developed a rich attention-based theory of firm behavior, where the definition of attention encompasses the focusing of time and effort of decision-makers to different issues that the organization faces. A number of economic models of hierarchical organizations highlight the importance of how managerial attention is allocated at the different layers of the organization (e.g., Keren and Levhari, 1979 as an early example).[2] While these approaches are quite different, in all of them managerial time is a scarce resource, whose allocation is crucial to the performance of the firm.

However, empirical work in this area has been hindered by a dearth of detailed and systematic information on CEO time use for a large sample of individuals. To our knowledge, this is the first time that information on CEO time use is analyzed in relation to organizational structure.

The data used in this paper contains time use information on a sample of 65 CEOs attending an executive education course at Harvard Business School. Each CEO's time allocation is monitored over a pre-selected work week. About two thirds of the subjects are based in North America, while the rest are mainly in Europe and Asia. The time use data is complemented by classic organizational chart information, thus linking span of control and span of attention.

We have four key findings:

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[2] For additional examples of theoretical models refer to Geanakoplos and Milgrom (1991), Radner (1993), Bolton and Dewatripont (1994), Van Zandt (1999, 2003), Prat (1999), and Garicano (2000). For survey of literature on hierarchies, see Van Zandt (1999). For a survey of organizational economics with cognitive costs, see Garicano and Prat (2011).

(i) *Number of reports*. CEOs with a larger number of direct reports (larger executive team) appear to spend a larger share of their time interacting with firm employees and a lower share working alone. There is no significant effect on the share of time spent with outsiders (customers, suppliers, etc) or the total number of hours worked. Thus, it appears that changes in span of control are mainly reflected in a trade-off between team work and individual work. More broadly, there is a positive complementarity between the size of the executive team and CEO attention allocated to internal constituents.

(ii) *Type of interactions*. While the organizational chart depicts all links as bilateral and homogenous, our time-use measures yield a richer description of how the CEO organizes his time with insiders: CEO interaction may be bilateral or multilateral (more than two participants, which account for about 80% of total time with insiders), unplanned or planned (in the CEO's diary), and single or cross-functional (more than one function, e.g., finance and human resources). We find that CEOs with a larger number of reports, in addition to spending more time internally, tend to have more multilateral, planned, and cross-functional interactions.

(iii) *Delegation*. CEOs appear to use certain organizational figures as delegates. CEOs allocate less time internally and less time to multi-participant, planned, and cross-functional meetings when the executive team includes a COO. The presence of other functional direct reports and business unit managers in the executive team does not appear to correlate with CEO attention.

(iv) *Firm Size*. The complementarity between the size of the executive team and CEO internal attention is more prevalent in larger firms.

Taken together, these four insights help shed light on the relationship between the role of the CEO and the role of the executive team. In a simple theory of delegation, the CEO frees up time by expanding the executive team and devolving more tasks to them. Such a model predicts that an increase in the size of the executive team provides the CEO with more time to spend on outside constituencies, individual work, and personal matters. However, this prediction is in clear conflict with the evidence in our first finding. Instead, finding (i) is consistent with some key predictions of the top management team (TMT) literature. The need for behavioral integration creates a strategic complementarity between executive team size and the time the CEO devotes to the team (see the literature section below for a more detailed discussion and related evidence). We also discuss how the remaining three findings relate to predictions of TMT.

Data on CEO interactions with executives and employees, and the analysis of how interactions correlate with organizational variables is a useful tool in understanding important research questions in the management/strategy literature. For instance, do executives interact as a team and, if so, under what circumstances? The extensive literature on top management teams (TMT) examines the effects of demographic diversity of senior managers on organizational outcomes based on the assumption that the interactions of top managers affect the choices they make (e.g., Hambrick & Mason, 1984; Carpenter, Geletkanycz, and Sanders, 2004). A central assumption of this literature is that executives act as a *team* – and not as a collection of *individuals* with their own goals and preferences, pursuing their own interests (Cyert and March, 1963; Hambrick, 1994). This literature does not investigate directly the intermediate interactions and processes through which the different demographic characteristics of the team are translated (Jackson, 1992), nor the role of organizational structure in mediating these interactions.

Another important research question is: what is the relationship between the formal and informal aspects of organizations? CEO span of control reflects the formal aspects of Thompson's (1967) concept of the inner circle – the group of individuals with the greatest decision-making influence in an organization. More broadly, the composition of the team reflects the underlying structure of the organization: functional vs. multi-divisional (M-form).[3] Yet, the formal structure is silent about interactions among executives which may help us identify the most influential members and understand the relationship to the organization of the firm. In contrast, span of attention captures informal aspects of the executive team, which are equally, if not more important.

The paper is structured as follows. In section II, we present the methodology used to collect the time use data, and basic summary statistics on the firms and executives in our sample. We describe related literature in section III and the main findings of our analysis in section IV. Finally, in section V, we discuss our findings and conclude.

II. Data and Methods

The key contribution of this paper consists of studying detailed records of CEO time use and the relationship with CEO span of control and the positions comprising the executive team. This section briefly describes our data collection methodology, the characteristics of the CEOs and firms represented in our sample, and the basic summary statistics of the time use and organizational data underlying our analysis.

II.a. Survey Methodology

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[3]Beckman and Burton (2011) point out, "The structure of the TMT can be a stand-in for the structure of the organization."

Our empirical methodology is based on the idea that since CEO time is one of the firm's most valuable and constrained resources, the patterns of CEO time allocation are a valid measure of CEO priorities and their involvement in the different functions and activities happening within and outside the firm. Using the survey designed by Bandiera, Guiso, Prat and Sadun (2011), we are able to keep track of the time use of a large sample of international top executives over a representative week of their life. Through the time use data, we are able to measure with unprecedented detail the daily allocation of CEO attention and, most importantly, the interactions between CEOs and their internal and external constituencies. We classify time allocation into several categories: time alone, time interacting with others (meetings), time interacting with insiders vs. outsiders. We also explore additional characteristics of the meetings to better document the nature of the interactions between CEOs and their subordinates (length of meeting, number of participants, planned vs. unplanned, cross-functional participants, function-specific interactions).

The time use survey allows us to effectively shadow the CEO – directly or through a Personal Assistant (PA) - for every day over a one week period. The participant is asked to record real-time information on all activities that last 15 minutes or longer in a time use diary. For each activity - defined as a task to which the CEO devotes time in excess of 15 minutes - the diary records information on the type of activity (e.g. meetings, phone calls, etc.), its duration, its location, whether it was scheduled in advance and when, and whether it is held regularly and how often. Crucially for our analysis, the diary also collects information on the number of participants in meetings, whether they are employees of the firm or not, and if insiders, their occupational areas (e.g. finance, marketing); if outsiders, their relation to the firm (e.g. investors, suppliers). The survey also asks to record the total time the CEO spends in activities that last 15

minutes or less or in travel. Hence, by summing the time spent over activities in excess of 15 minutes and the time spent in activities that last less than 15 minutes we obtain a measure of the CEO total working time.

Within the same survey, we also collected in depth information on the formal organizational structure of the firm, namely the number of positions reporting directly to the CEO and types of positions. Or, put another way, the size and composition of the executive team. This setting allows us to look directly at the allocation of CEO time, and its relationship with organizational measures of span of control, both in terms of its breadth and composition.

Participants to the survey were drawn from a population of 349 CEOs set to take part in an executive education course at the Harvard Business School in January 2010.[4] Prior to the program, each participant received an email invitation from the leaders of the executive education program, providing a link to a password protected website which allowed participants to fill in their time diaries online. In order to avoid endogenous week selection, we imposed the constraint that all participants had to complete the survey in a pre-selected week in November before they arrived at HBS for the executive course. Finally, to improve the response rate, we communicated that the time use analysis would be discussed in a dedicated session during the executive course, and that participants would be offered an individualized time use analysis of their own activity data.

Out of the initial population of 349 individuals, 107 responded positively to the invitation. Table A1 in the Appendix looks at the differences between participants and non-participants. We find that firms led by participating CEOs tend to be smaller in terms of both employment and

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[4]The executive education program lasts for one week with the objective to retool thinking, management and analysis skills in a dynamic environment. The participants in the program are leaders in their firms with the titles of CEO, managing director, president, chairman or equivalent. The program typically attracts smaller, privately-held firms that are headquartered in locations around the world.

sales compared to the rest of potential participants, but the differences are not significant in statistical terms. We also find firms led by participating CEOs ted to be marginally more productive (in terms of labor productivity) compared to non participants, and the difference is significant at the 10% level.

Of the 107 participants, 42 observations had to be dropped as the records were incomplete (i.e. less than 4 days were recorded), inaccurate (i.e. the activities description was incomplete), or the respondent was not a CEO. The estimating sample thus consists of 65 CEOs observed for at least 4 complete days. While the data was effectively self-reported, we hired a project manager who could help the respondents in case of doubts or questions regarding the specific fields they had to fill in, and to make sure that respondents filled in their time diaries on a daily basis to improve the accuracy of the data. In 88% of the cases, the survey data was filled in by the CEO's personal assistant, and in the rest of the cases the survey was filled directly by the CEO. Finally, we complemented the time use data with information from manual searches and accounting databases to obtain additional firm level characteristics such as main industry of activity, employment and listed status.

II.b. Descriptive Statistics: Firm Characteristics, Span of Control, and CEO Time Use

The analysis is based on data aggregated at the week level. Table 1 provides some basic information on the firms and CEOs in our sample. The firms are relatively small (200 employees at the median), however, the dataset also includes some very large corporations and the average number of employees is 2116. This wide heterogeneity in firm size reflects the differences among participants of the executive education course from which we draw our sample. We have a good representation of firms that are widely held (29% listed) and 20% of our firms operate in

the manufacturing sector. Finally, although the majority of firms in our sample are located in North America, we also have quite a few European (15%) and Asian organizations (14%).

Panel B, Table 1 shows that, in our sample, the average CEO tenure in the role of CEO is 11 years (median of 9). On average, 34% of the CEOs report to be older than 45 years of age and almost half of the CEOs have a college degree (45%). Turning to the organizational variables (Panel C, Table 1), on average, CEOs have 7.4 positions reporting directly (median of 6), but a relatively wide heterogeneity exists across firms (standard deviation 4.48). The data also show a great deal of variation in the type of positions reporting directly to the CEO. The Chief Operating Officer (COO) position is present in 57% of the sample. The large majority of the firms (80%) have at least one functional manager reporting directly (i.e., Chief Financial Officer, Chief Human Resources Officer, Chief Legal Officer, Chief Information Officer, Chief Marketing Officer, Chief Strategy Officer). A much smaller proportion (37%) has at least one business unit manager reporting directly. The team structure with business unit managers is arguably more consistent with a multidivisional (or M-form) organization studied extensively by Chandler (1962) and typically associated with larger firms.[5]

The averages of the organizational variables in our sample are surprisingly similar to those reported by other samples of large US firms. For example, Rajan and Wulf (2006), looking at a sample of large, publicly-traded US firms (average employees of approximately 50,000), find – similarly to our data - that the number of positions reporting to the CEO was 6.79 in 1998 (standard deviation 3.90), and 45% of the sample reported to have a COO.

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[5] The structure of the TMT offers insight about organizational form and decision-making; as Beckman and Burton (2011) point out, "The structure of the TMT can be a stand-in for the structure of the organization." The structure of top executive teams is also related to the role of headquarter functions in governing organizational decisions (e.g., Chandler, 1991; Collis, Young and Goold, 2007).

The key innovation of our data is that it allows us to directly link information on organizational structure with data on the time allocation of CEOs.[6] It is important to note, however, that this richness of information comes with some limitations. First, while the sample size is much larger than prior studies on managerial time allocation, it is still relatively smaller in comparison to existing studies on organizational structure (e.g. Rajan and Wulf, 2006, Bloom, Sadun and Van Reenen, 2011; Guadalupe, Li, and Wulf, 2013). Furthermore, we do not observe work-related activities that the CEO may perform in the evenings or on weekends, and we miss the characteristics of those that take less than 15 minutes.[7] Finally, while we have data on which positions make up the top management team and on the specific types of functions (e.g. finance, HR, etc) interacting with the CEO, our data does not allow us to identify with precision whether direct reports vs. other subordinates lower in the hierarchy attend meetings with the CEO. While we acknowledge that direct reports might not attend *all* meetings in which the CEO interacts with other employees of the firm, given the relatively small size of the firms in our sample, we believe that it would be unlikely not to have direct reports present in most CEO interactions. Instead, our data are rich in information on the allocation of the CEO's attention - including the

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[6] Our data addresses some of the measurement issues related to various measures of span of control discussed by Ouchi and Dowling, 2004 and may explain the mixed empirical findings with respect to the determinants of span of control (see Puranum, et al, 2012).

[7] While our data provides a very detailed account of a *portion* of the activities undertaken by the CEO, it does not allow us to measure with precision the *totality* of the activities, thus leading to potential underestimation of total working hours, including short activities, long but informal work activities (e.g. informal business conversation might not be reported in our data), or personal time taken during working hours. To look into this issue, we built a measure of the fraction of time that CEOs report to happen within working hours (i.e. from the moment the working day is reported to begin until its end), but for which we do not have detailed information in terms of participants, planning horizon, etc., and we investigated whether this fraction was systematically correlated with observable firms and CEO characteristics. The results of this analysis are provided in Table A2. We could not find any systematic relationship between the share of time with no activity details and firm employment, span of control, and the dummies capturing the composition of the top management team. The only variable that appears to be significant is a dummy capturing firms active in manufacturing: these CEO tend to spend about 12% more time in unaccounted activities relative to CEOs of other industries. We make sure to control for sectoral differences across all regressions.

length of meetings, whether the activity was planned or unplanned, and the number and types of participants present in the meetings - which we exploit extensively in our analysis.

Before looking at the relationship between time use and organizational structure, it is useful to start our analysis by providing some basic information on the overall patterns of time allocation reported by the CEOs in our sample. Table 2, Panel A shows that CEOs report to work on average 11.37 daily hours of work. Of these, we can rely on very detailed information for about 7.3 hours a day, or 64% of their overall time spent working.

Similarly to the time use data collected in other contexts (see Bandiera, Guiso, Prat and Sadun, 2011, for time use data on Italian CEOs and Bandiera, Prat and Sadun, 2013 for the same data on Indian CEOs), a wide heterogeneity exists in terms of CEOs overall time spent at work and allocation across different constituencies. Table 2, Panel B shows that CEOs tend to be mostly engaged in interactions with other people (81%), while about 19% of their time is dedicated to time spent working alone. On average, 21% of time is allocated to interactions with outsiders only, while 60% is spent with insiders (i.e., people directly employed by the firm). Standard models of organizational structure are typically built on the assumption that the interactions between the CEO and his subordinates are largely homogenous and bilateral. The time use data, however, reveals a much greater degree of richness in the variety of interactions. In other words, CEOs differ significantly not only in the total amount of time they spend with insiders, but also in *how* they decide to organize this time, i.e. as one-to-one vs. multilateral, single vs. cross-functional, and planned vs. unplanned meetings.

In our data, about half of the share of time dedicated to insiders is planned in advance (51% of all insider interactions). Interactions with insiders frequently involve more than two participants (47% of share of time spent with insiders), and almost 25% of the meetings with

insiders are cross-functional. Crucially, a wide heterogeneity exists in all these dimensions of time use.

<center>*Place Table 2 about here*</center>

In Table 3 we show the pairwise correlations between the total number of hours worked and the allocation of time across the different activities shown in Table 2. The total hours worked by CEOs is not correlated with any of the organizational and demographic variables included in the table. However, some interesting patterns emerge with respect to the relationship between the share of time spent alone and with insiders and the organizational variables. First, the number of direct reports is negatively correlated with time spent alone, and positively correlated with the share of time spent with insiders. Second, the presence of a COO is positively correlated with the share of time spent working alone, and negatively correlated with the share of time spent with insiders. Similar patterns emerge for the dummy capturing the presence of functional managers and business unit managers. We investigate these patterns in more detail in section IV.

<center>*Place Table 3 about here*</center>

III. CEO Span of Control and Attention

III.a. Related Literature

A natural question about executive attention is whether the presence of a large executive team (broad span of control) provides the CEO with more or less time to attend to other constituencies. Broadly speaking, the CEO can devote his time to interaction with firm insiders (any employee, including the executive team), to individual work, to interaction with outside constituencies (clients, investors, etc.) or to personal time. In this section, we discuss whether

and how the number and the type of positions that report directly to the CEO might be related to CEO attention. In particular, we focus on several issues discussed in the literature.

First, the allocation of CEO time between two major activities -- spending time alone vs. interacting with other people -- is central to the existing studies of executive time use (Mintzberg, 1973, Kotter, 1999, and more recently by Porter and Nohria, 2010). Time spent alone might be dedicated to analysis, planning, and strategic thinking, or it could be a measure of organizational slack, which is an optimal response when projects requiring attention are unpredictable (Iliev and Welch, 2012).

Second, an interesting question on which there is some debate is: what is the relationship between broader spans of control and decision-making? CEOs of large US firms over the past two decades have doubled their span of control from about 5 in 1986 to 10 in 2006 (Rajan and Wulf, 2006). Both academics and practitioners have traditionally associated a broader span of control with greater delegation of decision making and less involvement in the activities of subordinates (Aghion and Tirole, 1997; Boston Consulting Group, 2006). The basic argument is that when time-constrained managers have more direct reports, they are less likely to interfere in subordinate activities. It follows that an increase in CEO span over the past two decades could be interpreted as a movement towards greater delegation of decision-making and increased empowerment of lower level managerial positions.

However, a counter argument is that the increase in the number of direct reports (size of the executive team) is associated with greater CEO involvement in different functions of the organization and more centralized decision-making.[8] Based on data from both large sample studies and extensive CEO interviews in large US firms, Wulf (2012) argues that delayering at

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[8] For an example of a dramatic increase in span of control and more involvement by the CEO, refer to John Reed's organizational response to Citibank's real estate crisis in the early 1990s as described and analyzed in Kaplan (2013).

the top of the pyramid and the corresponding increase in CEO span of control and changed structure of the executive team is a complex phenomenon that in the end may be more indicative of centralized decision-making and greater coordination among the executive team.[9] Regardless, empirical evidence on the relationship between broader span and delegation is remarkably thin.

Third, the composition of the executive team, in addition to its size (span of control), is an important factor in the role of the CEO and, potentially, in the allocation of attention. Hambrick and Canella (2004) analyze the determinants of a Chief Operating Officer (COO) position and argue that the presence of the position significantly changes the nature of the CEO's job, since it allows them to delegate internal operating matters and focus more intensively on external and strategic activities.[10] In addition to being important to the role of the CEO, the composition of the executive team is a direct reflection of the underlying organizational structure of the firm. Executive teams in multi-divisional firms (Chandler's M-form) are comprised of general managers responsible for business units; in contrast, functional managers populate the top team in functional organizations. The role of the CEO and the behavior of the team may vary across organizational forms.

Not only is there substantial heterogeneity in the positions that comprise an executive team, the composition of the team has changed over time. The COO position has become less common in large US firms (Fortune 500) over the past two decades (Rajan and Wulf, 2006). Guadalupe, Li, and Wulf, (2013) document that team composition has shifted toward more functional managers (e.g., CHRO, CFO, CMO), in contrast to general managers of business units

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[9]See Wulf, 2012 ("The Flattened Firm – Not as Advertised") for the cumulative evidence suggesting that broader spans of control of CEOs are structures associated with a different role for the CEO and senior executives: centralized decision-making and greater coordination among the executive team. See Neilson and Wulf, (2012) ("How Many Direct Reports?") for details on CEO interviews suggesting that CEOs broaden their span of control to get *more involved* in internal operations, not less.

[10] Bennett and Miles (2006) also discuss how the COO acts as the interface between the CEO and the internal operations of the business. Marcel (2009) argues that COO presence improves information-processing and firm performance, while Zhang (2006) explores the relationship between CEO dismissals and the presence of COOs.

(i.e., M-form organization). They document that these changes in the executive team are correlated with changes in key strategic variables, such as the degree of diversification and investments in information technology. Based on analysis of compensation, they find that functional managers appear to be assuming some responsibility for general managers (a phenomenon they term "functional centralization"). However, their findings say nothing about whether the CEO is more or less involved with subordinates. [11]

Finally, the size, composition, and behavior of the top management team may vary by executive and firm characteristics. Newly tenured CEOs have larger spans of control as a mechanism to assess talent in the C-Suite (Guadalupe and Wulf, 2010; Neilson and Wulf, 2012). Executive job demands are important to consider when analyzing the behavior of teams (Hambrick, Finkelstein and Mooney, 2005) and can vary by firm size, sector, ownership, location, and challenges facing the firm. More specifically, larger organizations achieve less behavioral integration within the team: executives interact less frequently, through more formal exchanges of information, and direct their attention to their own subunits. (Proposition 1 in Hambrick, 1994).

III.b. Types of CEO Interaction : Complements vs. Substitutes

Based on the discussion above, we return to the question of whether the presence of a large executive team (broad span of control) provides the CEO with more or less time to attend to other constituencies, and in particular, the time spent with insiders. A priori, having a larger executive team may increase or reduce the time the CEO devotes to insiders. A simple task delegation model predicts that CEO time with insiders and size of the executive team are

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[11] A significant advantage of the CEO time use data is that we can directly assess whether CEOs are more or less involved and how that varies with the structure at the top.

substitutes in the firm's production function (Aghion and Tirole, 1997; BCG, 2006). If the CEO hires an additional manager to handle a certain set of tasks, he will have more time for other tasks.

However, the top management team (TMT) literature makes a set of predictions that go in the opposite direction. As the size of the executive team increases, we should expect a decrease in the degree of cognitive homogeneity, social integration, and consensus (Propositions 5-1F, 5-1G, and 5-1H in Finkelstein, Hambrick and Cannella, 2009). For instance, larger teams will be demographically heterogeneous and large groups create coordination and communication problems. To maintain a collaborative role and cohesion within the executive team, CEOs direct attention to activities that foster behavioral integration.[12] As these activities are time-consuming, internal CEO time must be a complementary production input to the size of the executive team.

In what follows we examine these two views of the relationship between CEO attention and executive team from three angles. We first look for the presence of positive or negative complementarities between CEO time use and executive team size. We then see how the presence of a certain type of agent in the team, the COO, affects complementarities. Finally, we explore how the characteristics of the firm, in particular firm size, affect our findings.

Our analysis is purely descriptive, i.e. we do not in any way claim that the structure of the executive team considered in our analysis should *cause* specific patterns of time allocation. Rather, our interest is to see to what extent, if any, standard metrics used to characterize organizations are able to capture how CEOs allocate attention. We pursue this goal by choosing a very simple econometric specification, whereby we correlate different components of CEO time use with measures of top team structure: size of team (or number of direct reports) and positions

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[12] Hambrick (2007; pg 336) defines behavioral integration as "the degree to which a TMT engages in mutual and collective interaction. A behaviorally integrated TMT shares information, resources, and decisions."

that comprise the team. Also, we control for basic firm level variables (firm size, listed status, manufacturing sector, and the geographical area where the firm is located), and variables capturing specific CEO characteristics (CEO age, educational level and tenure in position). The inclusion of these extra controls is useful to attenuate the concern that the patterns of correlations could be driven by possible confounding factors other than organizational variables. Finally, all regressions show robust standard errors in parentheses under the reported coefficients.

IV. Results

IV.a. CEO Time Use and Team Size/ Composition

In this section, we first look for the presence of positive or negative complementarities between CEO time use and executive team size. We then see how the presence of a certain type of agent in the team, the COO, affects complementarities. We show the results of these analyses in Tables 4 and 5.

We start by looking at the relationship between time use and the number of positions reporting directly to the CEO, i.e., his span of control or the size of the executive team. In Table 4, we present two specifications for each dependent variable: odd columns include only the main variable of interest, while even columns include all additional control variables (firm and CEO characteristics).

Columns 1 and 2 show that a broader span of control is *not* associated with the total amount of time spent working in a week. Span of control, however, appears to be correlated with the way the CEO divides his attention between working alone, meeting with outsiders and meetings with insiders. First, Columns 3 and 4 show that a broader span of control is negatively correlated with the share of time the CEOs spend working alone, as opposed to interacting with other people. A doubling of the span of control of the CEO is associated with a decrease in the

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share of time spent working alone of 6.4% (column 4). Second, columns 5 and 6 show a negative but insignificant relationship between span of control and time spent only with outsiders. Instead, we find that CEOs with broader spans of control tend to allocate more time in interactions with their employees (at least one insider). A doubling of the span of control of the CEO is associated with an 11% increase in time spent with insiders (column 8). The analysis so far suggests that organizational variables – such as the breadth of the span of control or size of executive team - may capture some salient features of CEO managerial style and in particular the extent to which they are directly involved with their employees. [13]

Place Table 4 about here

Next, we exploit our time-use measures to study the extent to which organizational variables correlate with different *types* of CEO interactions with firm employees. This is interesting because heterogeneity in the size, planning horizon, and the participants involved in the meetings can capture salient differences in CEO styles, that are largely ignored in standard organizational models. Of equal importance, the types of interactions between the CEO and firm employees are informative about the extent to which the CEO directs his attention to activities that foster behavioral integration within the executive team, as discussed earlier in Section III.

In Table 5, we explore further the relationship between CEO *internal time use* and the size and composition of the CEO's executive team. To do this, we do two things. First, we break down the interactions with insiders (columns 1 and 2) according to the planning horizon

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[13] Earlier work on managerial time allocation has investigated extensively whether the time spent with insiders may be seen as involuntary "interruptions" of the CEO workday, rather than voluntary interactions (e.g., Perlow (1997) and Sesjadri and Shapira (2001)). Unfortunately in this data we are not able to distinguish between activities initiated by the CEO vs. external interruptions.

(columns 3 and 4), the number of participants involved (columns 5 and 6), and their cross-functional nature (columns 7 and 8). Second, we evaluate the association between CEO internal time use and the composition of the executive team: specifically, whether the executive team includes a COO, functional managers, and/or business unit managers (columns 2, 4, 6, and 8).

In all columns in Table 5 except the last, we find a positive and statistically significant coefficient on the number of direct reports. CEOs with larger teams spend more time internally, and they spend more time in meetings of a certain type: planned in advance (columns 3 and 4), with more participants (columns 5 and 6), and that are cross-functional in nature (columns 7 and 8). The magnitudes of the coefficient indicate that a doubling in the CEO span of control is associated with increases of about 10% in planned and multifunctional meetings with insiders.

Next, we turn to the composition of the executive team. In the even columns in Table 5, we include a dummy taking value one if a COO exists and reports directly to the CEO. This reveals that – indeed – CEO attention varies dramatically across different types of direct reports. While a broader span is still positively correlated with a higher fraction of time spent in interactions with insiders, the presence of a COO is significantly associated with a *lower* share of time spent in internal interactions (of approximately 13%, column 2). Furthermore, when a COO is present, CEOs spend less time in planned meetings, with more participants, and cross-functional in nature (columns 4, 6, 8). These findings are consistent with the role of the COO as an intermediary between the CEO and the internal operations of the firm. CEOs appear to spend less time on internal operating matters when COOs exists, and to focus more intensively on external and individual activities.

To analyze whether CEO attention varies with the underlying organizational structure, we include dummy variables that proxy for whether the firm is a functional or multidivisional

organization (Table 5, even columns). Specifically, one dummy captures the presence of functional managers in the executive team (e.g., CFO, CHRO, etc) and another captures the presence of business unit managers. The organizational structure does not appear to correlate with CEO attention. However, our measures of organizational structure are somewhat coarse. Finally, it is important to note that the complementarity between team size and CEO attention is robust and relatively stable across specifications and is not driven by the composition of the executive team. [14]

Place Table 5 about here

In summary, the results shown in Tables 4 and 5 reveal three basic facts about the relationship between CEO time use and span of control. First, CEOs with larger executive teams appear to spend a larger share of their time interacting with firm employees (and a lower share working alone or with outsiders only). That is, there is a positive complementarity between the size of the executive team and CEO attention allocated to internal constituents. There is no significant association between span of control and the total number of hours worked. This suggests that CEOs do not acquire larger executive teams in order to free up time for personal use, to focus on individual work, or to cultivate external constituencies.

Second, we find that CEOs with larger teams, in addition to spending more time internally, tend to have more multilateral, planned, and cross-functional interactions. This suggests that CEOs with larger teams (or more direct subordinates) invest more in behavioral integration to maintain the collaborative role of the executive team (i.e., the team model of

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[14] The one exception is in column 8, where the correlation between span of control and time spent in multifunctional meetings is no longer statistically significant when the dummies capturing the presence of functional managers among the direct reports are included. In this case we are thus unable to distinguish between the correlation arising from the size of the top team and its composition.

interaction). As predicted by the TMT literature, larger teams face greater cognitive heterogeneity, less social integration, and are less likely to achieve consensus in decision-making. One important role for the CEO with more subordinates is to allocate attention internally to "achieve mutual and collective interaction and share information, resources and decisions across team members" (Hambrick, 2007, pg 336).

Third, CEOs appear to use the COO position as a delegate or intermediary between the CEO and the internal organization. CEOs with COOs allocate less attention internally and less time in multi-participant, planned, and cross-functional meetings. Our findings are consistent with the basic definition of the COO position and provide additional evidence that our time use measures are indeed capturing salient aspects of the role of the CEO and behavior of the executive team.

IV.b. Types of CEO Interaction and Firm Characteristics

The evidence presented so far suggests a positive complementarity between CEO allocation of internal attention and the size of the executive team: a finding that is more consistent with the notion of behavioral integration in the management literature and less with a simple task delegation model. A natural question to ask is: under what conditions do CEOs invest in behavioral integration and the team model of interaction? In Table 6, motivated by TMT predictions as discussed earlier we investigate whether the relationship between team size and internal CEO attention varies by the size of the firm. We repeat specifications from Table 5 (i.e., the even columns with all control variables), but split the sample into small and large firms. The odd columns in Table 6 represent small firms (measured by the number of employees below

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the sample median, i.e. 200 employees), while the even columns represent large firms (above the median).[15]

In general, the findings suggest that the team model (or behavioral integration) is more prevalent in large firms. More specifically, there is a positive correlation between CEO time allocation and the number of direct reports *for large firms* (columns 2, 4, 6 and 8). While the coefficient on span of control is typically negative for small firms, the same coefficient is consistently positive (although not always statistically significant) for large firms. For example, doubling the CEO span of control is associated with an 18% increase in the share of time spent in planned meetings with insiders, and a 25% increase in the share of time spent in multi participants meetings with insiders. In contrast, we find negative and generally insignificant relationships for small firms (columns 1, 3, 5 and 7), with the exception of the share of time spent in multifunctional meetings with insiders which *decreases* with the CEO span of control in small firms.

Turning to the composition of the team, we find a negative coefficient on the COO dummy in both large and small firms that is statistically significant in all but two specifications. CEOs appear to use COOs as delegates regardless of firm size. Lastly, we find some evidence suggesting a negative relationship between CEO attention and the presence of functional managers, but only in small firms. This is consistent with the idea that functional managers may serve as CEO delegates in small firms.

Place Table 6 about here

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[15] In Table A3 we investigate whether large and small firms differ in terms of their CEO use of time and other observable firm characteristics. We find that the two types of firms are similar along most dimensions, with the exception that the CEOs tend to have a narrower span of control (7 vs 5 direct reports on average), that they tend to be more likely to have a functional managers reporting directly to them, and that they are more prevalent in Asia.

Taken together, the patterns we observe are consistent with the prediction by Hambrick et al that achieving behavioral integration is harder in larger teams, especially in large organizations. In equilibrium, CEOs of larger organizations must put more effort into maintaining cohesion in the executive team. Thus, an increase in team size results in a larger increase in time devoted to the team in larger organizations as opposed to small organizations.

V. Discussion and Conclusion

This paper uses novel data to better understand the role of the CEO and the relationship to the executive team as represented by the CEO's span of control. We collect detailed time use information for a large sample of CEOs and use it to characterize how CEOs allocate their time. We compare how this new and more comprehensive measure – *span of attention* – is related to the more traditional notion of span of control.

Overall, our findings suggest that the structure of the executive team – both the size and the composition -- is correlated with CEO attention. We find a positive complementarity between the size of the executive team (span of control) and the attention the CEO allocates to internal interactions. Our findings suggest that CEOs invest in a "team" model of interaction in larger teams: they spend more time internally, in planned meetings with multiple participants across functional areas. Taken together, the patterns of "what CEOs do" are consistent with TMT predictions that achieving behavioral integration is harder in larger teams, especially in large organizations. Our results suggest, that in these settings, CEOs allocate attention to increase the cohesion among team members. Our findings are consistent with "what CEOs say" about the rationale behind increasing their span of control: to get *more involved* in internal operations

(Neilson and Wulf, 2012). Finally, our analysis confirms that certain positions act as delegates: CEOs allocate less time to internal interactions in the presence of a COO.

Our analysis demonstrates the importance of collecting data on both the formal and informal aspects of organizations. Time allocation of executives, in conjunction with the size and composition of the team, allows for a much richer understanding of the role of the CEO and senior positions, and in particular, the behavior of the executive team. In a survey of TMT research, Finkelstein, Hambrick and Cannella (2009) list three issues that "if solved, could move the area significantly forward." We believe our measures of time use or *span of attention* have the potential to address two of the three issues. The first is how to define the boundaries of the TMT in an objective way. While managers may be formal members of the executive team based on title or position in the hierarchy, interactions may reveal the true boundaries of the team. The second issue is how to study the role of the CEO within the TMT. Allocation of attention or time use goes far beyond any existing measure that captures CEO impact on and involvement with the TMT. For instance, time allocation can identify the crucial distinction as to whether a CEO is externally or internally focused.

Although our study presents several limitations, which we discuss in the paper, we believe that a more systematic study of managerial attention over a large sample of executives could bring significant benefits to scholars in both management and economics. First, looking at interactions in conjunction with organizational structure may provide the basis for more realistic formal models of organizations. More generally, time use analysis allows scholars to shift from the focus on individual managers to analyzing teams and complementarities inherent in human capital. At the same time, this study also suggests the importance of refining definitions and sharpening the empirical predictions of top management team models prevalent in the

management literature. For example, our findings suggest that it would be beneficial to move beyond the use of simple demographic information of top team members, and consider in more detail the structural aspects of the executive team.

Practitioners may also benefit from time use data for several reasons. First, basic calendar analysis can be used as a tool for assessment for individual managers to evaluate their own patterns of time allocation. In the debrief with the participants of the executive education program at Harvard Business School, for example, we found that the executives' assessment of how they spend their time was quite different from actual records. Executives also find it fascinating to compare their time allocation to that of other peers in the same industry, as a way to gauge differences in their respective managerial styles. Finally, time use analysis enables senior managers to evaluate whether they are allocating time in a manner that is consistent with firm strategy and priorities critical to the implementation of strategy.

Ultimately, we argue that it is critical to complement traditional notions of organizational structure and team characteristics – *span of control* – with rich data on CEO interactions – *span of attention*. Although the collection of time use data for large sample of individuals presents clear methodological challenges, our experience across several countries and the availability of electronic calendars convince us of the feasibility of this research agenda. Most importantly, we believe that this strand of research could facilitate the establishment of a much-needed connection between the formal models of organizational structure in economics and the richness of the theories and empirical findings of the management literature.

Obviously, this paper is just an initial step in this direction, and there are many ways in which the time use data can be improved, suggesting several directions for future research. First, by collecting information on the purpose of the meetings, we could distinguish between

interactions that primarily facilitate information exchange versus interactions that involve decision-making and the relationship between objectives and top team structure. Second, by collecting data on the firm's strategy and scope of businesses, we could explore how interactions and team structure relate to the interdependence of tasks.[16] For example, the role of the CEO might be very different in firms that operate in related businesses versus diversified firms, and we could characterize the CEO's role by the nature of interactions and relate it to team structure. Also, it would be interesting to analyze smaller groups of teams using our span of attention measure since all team members are not involved in every decision.[17] Lastly, span of control complemented by span of attention will allow us to explore the relationship between organizational structure, management interactions, firm strategy and performance. We leave these topics for further research.

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[16] Barrick, Bradley and Colbert, 2007 emphasize how the importance of interdependencies (e.g., relatedness of businesses) will determine the importance of interactions (and team-based behavior) and the effect on firm performance. Firms should consider firm and industry characteristics when thinking about the optimal level of TMT interactions.

[17] Jackson (1992) discusses how top management teams are typically assigned to task forces comprised of smaller teams that focus on specific issues, initiatives, and decisions. Relatedly, Friesch (2011) argues that CEOs rely on a few key executives in top teams that are deeply involved in key decisions.

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Table 1: Firm, CEO and organizational characteristics

	Mean	Median	Standard deviation	Min	Max	Number of firms with available information
Panel A: Firm						
Number of employees	2116.02	200	6009.568	7	29581	60
Listed firm	0.29	0	0.46	0	1	65
Manufacturing	0.20	0	0.40	0	1	65
Firm HQ in US	0.57	1	0.50	0	1	65
Firm HQ in Europe	0.15	0	0.36	0	1	65
Firm HQ in Asia	0.14	0	0.35	0	1	65
Firm HQ in Oceania or South America	0.06	0	0.24	0	1	65
Panel B: CEO						
Tenure as CEO (number of years)	11.35	9	8.27	1	35	60
Dummy=1 if CEO is over 45 years old	0.34	0	0.48	0	1	65
Dummy=1 if CEO has college degree	0.45	0	0.50	0	1	65
Panel C: Organizational Structure						
Number of CEO direct reports	7.44	6	4.48	1	18	61
Dummy=1 if COO exists	0.57	1	0.50	0	1	65
Dummy=1 if functional managers report directly to CEO	0.80	1	0.40	0	1	65
Dummy=1 if business unit managers report directly to CEO	0.37	0	0.49	0	1	65

Table 2: Time Use Descriptives

A. Hours at work

	Mean	Std. Dev.	Min	Max	Obs
Number of days at work	4.80	0.40	4.00	5.00	65
Average daily hours at work	11.37	1.94	7.50	16.40	65
Average daily hours at work > 15 mins	7.27	1.99	3.63	12.90	65

B. Style

	Mean	Std. Dev.	Min	Max	Obs
Share of time spent working alone	0.19	0.18	0.00	0.70	65
Share of time spent with outisders only	0.21	0.19	0.00	0.76	65
Share of time spent with insiders	0.60	0.25	0.07	1.00	65
Share of time spent with insiders, planned activities	0.51	0.24	0.04	1.00	65
Share of time spent with insiders, >2 participants	0.47	0.25	0.02	1.00	65
Share of time spent with insiders, >1 functions	0.25	0.22	0.00	1.00	65

All variables are drawn from the time use survey. Average dailyl hours worked include all activities, including those shorter than 15 minutes and travel. Average daily hours >15 includes activities that are longer than 15 minutes and does not include travel. Ahre of time spent in the different activities used Average daily hours at work>15 as a denominator.

Table 3: Pairwise Correlations (p-value under correlation coefficients)

	Total hours at work > 15 mins	Share of time spent working alone	Share of time spent with outisders only	Share of time spent with insiders	Ln(Direct Reports)	Listed firm (dummy)	Ln(Employees)	Manufacturing firm (dummy)	Oceania	Europe	Asia	CEO tenure	CEO age	CEO has college degree (dummy)	COO reports directly to CEO	Functional managers report directly to CEO	Business unit managers report directy to CEO
Total hours at work > 15 mins	1.00																
Share of time spent working alone	-0.03	1.00															
	0.79																
Share of time spent with outisders only	0.17	-0.12	1.00														
	0.17	0.34															
Share of time spent with insiders	-0.13	-0.64	-0.68	1.00													
	0.31	0.00	0.00														
Ln(Direct Reports)	-0.07	-0.21	-0.08	0.22	1.00												
	0.58	0.11	0.54	0.09													
Listed firm (dummy)	-0.13	-0.27	0.19	0.06	-0.04	1.00											
	0.30	0.03	0.14	0.64	0.73												
Ln(Employees)	-0.01	-0.02	-0.20	0.18	0.18	0.22	1.00										
	0.93	0.86	0.12	0.17	0.17	0.09											
Manufacturing firm (dummy)	-0.27	-0.18	-0.09	0.21	0.17	0.10	0.24	1.00									
	0.03	0.15	0.46	0.10	0.20	0.42	0.06										
Oceania	-0.08	-0.13	-0.02	0.12	0.01	0.12	0.13	0.03	1.00								
	0.51	0.28	0.88	0.35	0.96	0.35	0.33	0.80									
Europe	-0.12	-0.02	0.20	-0.13	0.01	0.29	0.00	0.00	-0.11	1.00							
	0.34	0.88	0.12	0.30	0.97	0.02	1.00	1.00	0.39								
Asia	-0.10	-0.01	0.10	-0.07	0.27	0.04	0.12	0.25	-0.10	-0.17	1.00						
	0.42	0.97	0.42	0.59	0.03	0.77	0.38	0.05	0.42	0.17							
CEO tenure	0.02	-0.02	0.03	-0.03	0.20	-0.27	-0.05	-0.09	-0.15	-0.17	0.10	1.00					
	0.87	0.87	0.82	0.80	0.13	0.04	0.71	0.51	0.25	0.19	0.45						
CEO age	0.08	0.06	0.23	-0.22	0.15	0.11	-0.13	-0.20	-0.05	0.24	0.00	-0.10	1.00				
	0.51	0.61	0.06	0.08	0.24	0.37	0.32	0.12	0.70	0.06	0.97	0.47					
CEO has college degree (dummy)	-0.11	-0.05	0.06	-0.01	0.07	0.31	0.01	0.09	0.03	0.22	0.00	-0.19	0.08	1.00			
	0.37	0.69	0.62	0.95	0.58	0.01	0.93	0.46	0.83	0.08	0.99	0.15	0.54				
COO reports directly to CEO	0.09	0.29	0.09	-0.28	-0.19	0.08	0.08	-0.03	0.09	0.20	-0.19	-0.26	0.29	-0.09	1.00		
	0.48	0.02	0.48	0.02	0.14	0.52	0.54	0.81	0.46	0.11	0.13	0.05	0.02	0.46			
Functional managers report directly to CEO	0.00	0.30	0.02	-0.25	0.09	0.07	0.24	0.06	-0.03	0.21	-0.13	0.01	0.20	0.22	0.34	1.00	
	0.98	0.02	0.86	0.05	0.47	0.59	0.07	0.65	0.80	0.09	0.29	0.93	0.12	0.08	0.01		
Business unit managers report directy to CEO	-0.04	0.23	-0.19	-0.03	0.31	-0.14	0.09	-0.06	0.20	0.03	0.15	0.09	0.13	-0.11	0.02	0.22	1.00
	0.78	0.07	0.13	0.81	0.01	0.26	0.48	0.61	0.11	0.83	0.22	0.51	0.32	0.39	0.86	0.07	

Table 4 - Use of time and number of direct reports

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total weekly hours worked		Share of time working alone		Share of time with outsiders only		Share of time with at least one insider	
Ln(Direct Reports)	-2.069	-1.014	-0.054*	-0.064*	-0.027	-0.050	0.079*	0.114**
	(1.426)	(1.794)	(0.028)	(0.036)	(0.045)	(0.044)	(0.043)	(0.044)
Listed firm (dummy)		-4.218		-0.122**		0.075		0.044
		(2.904)		(0.054)		(0.059)		(0.075)
Ln(Employees)		-0.015		0.007		-0.020		0.014
		(0.449)		(0.013)		(0.013)		(0.015)
Manufacturing firm (dummy)		-7.424**		-0.069		-0.031		0.096
		(3.385)		(0.061)		(0.075)		(0.092)
Oceania		2.014		-0.098		0.076		0.024
		(3.144)		(0.069)		(0.107)		(0.079)
Europe		-1.403		0.006		0.097		-0.099
		(4.244)		(0.065)		(0.080)		(0.108)
Asia		0.258		0.075		0.147**		-0.211**
		(5.395)		(0.088)		(0.068)		(0.083)
CEO tenure		-0.076		-0.002		0.004		-0.002
		(0.191)		(0.004)		(0.003)		(0.005)
CEO age		-0.053		0.028		0.054		-0.078
		(2.948)		(0.059)		(0.054)		(0.073)
CEO has college degree (dummy)		1.251		0.001		0.009		-0.007
		(2.828)		(0.058)		(0.052)		(0.066)
Constant	28.858***	29.204***	0.298***	0.359***	0.201**	0.223*	0.498***	0.416***
	(3.035)	(4.690)	(0.075)	(0.121)	(0.095)	(0.121)	(0.091)	(0.132)
N	65	65	65	65	65	65	65	65

Notes:*, **, *** indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS estimates, robust standard errors in parentheses under coefficients. The dependent variable in column 1 is the total number of hours recorded over the survey week. The dependent variable in columns 2 and 3 is the share of time spent working alone over the relevation week. The dependent variable in columns 4 and 5 is the share of time spent in interactions with outsiders (non-employees) only over the relevation week. The dependent variable in columns 6 and 7 is the share of time spent in interactions with at least one insider (employee) over the relevation week.

Table 5 - Internal focus, number of direct reports and composition of the top team

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Share of time with at least one insider		Share of time with at least one insider, planned		Share of time with at least one insider, >2 participants		Share of time with at least one insider, >1 function	
Ln(Direct Reports)	0.114**	0.102*	0.107**	0.096*	0.114***	0.103**	0.091**	0.069
	(0.044)	(0.052)	(0.046)	(0.055)	(0.041)	(0.047)	(0.041)	(0.048)
COO reports directly to CEO		-0.126*		-0.160**		-0.112**		-0.166***
		(0.063)		(0.065)		(0.055)		(0.059)
Functional managers report directly to CEO		-0.130		-0.082		-0.073		0.056
		(0.080)		(0.077)		(0.082)		(0.079)
Business unit managers report directy to CEO		0.013		-0.013		0.008		0.010
		(0.085)		(0.077)		(0.081)		(0.068)
Listed firm (dummy)	0.044	0.041	0.054	0.051	0.030	0.029	-0.021	-0.012
	(0.075)	(0.082)	(0.075)	(0.078)	(0.072)	(0.078)	(0.066)	(0.068)
Ln(Employees)	0.014	0.019	0.020	0.024	0.002	0.005	-0.007	-0.008
	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.011)	(0.011)
Manufacturing firm (dummy)	0.096	0.124	0.079	0.111	0.177*	0.202**	0.258***	0.294***
	(0.092)	(0.095)	(0.090)	(0.091)	(0.097)	(0.096)	(0.096)	(0.087)
Oceania	0.024	0.007	0.105	0.109	0.102	0.094	0.057	0.065
	(0.079)	(0.093)	(0.093)	(0.089)	(0.103)	(0.106)	(0.084)	(0.094)
Europe	-0.099	-0.070	-0.095	-0.065	-0.191*	-0.172	-0.136*	-0.132
	(0.108)	(0.118)	(0.105)	(0.114)	(0.097)	(0.103)	(0.075)	(0.084)
Asia	-0.211**	-0.253***	-0.163**	-0.203**	-0.164*	-0.197*	-0.079	-0.114
	(0.083)	(0.094)	(0.076)	(0.079)	(0.096)	(0.100)	(0.085)	(0.090)
CEO age	-0.078	-0.025	-0.087	-0.029	-0.053	-0.011	-0.046	-0.001
	(0.073)	(0.067)	(0.070)	(0.065)	(0.064)	(0.059)	(0.055)	(0.059)
CEO has college degree (dummy)	-0.007	-0.028	0.007	-0.035	0.028	0.003	0.062	0.004
	(0.066)	(0.070)	(0.063)	(0.066)	(0.062)	(0.062)	(0.060)	(0.056)
Constant	0.416***	0.616***	0.259**	0.466***	0.347**	0.501***	0.055	0.192
	(0.132)	(0.138)	(0.121)	(0.124)	(0.135)	(0.150)	(0.092)	(0.114)
N	65	65	65	65	65	65	65	65

Notes:*, **, *** indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS estimates, robust standard errors in parentheses under coefficients. The dependent variable in columns 1 and 2 is the share of time spent in interactions with at least one insider (employee) over the relevation week. The dependent variable in columns 3 and 4 is the share of time spent in interactions with at least one insider (employee) over the relevation week, which was also planned in advance. The dependent variable in columns 5 and 6 is the share of time spent in interactions with at least one insider (employee) over the relevation week including more than 2 participants. The dependent variable in columns 7 and 8 is the share of time spent in interactions with at least one insider (employee) over the relevation week including more than 1 function.

Table 6 - Differences between small and big firms

Numbers of Employees	(1) <200	(2) >=200	(3) <200	(4) >=200	(5) <200	(6) >=200	(7) <200	(8) >=200
	Share of time with at least one insider		Share of time with at least one insider, planned		Share of time with at least one insider, >1 participants		Share of time with at least one insider, >1 function	
Ln(Direct Reports)	-0.070	0.129	-0.091	0.183*	-0.069	0.255**	-0.109*	0.204
	(0.129)	(0.094)	(0.121)	(0.087)	(0.096)	(0.089)	(0.058)	(0.153)
COO reports directly to CEO	-0.266**	-0.224**	-0.183	-0.277**	-0.177	-0.220*	-0.250***	-0.284*
	(0.117)	(0.097)	(0.116)	(0.092)	(0.106)	(0.102)	(0.082)	(0.137)
Functional managers report directly to CEO	-0.257**	0.167	-0.273**	0.250	-0.194*	-0.005	-0.019	0.337
	(0.109)	(0.147)	(0.110)	(0.164)	(0.098)	(0.179)	(0.082)	(0.207)
Business unit managers report directy to CEO	0.150	-0.049	0.147	-0.054	0.176	-0.085	0.133	-0.093
	(0.140)	(0.070)	(0.131)	(0.086)	(0.119)	(0.096)	(0.086)	(0.110)
Listed firm (dummy)	-0.069	0.211*	-0.055	0.201	0.001	0.142	-0.074	0.067
	(0.161)	(0.114)	(0.143)	(0.113)	(0.116)	(0.110)	(0.099)	(0.134)
Ln(Employees)	0.007	0.001	0.007	0.007	-0.027	-0.029	0.036*	-0.055
	(0.041)	(0.036)	(0.040)	(0.036)	(0.032)	(0.034)	(0.020)	(0.047)
Manufacturing firm (dummy)	0.007	0.239**	0.032	0.116	0.120	0.290**	0.154	0.347*
	(0.179)	(0.081)	(0.158)	(0.074)	(0.121)	(0.099)	(0.089)	(0.186)
Oceania	-0.392	0.055	-0.257	0.119	-0.116	0.115	-0.281*	0.064
	(0.244)	(0.139)	(0.221)	(0.118)	(0.203)	(0.110)	(0.140)	(0.135)
Europe	0.019	-0.161*	-0.037	-0.193*	-0.138	-0.130	-0.151*	-0.127
	(0.173)	(0.085)	(0.151)	(0.092)	(0.145)	(0.089)	(0.083)	(0.138)
Asia	-0.274	-0.132	-0.224	-0.088	-0.421*	-0.147	-0.176	-0.067
	(0.253)	(0.130)	(0.244)	(0.125)	(0.213)	(0.134)	(0.156)	(0.137)
CEO age	0.089	-0.154	0.145	-0.203*	0.054	-0.088	0.125	-0.077
	(0.117)	(0.103)	(0.108)	(0.093)	(0.089)	(0.092)	(0.077)	(0.126)
CEO has college degree (dummy)	0.021	-0.022	0.069	-0.024	0.042	0.014	0.115	-0.051
	(0.135)	(0.096)	(0.125)	(0.102)	(0.115)	(0.111)	(0.071)	(0.128)
Constant	1.056***	0.209	0.915**	0.076	0.971***	0.409	0.367**	0.165
	(0.352)	(0.345)	(0.332)	(0.331)	(0.301)	(0.323)	(0.165)	(0.445)
N	33	26	33	26	33	26	33	26

Notes:*, **, *** indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS estimates, robust standard errors in parentheses under coefficients. The dependent variable in columns 1 and 2 is the share of time spent in interactions with at least one insider (employee) over the relevation week. The dependent variable in columns 3 and 4 is the share of time spent in interactions with at least one insider (employee) over the relevation week, which was also planned in advance. The dependent variable in columns 5 and 6 is the share of time spent in interactions with at least one insider (employee) over the relevation week including more than 2 participants. The dependent variable in columns 7 and 8 is the share of time spent in interactions with at least one insider (employee) over the relevation week including more than 1 function.

Table A1 - Selection

	(1)	(2)	(3)	(4)
	Dummy=1 if CEO participated			
North America	0.059	-0.040	-0.004	-0.013
	(0.060)	(0.071)	(0.073)	(0.082)
Manufacturing firm (dummy)	-0.040	-0.025	-0.048	-0.053
	(0.068)	(0.079)	(0.077)	(0.083)
Ln(Employees)		-0.014		-0.010
		(0.015)		(0.016)
Ln(Sales)			-0.002	
			(0.013)	
Ln(Sales/Employees)				0.051*
				(0.027)
Constant	0.264***	0.397***	0.345**	0.122
	(0.048)	(0.090)	(0.150)	(0.178)
N	235	189	200	170

Notes:*, **, *** indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS estimates, robust standard errors in parentheses under coefficients. The sample comprises of all firms participating in the HBS YPO executive program in the winter of 2009. The dependent variable in all columns is a dummy taking value one if the firm participated in the survey.

Table A2 - Share of time spent in activities not fully recorded

	(1)	(2)
	Share of time in activities <15 mins	
Ln(Direct Reports)	0.005	0.001
	(0.036)	(0.037)
Listed firm (dummy)	0.080	0.079
	(0.053)	(0.054)
Ln(Employees)	0.002	0.005
	(0.010)	(0.011)
Manufacturing firm (dummy)	0.112*	0.121*
	(0.060)	(0.064)
Oceania	-0.091*	-0.104
	(0.046)	(0.062)
Europe	-0.007	0.003
	(0.077)	(0.081)
Asia	0.023	0.007
	(0.070)	(0.084)
COO reports directky to CEO		-0.034
		(0.062)
Functional managers report directly to CEO		-0.067
		(0.067)
Business unit managers report directy to CEO		0.014
		(0.060)
Constant	0.377***	0.450***
	(0.082)	(0.100)
N	65	65

Notes:*, **, *** indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS estimates, robust standard errors in parentheses under coefficients. The dependent variable in all columns is the share of working time which was not detailed in the survey, including activities lasting less than 15 minutes.

Table A3: Differences between small and large firms

Number of employees	<200	>=200	p-value
Total hours at work > 15 mins	34.66	35.70	0.69
Share of time spent working alone	0.19	0.18	0.72
Share of time spent with outisders only	0.22	0.18	0.38
Share of time spent with insiders	0.58	0.64	0.30
Ln(Direct Reports)	1.61	2.06	0.01
Listed firm (dummy)	0.26	0.35	0.44
Ln(Employees)	3.72	7.29	0.00
Manufacturing firm (dummy)	0.15	0.27	0.26
Oceania	0.03	0.12	0.14
Europe	0.18	0.12	0.49
Asia	0.08	0.23	0.08
CEO tenure	10.76	12.12	0.54
CEO age	0.36	0.31	0.67
CEO has college degree (dummy)	0.44	0.46	0.84
COO reports directly to CEO	0.54	0.62	0.55
Functional managers report directly to CEO	0.69	0.96	0.01
Business unit managers report directy to CEO	0.31	0.46	0.21