

# What Do CEOs Do?\*

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## Abstract

We develop a methodology to collect and analyze data on CEOs' time use. Our idea – sketched out in a simple theoretical set-up – is that CEO time is a scarce resource and that its allocation can help us identify the firm's priorities as well as the presence of governance issues. We record the time devoted to different work activities by 94 CEOs of top-600 Italian firms over a pre-specified week. We focus on the distinction between time spent with insiders (employees of the firm) and outsiders (people not directly employed by the firm, such as clients and suppliers, but also consultants, investors, banks). Individual CEOs differ systematically in how much time they spend at work and in how much time they devote to outsiders vs. insiders. We analyse the correlation between time use, managerial effort, quality of governance and firm performance, and interpret the empirical findings within two versions of our model, one with effective corporate governance and one with imperfect governance.

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## 1 Introduction

Time management has been at the core of the research on management for almost fifty years. Peter Drucker (1966) makes it the centerpiece of his celebrated book on effective management:

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“Effective executives know that time is the limiting factor. The output of any process is set by the scarcest resource. In the process we call ‘accomplishment’, this is time.”

More recently, the importance of time constraints for people at the top of organizational hierarchies has been recognized by a number of economic models, like Radner and Van Zandt’s work on hierarchies (surveyed in Van Zandt, 1998), Bolton and Dewatripont (1994), and Garicano (2000). Intellectual tasks – information processing in Radner-Van Zandt, communication in Bolton-Dewatripont, problem solving in Garicano – require managerial time, which is particularly scarce at the top of the organization. As a consequence, a key question in organization economics is whether and how managers allocate their time to maximize firm performance. The theoretical interest, however, is not matched by adequate empirical evidence, as firm datasets typically contain no information on managerial time use, while existing studies of managerial time use are mostly based on very few observations and are not matched to firm level outcomes.<sup>1</sup>

This paper makes a first step towards filling this gap by developing a methodology to systematically collect information on how CEOs allocate their time between different work activities. We develop a time-use diary for CEOs and we use it to record the time allocation of a sample of 94 CEOs belonging to leading Italian companies in various industries over a pre-selected work week. A minimalistic model of managerial time allocation guides our interpretation of observed differences in time allocation patterns, and how these are related to the firms’ priorities and to differences between the firms’ and the CEOs’ interests.

To collect the time use data, we ask the CEO’s personal assistant (PA) to keep a diary of the activities performed by the CEO during a pre-specified week (from Monday to Friday). The PA has full information on the CEO’s schedule and he/she has a good understanding of the functions of the people that his/her boss interacts with.<sup>2</sup> The PA reports overall working time and records in a diary all the activities of the CEO that last longer than 15 minutes detailing their characteristics, in particular information on other participants.

To operationalize the concept of time allocation, we group activities according to whether they involve employees of the firm (insiders) or only people external to the firm (outsiders). Insiders are listed by functional area, for instance finance, marketing, or human resources. Outsiders are grouped in categories CEOs normally interact with, for instance suppliers, investors, or consultants. The insider/outsider classification is ideal for our purposes for two reasons. First, it captures the essence of the CEO’s job: “The CEO is the link between the

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<sup>1</sup>For example, Mintzberg (1973) seminal work of managerial time use is based on a sample of 5 CEOs.

<sup>2</sup>Roxanne Sadowski, Jack Welch’s long-term PA, makes this abundantly clear: “For more than fourteen years, I’ve been human answering machine, auto dialer, word processor, filtering system, and fact checker; been a sounding board, schlepper, buddy, and bearer of good and bad tidings; served as a scold, diplomat, repairperson, cheerleader and naysayer; and performed dozens of other roles under the title of ‘assistant’.”

Inside that is the organization, and the Outside of society, economy, technology, markets, and customers ” (Drucker, 2004) . Second, it is a dimension over which the CEO’s and the firm’s interests might be misaligned. As a matter of fact, the optimal inside/outside balance is the subject of controversy in the management, finance and economics literature. At one end of the spectrum, a widely held view is that since the CEO is the ”public face” of the company, spending time outside the firm is an important (if perhaps not the most important) role of the CEO <sup>3</sup> At the other end, however, an increasingly popular view points out that time spent with outsiders might mostly benefit the CEO without contributing to creating value for the firm. Khurana (2002), for instance, argues that CEOs have strong incentives to seek visibility, by cultivating personal connections with influential business leaders. In line with this, Malmendier and Tate (2009) show that when their power vis-a-vis the firm increases, CEOs spend more time outside the firm in activities, such as writing books and playing golf, and that this shift in activities does not contribute to firm’s performance.<sup>4</sup>

Our data reveal that, as expected, CEOs spend the majority of their time with other people (85%). Of these most are employees of the same firm, but many are not. On average, CEOs spend 42% of their time with insiders only, 25% with both insiders and outsiders and 16% with outsiders alone. More interestingly, these averages hide a great deal of heterogeneity, both in terms of number of hours worked and time allocation. In particular, a majority of CEOs spend very little time (less than 5 hours per week) alone with outsiders, while over 10% of them spend over 10 hours a week. Our empirical analysis is aimed at making sense of the wide heterogeneity on this dimension of time allocation choices.

Since the implication of different time allocation choices - and in particular the differential impact of time spent with insiders vs. outsiders - is *a priori* ambiguous, we develop a minimalistic model of managerial time allocation that allows us to distinguish productive activities from activities that mostly confer private benefits to the CEO. We use this framework to shed light on whether time with insiders and outsiders can be interpreted along these lines. In our model, the CEO chooses how much time to devote to a number of possible

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<sup>3</sup>Procter & Gamble’s CEO A. G. Lafley (2009) views the link with the outside as the *raison d’être* of the top executive: “The CEO alone experiences the meaningful outside at an enterprise level and is responsible for understanding it, interpreting it, advocating for it, and presenting it so that the company can respond in a way that enables sustainable sales, profit, and total shareholder return (TSR) growth.”

<sup>4</sup>Khurana (2002)’s view is that the market for CEOs is deeply flawed. The search for external, charismatic “corporate saviors” leads boards – and the executive search companies they employ – to give their preference to highly visible personalities that can more easily be ”sold” to the firm shareholders. In turn, this creates an incentive for CEOs to seek visibility, by cultivating personal connections with influential business leaders. Malmendier and Tate (2009) exploit variation due to the receipt of prestigious business awards to show that these exogenous increase in CEOs’ power hurt firm performance as the CEOs devote more time engaging outside the firm, writing books, playing golf, and sitting on boards of other companies.

work-related activities, or to leisure. Each of the work activities yield non-negative benefits to the firm and to the CEO. For instance, networking with clients might increase the firm's sale but also increase the chance that the CEO is offered a better job in the future. Suppose activities can be roughly divided into the ones that benefit mostly the firm and those that benefit mostly the CEO. In this set-up, the interpretation of differences in time allocation between these two sets of activities depends on the extent to which the CEO's and the firm's interests are aligned. When these are perfectly aligned, time allocation is entirely determined by the firm's objectives. In this case, the observed variation in time allocation is entirely determined by optimal responses to different conditions faced by different firms. However, when the CEO's and the firm's interests are not perfectly aligned, time allocation is determined by both the firm's objectives and the CEO's objectives. In this case, the observed variation in time allocation partially reflects differences in the quality of governance that determines the alignment of the CEO's interests with the firm's.

If the observed variation reflects differences in governance, the model makes precise that the following three sets of correlations must hold:

1. CEOs who work longer hours, devote more time to activities that mostly benefit the firm and less time to activities that mostly yield private benefits.
2. CEOs who work for firms with stronger governance devote more time to activities that mostly benefit the firm and less time to activities that mostly yield private benefits.
3. Time devoted to activities that mostly benefit the firm is more strongly correlated with productivity than time devoted to activities that mostly yield private benefits.

Guided by the theoretical framework, we estimate the correlation between the CEOs' time use, their total time at work, firm level measures of governance and productivity, conditional on the size of the firm, whether it is listed and the industry it is in. The analysis yields three key findings, corresponding to results 1-3 above.

First, the insider/outsider allocation is associated with systematic differences in CEO worktime. In particular, CEOs who work longer hours spend more time with insiders and less time, in absolute terms, with outsiders, especially in on one-on-one meetings.

Second, the insider/outsider allocation is systematically correlated with differences in firm governance. More precisely, we correlate CEOs time allocation with a range of external proxies for firm level governance. We begin by comparing the time allocation of CEOs working for domestic and multinational firms. We expect the latter to have stronger governance as multinational firms face global competition and therefore need to provide steeper incentives to maintain their productivity advantage (Bloom and Van Reenen 2010 and Bandiera et. al

2010). We then look at variables that proxy for the CEO's power vis-a-vis the firm owners. First, we compare external CEOs who work for family firms to those hired by firms owned by disperse shareholders. Intuitively, when ownership is concentrated, as it is in family firms, owners might face less difficulties in monitoring the CEOs' time use. In this respect, it is important to distinguish between external and family CEOs, as the time allocation of these might be driven by different objectives other than profit maximization. The existing evidence indeed suggests that, compared to those headed by external CEOs, family firms headed by family CEOs are poorly managed and have lower performance (Bennedsen et al 2007, Bloom and van Reenen 2010, Perez-Gonzales 2006). Second, we test whether time allocation is correlated with board size. Large boards have long been suspected of being dysfunctional and to lead to too little criticism of management performance, thus granting CEOs more freedom (e.g. Lipton and Lorsch, 1992). Consistent with this view, there is some evidence that larger boards reduce the value of the firm (e.g. Yermack, 1996). Third, following a recent literature pointing at the fact that the presence of women on the board might improve the quality of governance (Adams and Ferreira 2009), we use an indicator for whether there is at least a woman in the board with an executive role. Finally, as a more direct (and arguably exogenous) measure of governance quality and restraints on the managers we use the country-level indicator of private benefits of control computed by Dyck and Zingales (2004) on the basis of block control transactions in 39 countries. We attach this measure of quality of governance to multinational firms in our sample on the basis of their country of origin and rely on within variation among multinational firms operating in Italy. The correlations between time use and the five independent governance proxies paint a consistent picture: CEOs who work for firms with better governance devote more time to insiders and less time to meeting outsiders alone.

In the final part of our empirical analysis, we show that the insider/outsider allocation is correlated with firm performance. Time spent with insiders is positively correlated with several measures of firm performance, while time spent with outsiders only is not. For example, a one percent increase in hours dedicated to insiders is correlated with a productivity increase of 1.22%, significantly different from zero at conventional levels, whereas a one percent increase in hours dedicated to outsiders is correlated with a productivity increase of 0.22%, and we cannot reject the null hypothesis that the correlation is equal to zero.

Taken together, our findings are consistent with the idea that differences in time allocation reflect differences in governance and that, compared to time spent with outsiders alone, time spent with insiders is more beneficial to the firm. Since the data at hand, however, is not suited to identify the causal effect of governance on time allocation, we can make precise the set of assumptions needed to reconcile the findings with the view that differences in time

allocation reflect optimal responses to different shocks faced by different firms. The final section of the paper discusses these in detail.

The paper is structured as follows. After a brief literature review in Section 2, Section 3 explains our empirical methodology and describes the data. Section 4 presents a simple time allocation model. Section 5 reports empirical findings based on our theoretical set-up. Section 6 concludes.

## 2 Related Literature

The collection and analysis of time use data has experienced a recent surge in the economics literature, mostly to shed light on the work/leisure choice and to measure welfare (see, e.g. Aguiar and Hurst 2007, Krueger et al 2009). Closer to our exercise are Hamermesh (1990) and Luthans (1988), who analyse how workers and middle managers, respectively, spend time at work. Hamermesh (1990) analyzes time diaries of a sample of 343 US workers to shed light whether time devoted to leisure on-the-job (e.g. on breaks) is productive for the firm, or an indicator of shirking. Luthans (1988) records in detail the activities of 44 managers with the aim to identify the determinants of a manager's success within his or her organization. Other celebrated management authors, such as Kotter or Mintzberg, also base their works on in-depth observation of managerial behavior, however they tend to base their research on in depth observations of a limited number of managers. Although this literature has provided a very rich set of information on the nature of managerial activities, it has not directly tested the implications of different time use allocations for firm performance. To the best of our knowledge, this is the first paper that measures how CEOs spend their time using a large sample of individuals.

Our analysis is also related to the vast literature that focuses on agency problems for CEOs (see the survey by Stein (2003)). Our paper studies one particular form of moral hazard, that relates to the diversion of CEOs time allocation, and hence it is quite far from other types of misbehavior studied in the literature. The most closely related study is Malmendier and Tate (2009), who look at what happens when CEOs receive prestigious business awards, both in terms of firm performance and CEO behavior. One of their findings is that award recipients appear to devote more time to writing books, playing golf, and sitting on boards of other companies, a finding that is not inconsistent with ours in so far time to write books crowds CEO's out working time rather than his leisure.

Our paper is complementary to Bertrand and Schoar's (2003) analysis of management style in a panel of matched CEO-firm observations. While their objective is to identify the fixed effect of individual managers, our goal is to use a direct behavior variable - time

allocation - to make inferences on the implicit incentive structure that managers face.

### 3 The CEOs' Diaries: Descriptive Evidence on Time Use

#### 3.1 Sources and Sample Description

Our main data source is a time use survey, which we designed to identify the activities CEOs engage in on a day-to-day basis. The survey effectively shadows the CEO through his PA for every day over a one week period. The PA is asked to record real-time information on all the CEO's activities that last 15 minutes or longer in a time use diary. Table A2 shows how the diary is structured. For each activity - defined as a task to which the CEOs 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, whether it is held regularly and how often. The diary also collects information on the number of participants, whether these belong to 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 PA is also asked to record the total time the CEO spends in activities that last 15 minutes or less and in transit. 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. Each PA is randomly assigned one of five weeks between February 10 and March 14, 2007.

The master sample contains the top 800 Italian firms from the Dun&Bradstreet data base (2007) and the top 50 Italian banks from the list of all major Italian financial groups compiled yearly by the Research Division of Mediobanca, a leading Italian investment bank. Size is measured as yearly revenue for firms and as the average of (i) employment, (ii) Stock market capitalization; (iii) Total value of loan portfolio for banks. All 850 institutions were contacted to ascertain the identity and contact details of the CEO; this procedure yielded 720 complete records. Of these, 50 were randomly selected for a pilot survey and the remaining 670 formed the final sample. The response rate was 18%, yielding complete information on the time use of 119 CEOs.

The implementation of the survey was outsourced to a professional survey firm, Carlo Erminero and co., headquartered in Milan. Sample CEOs received an official invitation letter from the Fondazione Rodolfo Debenedetti that sponsored this project, followed by a personal phone call explaining the purpose of the survey and the relevant confidentiality clauses. Upon acceptance, the survey was mailed to the PA identified by the CEO, who was asked to record the information and send back the completed forms via either fax or mail.

To maintain comparability across individuals, we drop ten CEOs who also cover the role

of "board president". The final sample contains 94 CEOs.<sup>5</sup>

We match the time use data with two further sources. The first is the Amadeus database, which contains balance sheet data, firm size, ownership and multinational status for 94 firms in our sample. The second is the Infocamere database, which provides a rich set of demographic information about all board members with executive and non executive responsibilities.

Our dataset has obvious strengths and appeals; but it is subject also to a number of limitations which deserve to be mentioned up-front. Apart from its small size, which reflects our focus on the largest corporations together with a low survey response rate (18%), the data are cross-sectional in nature. 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.

Table 1 describes our sample firms and CEOs. Panel 1A shows that manufacturing is the most common sector (39%) followed by Finance, Insurance and Real Estate (15%), Services (14%), Transportation, Communication and Utilities (13%), Wholesale and Retail (8%), Construction (4%) and Mining (3%). The median firm in our sample has 1,244 employees and its productivity (measured as value of sales over employees) is USD 600,000 per year. Just under 40% of the sample firms are widely held, 22% belong to families, and the remainder is split between private individuals, private equity, government and cooperatives. Finally, the sample 30% of the firms are domestic, 36% Italian multinationals and 34% Italian subsidiaries of foreign multinationals. For the latter, respondents in our sample are CEOs of the Italian subsidiary.

### 3.2 CEOs' Time Use: Insiders vs Outsiders

Table 2 and Figure 1 illustrate how CEOs spend their time. The average CEO in our sample works 47.7 hours over a 5 day-week. We note that this only comprises the work hours known to the PA, and as such it does not include working time at home or at the weekend. The figure thus provides a lower bound on the working hours of the CEOs. Of these, 36.9 -just under 80%- are spent in activities that last 15 minutes or longer, for which the diary records

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<sup>5</sup>We analyzed whether the survey sample was systematically different from non respondents in terms of observable firm level characteristics, such as size, productivity, profits, location and industry. The analysis (presented in Table A2 in appendix) shows that the CEOs participating in our study tended to work for larger firms, and had a higher probability of being affiliated to the Fondazione Debenedetti. In terms of industry representativeness, we also had a higher response rate for firms classified in Public Administration, Business Services and Finance. However, we could not find any systematic difference in terms of regional location and firm performance, as measured by productivity, profits and three years sales growth rates. The selection analysis is limited to the sample of 535 firms that could be matched to the Amadeus dataset

detailed information. The rest of the analysis will focus on these activities that, reassuringly, comprise the bulk of the CEO's time.

Table 2 (top panel) and Figure 1 show that, as expected, CEOs spend most of their time (85%) with other people. Meetings take up 60% of the working hours, and the remaining 25% is comprised of phone-calls, conference calls and public events. Our sample CEOs spend on average 15% of their time working alone. We note that this might be subject to measurement error, as the CEO might be in his office but not necessarily working. This is of little consequence for our analysis, which focusses on the time the CEO spends with other people.

We illustrate how the CEOs allocate their time across different categories of people, and we focus especially on the distinction between people who belong to the firm (insiders) and those who do not (outsiders). The diaries reveal three interesting patterns. First, while insiders are present most of the time, CEOs also spend a considerable amount of time with outsiders alone (Figure 1B). On average, CEOs spend 42% of their time with insiders only, 25% with both insiders and outsiders and 16% with outsiders alone. Second, time spent with insiders is evenly spread across different operational areas (Table 2B). Among the top five categories of insiders -ranked by total time spent, the ratio between the highest (finance: 8.6 hours) and the lowest (human resources: 5.5 hours) is 1.4. In contrast, consultants dominate among outsiders. Looking again at the top five categories by time spent, the ratio between the highest (consultants: 4.7 hours) and the lowest (suppliers: 1.3 hours) is 3.9. Third, most of the variation between insiders is on the intensive margin: at least 70% of our sample CEOs spends at least 15 minutes per week with each of the top five categories of insiders. In contrast, time spent with different categories of outsiders exhibit considerable variation on the extensive margin.

More interestingly, we note that the average values hide a considerable amount of variation. Figure 2 shows the histograms of total diary-recorded hours, and hours spent with insiders and outsiders. There is considerable variation in hours worked: the CEO at the 90th percentile works 20 hours longer than the CEO at the 10th percentile (47 vs 27). The differences in hours spent with various participants are even starker. The CEO at the 90th percentile devotes 35 weekly hours to activities where there is at least one insider, whereas the corresponding figure is 14 hours for the CEO at the 10th percentile. The CEO at the 90th percentile devotes 11 weekly hours meeting alone with outsiders, whereas the CEO at the 10th percentile spends no time at all with outsiders alone.

To test whether these differences are systematic rather than the outcome of random variation across CEOs or purely driven by firm characteristics, we estimate the time spent with at least one insider at the most disaggregated level of observation in our data - *the*

*activity level* - conditional on firm size, industry dummies and CEO fixed effects. We observed a total of 2612 activities in the sample and on average, CEOs engage in 27 activities over the observation week. We reject the null hypothesis of no systematic difference, namely that the CEO fixed effects are jointly equal to zero, at the 1% level. The estimated fixed effects, reported in Figure A2 with their 95% confidence interval, illustrate that conditional on firm size and industry, CEOs exhibit different patterns of time use.

## 4 A Model of CEO Time Allocation

The goal of this section is to develop a minimalistic model of managerial time allocation to illustrate how the interpretation of differences in time allocation among different CEOs depends on the extent to which the CEO's and the firm's interests are aligned. We will show that when these are perfectly aligned, time allocation is entirely determined by the firm's objectives, whereas when they are not, time allocation reflects difference in governance. In this case the model will produce a set of testable correlations that can be tested with our data. The points we make would still hold in a more general model, but – in the interest of space and readability – we prefer to illustrate them in the simplest possible linear quadratic formulation.

The section ends by dealing with the connection between desired time allocation, which is the activity time distribution predicted by the model, and observed time allocation, which is the particular realization of the theoretical time distribution that we observe in our CEO diaries.

### 4.1 Definitions

The CEO faces  $n$  activities and allocates non-negative time vector  $(x_1, \dots, x_I)$  to the activities.

The firm's production function is

$$Y = \sum_{i=1}^n \alpha_i x_i$$

The vector  $\alpha$  describes the value of the top manager's time in all possible activities and it is determined by the firm technology and environment.

The CEO can also produce some personal rent (e.g. networking), with production function

$$R = \sum_{i=1}^n \rho_i x_i$$

The vector  $\rho$  depends on characteristics of the CEO and the institutional and economic environment he operates in.

The total cost of time for the CEO is

$$C = \frac{1}{2} \sum_{i=1}^n x_i^2.$$

There is an increasing marginal cost in devoting time to one particular activity, due either to the onset of boredom or to a lower time-efficiency (for instance, take the time devoted to having lunch with clients; the time spent to meet one client equals one hour for the meal plus transportation time; the CEO first meets the clients who are willing to come to the firm or those who work nearby; then he has to spend more time traveling if he wants to meet the ones in more distant locations).<sup>6</sup>

The CEO's payoff is

$$u = bY + (1 - b)R - C.$$

The parameter  $b$  captures the alignment between the firm's interests and the CEO's – implicit or explicit – incentive structure. If  $b = 1$ , the firm and the CEO have perfectly aligned interests. If  $b = 0$ , the CEO only pursues personal interest.

## 4.2 Perfect Governance

We begin by analyzing the benchmark case where the CEO's and the firm's interests are perfectly aligned. The CEO solves

$$\max_x \sum_{i=1}^n \alpha_i x_i - \frac{1}{2} \sum_{i=1}^n x_i^2$$

and the solution is:

**Proposition 1** *In the perfect-alignment case ( $b = 1$ ), the CEO devotes time to activities in proportion to the relative value of the activities to the firm. Namely, given activities  $i$  and  $j$ , the equilibrium allocation of time on the two activities ( $\hat{x}_i$  and  $\hat{x}_j$ ) satisfies:*

$$\frac{\hat{x}_i}{\hat{x}_j} = \frac{\alpha_i}{\alpha_j}.$$

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<sup>6</sup>This formulation is equivalent to one where the production function is logarithmic

$$\begin{aligned} Y &= \sum_{i=1}^n \alpha_i \log x_i \\ R &= \sum_{i=1}^n \rho_i \log x_i \end{aligned}$$

and the cost function is linear

$$C = \sum_{i=1}^n x_i.$$

The proposition makes clear that when the CEO's interest is perfectly aligned with the firm's, observing data on time allocation allows us to back out the relative importance of the different activities in the eyes of the firm.

### 4.3 Imperfect Governance

When  $b \in (0, 1)$ , the CEO pursues both the firm's interest and her own. The solution to the CEO's maximization problem no longer implies that time is allocated according to the firm's needs. Given two activities  $i$  and  $j$ , we have:

$$\frac{\hat{x}_i}{\hat{x}_j} = \frac{b\alpha_i + (1 - b)\rho_i}{b\alpha_j + (1 - b)\rho_j}.$$

To put some structure on the problem, assume that activities can be grouped into two sets:  $I_Y$  and  $I_R$ . The first set contains activities that benefits the firm but not the CEO ( $\alpha_i > 0$  and  $\rho_i = 0$ ), while the second one contains activities that are only beneficial to the CEO ( $\alpha_i = 0$  and  $\rho_i > 0$ ).

There is a distribution of firms that are identical except for the quality of governance, so that  $b$  is a random variable with support  $(0, 1)$ .

We assume that the benefit to the firm of productive time is greater in monetary terms than the benefit to the CEO of networking time, namely

$$\sum_{k \in I_Y} \alpha_k > \sum_{k \in I_R} \rho_k$$

This is a weak condition; its violation would imply that the CEO job exists mainly for the benefit of the job holder.

If we observe a distribution of realized time allocations (a vector  $\hat{x}$  for each firm), we can state

**Proposition 2** *In equilibrium, the cross-sectional correlation between the time  $\hat{x}_i$  that the CEO devotes to a particular activity and the total time the CEO spends at work is positive if and only if the activity benefits the firm:*

$$\text{Corr} \left( \sum_{k=1}^n \hat{x}_k, \hat{x}_i \right) > 0 \iff i \in I_Y$$

**Proof.** Recall that the equilibrium allocation is given by  $\hat{x}_i = b\alpha_i + (1 - b)\rho_i$ . The covariance – whose sign is the same as the correlation – is

$$\text{Cov} \left( \sum_{k=1}^n \hat{x}_k, \hat{x}_i \right) = \text{Cov} \left( \sum_{k=1}^n (b\alpha_k + (1 - b)\rho_k), b\alpha_i + (1 - b)\rho_i \right)$$

$$\begin{aligned}
&= \text{Var}(b) \left( \alpha_i \sum_{k=1}^n \alpha_k - \rho_i \sum_{k=1}^n \alpha_k - \alpha_i \sum_{k=1}^n \rho_k + \rho_i \sum_{k=1}^n \rho_k \right) \\
&= \text{Var}(b) (\alpha_i - \rho_i) \left( \sum_{k=1}^n \alpha_k - \sum_{k=1}^n \rho_k \right)
\end{aligned}$$

which is positive if and only if  $\alpha_i > \rho_i$ , which in turn is true if and only if  $i$  is an activity that benefits the firm. ■

Second, suppose we have a, possibly noisy, measure of governance. Let

$$\hat{b} = b + \varepsilon,$$

where  $\hat{b}$  is the governance proxy and  $\varepsilon$  is an i.i.d. noise term. Note that  $\hat{b}$  could be a poor proxy, in the sense that the variance of  $\varepsilon$  can be very high.

We have:

**Proposition 3** *The governance measure  $\hat{b}$  is positively correlated with time spent on an activity if and only if that activity benefits the firm.*

$$\text{Cov}(\hat{b}, \hat{x}_i) > 0 \iff i \in I_Y;$$

**Proof.** We have

$$\text{Cov}(\hat{b}, \hat{x}_i) = \text{Cov}(b + \varepsilon, b\alpha_i + (1 - b)\rho_i) = \text{Var}(b)(\alpha_i - \rho_i),$$

whose sign depends – once more – on whether  $i$  is a productive activity. ■

Finally, we can relate time allocation to firm productivity  $Y$ .

**Proposition 4** *In equilibrium, the cross-sectional correlation between the time  $\hat{x}_i$  that the CEO devotes to an activity  $i$  and firm's productivity  $\hat{Y}$  is positive if and only if activity  $i$  benefits the firm. Namely*

$$\text{Corr}(\hat{Y}, \hat{x}_i) > 0 \iff i \in I_Y;$$

**Proof.** Recall that

$$Y = \sum_{k=1}^n \alpha_k \hat{x}_k = \sum_{k \in I_Y} \alpha_k \hat{x}_k$$

We have

$$\begin{aligned}
\text{Cov}(\hat{Y}, \hat{x}_i) &= \text{Cov}\left(\sum_{k \in I_Y} \alpha_k (b\alpha_k + (1 - b)\rho_k), b\alpha_i + (1 - b)\rho_i\right) \\
&= \text{Cov}\left(\sum_{k \in I_Y} b\alpha_k^2, b\alpha_i + (1 - b)\rho_i\right)
\end{aligned}$$

$$\begin{aligned}
&= \text{Var}(b) \left( \alpha_i \sum_{k=1}^n \alpha_k^2 - \rho_i \sum_{k=1}^n \alpha_k^2 \right) \\
&= \text{Var}(b) (\alpha_i - \rho_i) \sum_{k=1}^n \alpha_k^2,
\end{aligned}$$

which – again – is positive if and only  $i$  is benefits the firm. ■

If we do not know a priori which activities are more beneficial to the firm and which activities are more beneficial to the CEOs, the three propositions offer three distinct ways of using time allocation information to distinguish between these. In the empirical application we use this framework to shed light on whether time with insiders and outsiders can be divided along these lines.

## 5 Evidence on CEOs' Time Use

Guided by the theoretical framework we now explore the correlation between the time use of the CEO and three sets of variables: (i) CEOs' effort, (ii) firm governance and (iii) firm performance. It is key to stress that our analysis only uncovers equilibrium correlations, that is the nature of the data does not allow us to establish causal links. The analysis will however shed light on the set of assumptions under which the evidence can be made consistent with the two views of the world -perfect vs imperfect governance- formalized by the theoretical framework. We will discuss these assumptions in details at the end of this section.

### 5.1 CEOs' Time Use and Hours Worked

The descriptive evidence in Figure 2 indicates that CEOs differ considerably both in the amount of time they work and in how they allocate this across different categories of people. Our first test aims at assessing whether effort -measured by hours worked- and time use are correlated. Namely do CEOs who work longer hours have a systematically different pattern of time allocation between insiders and outsiders?

Throughout we focus on the distinction between time spent with at least one insider- with or without outsiders- and time spent with outsiders alone. This follows from the reasonable assumption that if the CEO devotes some of his time to activities that only carry private benefits, he is more likely to do so when no other firm employee is present.

Table 3 estimates the correlations between hours worked and time allocated to insiders and outsiders alone. Throughout we control for firm size, whether the firm is listed and industry dummies, as the time CEOs must devote to outsiders is likely to be determined by these. Panel A shows that there is a significant correlation between the total time the CEO spends at work and how he allocates this between different categories of people. In particular,

hours devoted to insiders increase in proportion to hours worked, whereas hours spent with outsiders alone are negatively correlated with total hours worked. The table reports the p-value of the test of the null hypothesis that the coefficient is equal to one- namely that hours with insiders (outsiders) increase in direct proportion to the hours worked. We find that the coefficient in the regression of the logarithm of hours spent with insiders on the logarithm of total hours is not statistically different from one, whereas the coefficient in the corresponding regression for hours spent with outsiders only is negative, and significantly different from one.

Panel B shows that the negative correlation between hours worked and hours spent with outsiders alone is driven exclusively by the fact that CEOs who work longer hours devote fewer hours to one-to-one meetings with outsiders alone. Columns 3 to 6 divide the time spent with insiders and outsiders into time spent with one or more categories of each. For instance, a meeting with investors would fall under the "one category of outsiders" heading, whereas a meeting with investors and consultants would fall under the "more than one category of outsiders" heading. Columns 3 and 4 show that the correlation between hours worked and time spent with insiders does not depend on whether these belong to one or more categories. In contrast, Columns 5 and 6 show that CEOs who work longer hours spend fewer hours in meetings alone with one type of outsiders only. The correlation with hours spent with more than one category of outsiders is positive but significantly less than one.

Panel C divides the time spent with insiders and outsiders according to the number of people participating in the activity. In line with the findings above, Columns 7 and 8 show that the correlation between hours worked and time spent with insiders does not depend on the number of insiders present. In contrast, Column 9 shows that CEOs who work longer hours spend fewer hours in meetings with one or two outsiders and nobody else.

## 5.2 CEO's Time Use and Governance

Findings so far indicate that CEOs who work longer hours devote more time to insiders and less time- in absolute terms- to meeting outsiders alone, especially in one-to-one meetings. To the extent that CEOs whose firms have better governance work harder, this is consistent with the interpretation that observed variation in time allocation reflect differences in governance. We can test this relationship directly, by analyzing the correlation between time use and five independent proxies of "governance quality". These proxies rely on the intuition that the CEO's ability to pursue activities that only produce private benefits, depends on the strength and effective functioning of the firm board and its ability and willingness to monitor CEO's actions, as well as on the economic cost the CEO pays if the firm underperforms.

In this framework, governance quality is both the reflection of economic incentives and the board's ability to monitor the CEO. Since misalignment between the firm and the CEO

objectives is not directly observable, we proxy quality of governance using five external firm level indicators. First we use an indicator of whether the firm is a multinational. Intuitively, because of the stronger competitive pressure that multinationals face, they need keep CEOs focused on firm productivity to keep their competitive advantage. In line with this Bloom and Van Reenen (2010) and Bandiera et. al (2010) show that multinational firms are more likely to be well managed and to offer steep performance incentives to their executives. Hence we would expect that CEOs of multinational firms incur a higher cost if they divert time from productive to unproductive uses. In line with this idea, we find that CEOs who work for multinationals spend more time with insiders and less time with outsiders alone. In particular, Columns 1 and 2 in Table 4 show that CEOs who work for foreign multinationals spend 54% more time with insiders and 55% less with outsiders alone. Both coefficients are precisely estimated at conventional levels. Time allocation in Italian multinationals is similar and we cannot reject the null that the coefficients are equal.

The next set of indicators proxies for the power of firm owners vis a vis the CEO. The second indicator measures whether the firm is owned by a family, and if so, whether the CEO is external to the family or one of its members. This distinction is key because it raises different governance issues. Compared to disperse shareholders, family owners face fewer difficulties in monitoring the CEOs they hire to run their firms, for instance because coordination among owners is much easier when owners are few. When the CEO belongs to the family, however, there is no separation of ownership and control and hence no governance issues as such but family CEOs in family firms might pursue objectives other than profit maximization (Bandiera et al 2010) and the implication of these for time allocation is not captured by our simple framework. Columns 3 and 4 in Table 4 show that external CEOs who work for family firms spend 32% more time with insiders and 27% less time with outsiders alone, but only the former is estimated precisely. This is in line with the intuition that, compared to disperse shareholders, family owners can keep a tighter control on their CEOs. Family CEOs, in contrast, do not appear to behave differently than CEOs in non family firms.

The third indicator is the size of the board. Large boards have long been suspected of being dysfunctional and to provide too little criticism of management performance, thus granting CEOs more discretion which can be abused (e.g. Lipton and Lorsch, 1992). Jensen (1993), subscribing to this criticism argues that "when boards get beyond seven or eight people they are less likely to function effectively and are easier for the CEO to control". In addition, plethoric boards can be just the reflection of attempts to bring in friends and transfer them shareholders money through board members compensation. Consistent with this view there is some evidence that larger boards reduce the value of the firm (e.g.

Yermack, 1996). In line with this, Columns 7 and 8 show that CEOs with larger boards spend less time with insiders and more time with outsiders alone. A 1% increase in board size (1.3 people in our sample), reduces the time spent with insiders by .24% while it increases the time spent with outsiders alone by .47%.

A better measure of constraints on the CEO is the independence of board members. We have no direct information on the nature of the directors. But we observe some of their characteristics, including gender. As a fourth proxy for quality of governance we use an indicator for whether there is at least a woman in the board. There is evidence that the presence of women improves the quality of governance. For instance, Adams and Ferreira (2009) find that boards with more women tend to be tougher with the CEO, to raise board attendance and to monitor more. One rational is that women have higher standards of morality and a higher sense of their duty as documented in experimental and survey based studies which show that women are more likely to stick to the rules, less likely to break agreed legal or moral norms (e.g. Guiso et. al (2003) ) and are less self-oriented than men (for instance Eagly and Crowley (1986); Eckel and Grossman (1998); Reiss and Mitra (1998); Butler et. al. (2010)). Because of this they are more willing to voice in the board meetings against a shirking CEO, thus providing more monitoring and control. Throughout the analysis, we distinguish between executive and non executive roles, since we expect this effect to be stronger when women assume executive roles. The findings in columns 9 and 10 indicate that CEOs spend 17% more time with insiders and 27% less with outsiders alone, respectively when at least one woman on the board has an executive role. As expected, the correlations have a similar sign but are smaller in magnitude and not precisely estimated when we look at the presence of women with non executive roles.

As a final and more direct measure of governance quality and restraints on the managers we use the country-level indicator of private benefits of control computed by Dyck and Zingales (2004) on the basis of block control transactions in 39 countries. We attach this measure of quality of governance to multinational firms in our sample on the basis of their country of origin and rely on within variation among multinational firms operating in Italy. Compared to the others, the main advantages of this measure are its direct interpretability in terms of access to private benefit and its exogeneity. It comes at the cost that we can only rely on a subset of observations. The findings in columns 11 and 12, table 4, indicate that CEOs who work for multinationals based in countries with good governance spend more time with insiders and less with outsiders alone. A one standard deviation increase in the index, indicating a worsening of governance, decreases hours spent with insiders by 13% and increases hours spent with outsiders alone by 45%.

Taken together, the findings in Table 4 provide a consistent picture. Whenever the CEO

and the firm interest are better aligned - either because of stronger market competition, better monitoring, more powerful boards- CEOs spend more time with insiders and less time with outsiders alone. This, as the findings in the previous section, suggests that the evidence is consistent with the assumption that time with outsiders alone yields more private benefits than time with insiders, and that differences in time allocation reflect differences in governance. The next section looks at whether differences in time allocation have any implication for firm performance.

### 5.3 CEOs' Time Use and Firm Performance

For our next test we match the time use data with external measures of firm performance from the Amadeus database. Following the theory, we test whether the time the CEO spends with different categories of people is correlated with firm performance. As illustrated by the model in Section 3, all hours devoted to productive activities should be positively correlated with firm performance, namely the CEOs' time is an input in the production function. If, on the other hand, the CEO spends time on activities that benefit him but not the firm, the time dedicated to these activities should not be correlated to firm performance.

Table 5 estimates the conditional correlation between firm performance and CEOs' time use controlling for firm size and industry dummies. Our main measure of performance is productivity, measured as the value of sales over employees, which is available for 80 of our 94 sample firms. Firms in the finance sector are excluded from this exercise because sales/employees is not a comparable measure of productivity in this sector.

Column 1 shows a strong positive correlation between hours worked and productivity. The coefficient is precisely estimated and implies that a one percentage point increase in CEOs' working hours is associated with a 2.14 percentage point increase in productivity. Column 2 shows that this correlation is entirely driven by the hours the CEOs spend with at least one other employee of the firm. A one percentage point increase in hours spent with at least one insider is associated with a 1.23 percentage points increase in productivity. In contrast, hours spent working alone and, most interestingly, hours spent with outsiders alone are not correlated with productivity. The coefficient is precisely estimated but small and not significantly different from zero. The test of equality of coefficients between hours with at least one insiders and hours with outsiders alone rejects the null at the 1% level.

Columns 3 to 5 address measurement error issues. In particular, given that the CEO generally meets insiders at the firm's HQ, while he might meet outsiders in other locations, the results could be driven by measurement error if the time spent with outsiders comprises unproductive travel or setting-up time. Alternatively, the PA might have more precise information on the hours dedicated to a given activity if this takes place in the CEO's office,

which is presumably close to hers, rather than on activities that take place away from the firm. To allay this concern, Column 3 splits the hours spent with outsiders alone according to location. If this were driving the results, we would expect the time spent with outsiders at HQ to be positively correlated with firm productivity. The results indicate that however this is not the case. The coefficient on hours spent with outsiders is small, precisely estimated and not significantly different from zero regardless of where the activity takes place.

A related concern is that the PA might have more precise information about the duration of activities with insiders and hence measurement error would again introduce a downward bias on the coefficient on time with outsiders alone. To allay this concern we use information on whether the activity was scheduled in advance and recorded in the CEO's diary. Intuitively, activities that are planned in advance and already recorded should be measured more precisely. Columns 4 and 5 show that this form of measurement error was not driving the results either. The coefficient of hours spent with outsiders is small, precisely estimated and not significantly different from zero regardless of whether the activity was planned in advance. In contrast, the coefficient on hours spent with at least one insider is positive and significantly different from zero regardless of whether the activity was planned in advance. Column 5 probes the robustness of the results to the inclusion of other inputs, namely capital and materials.

While the pattern of time use is correlated with productivity, it might also be correlated with other unobservables- most notably the CEOs pay- so to leave the firm owners indifferent between having a hard working CEO who spends long hours with insiders and a CEO who works fewer hours and spends more time with outsiders alone. To assess the empirical relevance of this interpretation, Column 6 presents the conditional correlation between firms profits per employee and time use. The results show that time spent with at least one insider is positively correlated with profits, whereas time spent with outsiders is not.

A possible further concern is that the impact of time allocation choices might reveal itself over a longer time period. For example, networking activities might need a longer time frame to bear their positive impact on firm performance. To test this idea we consider as a dependent variable the growth rate of sales over a three year period. The results do not support the idea that time spent with outsiders might have a positive long run impact. In fact, although the coefficients are not precisely estimated, Column 7 shows that time spent with outsiders is negatively correlated with sales growth, while time spent with insiders shows a positive correlation.

## 5.4 Discussion and Conclusions

The analysis above has illustrated a rich set of correlations between the CEOs' pattern of time use, his effort, governance proxies and the performance of the firm he leads. In particular we find that CEOs who work longer hours spend more time in activities that involve at least one insider and less time in activities where the CEO meets outsiders alone. CEOs who work for firms with stronger governance also spend more time in activities that involve at least one insider and less time in activities where the CEO meets outsiders alone. Finally, time spent with insiders is positively correlated with productivity and profits, whereas time spent with outsiders alone is not.

As illustrated in the theoretical framework, variations in time use can either be seen as optimal responses to different circumstances faced by different firms if the CEO's and the firm's interests are perfectly aligned ( $b = 1$ ) or as consequences of differences in the quality of governance. We now make precise the conditions under which the findings can be reconciled with either the perfect and the imperfect governance view. It is important to stress that our data does not allow us to implement a formal test of the two models, but the rich set of correlations we uncover allows us to pin down the set of assumptions needed to reconcile the findings with either view. We leave it to the reader to assess which is more plausible.

In the perfect governance view, where the CEO's and the firm's interests are perfectly aligned, the observed correlations must be due to shocks that affect the pattern of time use, total hours worked, firm performance and firm characteristics as follows. First, shocks that increase the marginal return to CEO's effort- so that CEOs work longer hours, also increase the marginal product of time with at least one insider and at the same time decrease the marginal product of time alone with outsiders, especially so for time alone in one-to-one meetings. Second, shocks that increase the firm's productivity, also increase the marginal product of time with at least one insider and leave the marginal product of time alone with outsiders constant. Third, this type of shocks are more likely to hit multinationals, family firms with external CEOs, firms with small boards, firms with women covering executive roles on the board, and firms from countries with a good governance record.

In the imperfect governance view, the observed variation in time use can derive from differences in governance that determine the extent to which the CEOs' interests are aligned with the firm. If we take this view, the findings indicate that time spent with insiders contributes to the firm's output while time spent *alone* with outsiders only benefits the CEO. Moreover, CEOs hired by firms with better governance work longer hours and devote more time to activities that benefit the firm and less time to activities that mostly carry private benefits.

We leave it to the reader to assess which of the two interpretations is more plausible. In

either case, our analysis suggests that CEO time use data are a useful tool to shed light on constraints and objectives of firms and of their executives.

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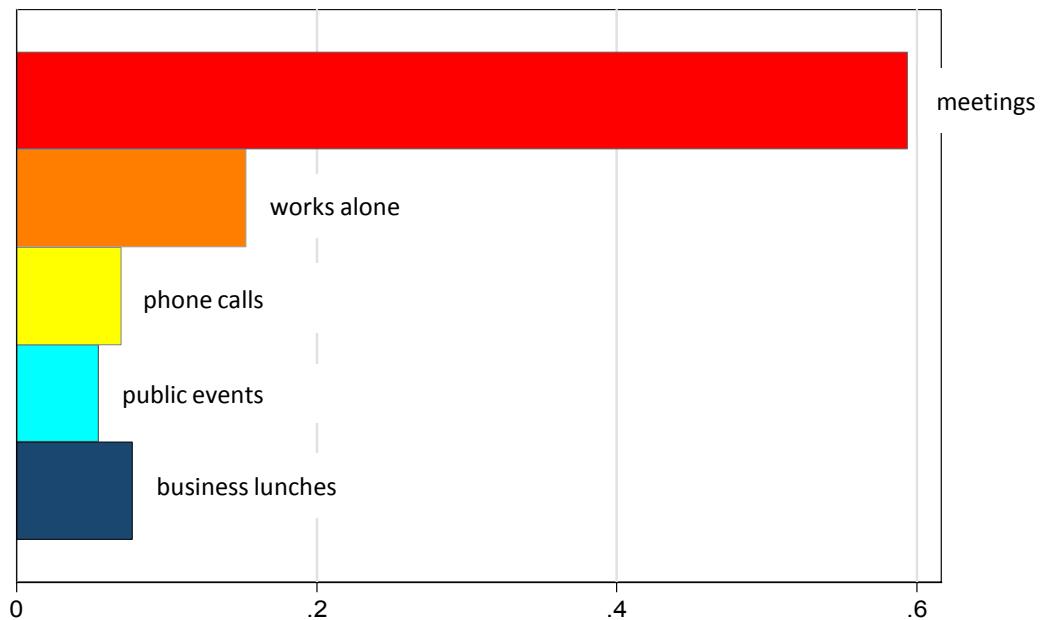
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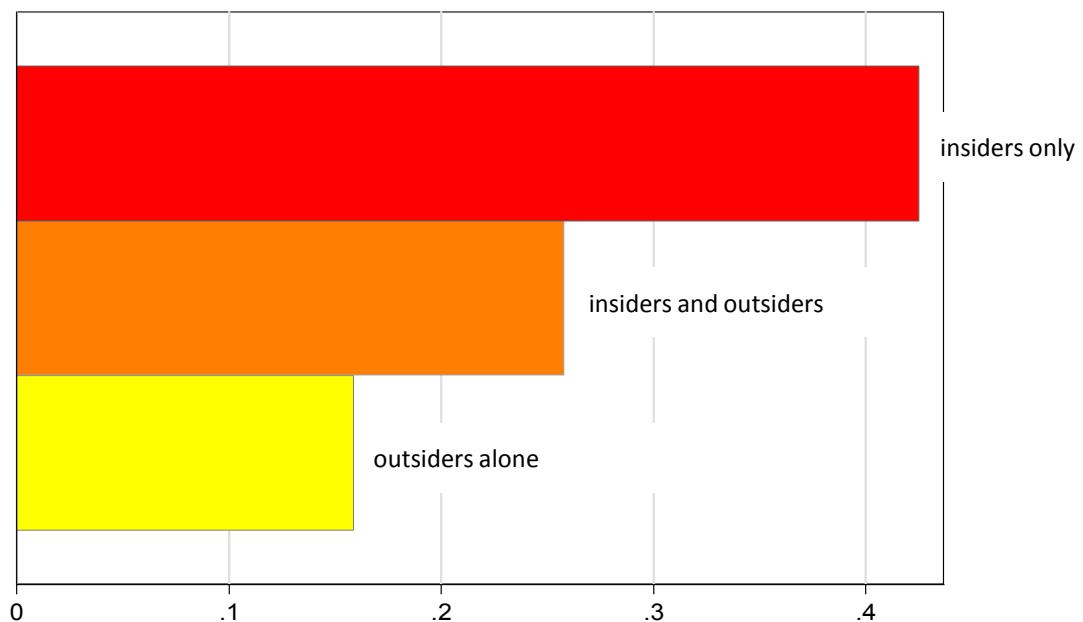
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## **FIGURE 1: CEO's Time Use**

### 1.A Share of time devoted to different activities

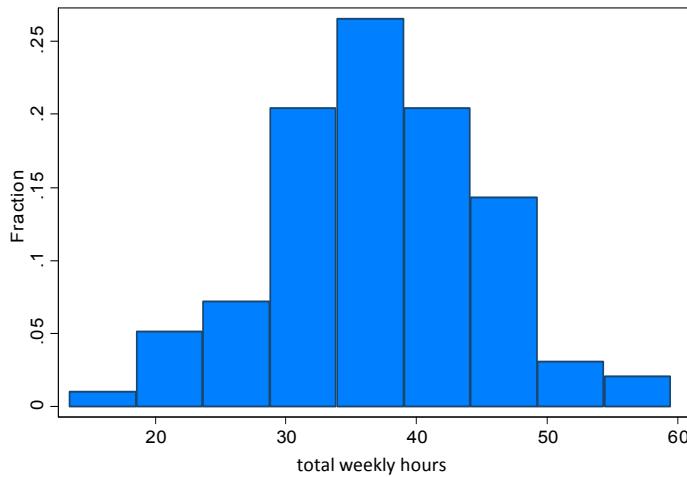


### 1B. Share of time spent with different categories of people

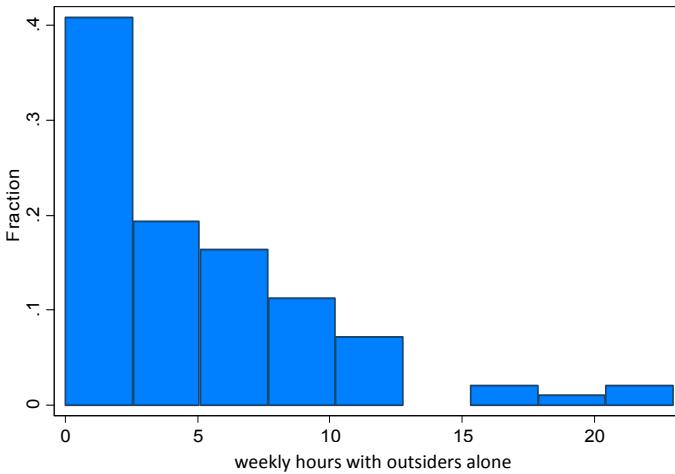


**FIGURE 2: CEO's Time Use**

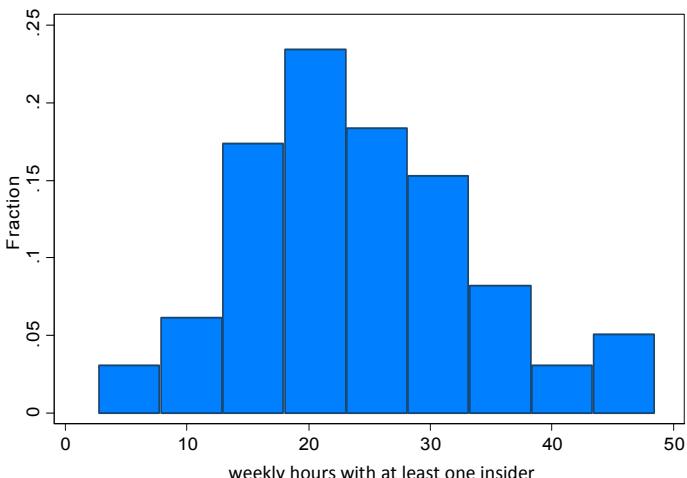
2A. Hours Worked



2B. Hours spent with outsiders alone



2C. Hours spent with at least one insider



Note: Weekly hours are computed as the sum of time spent in all activities longer than fifteen minutes. Weekly hours with outsiders alone is the sum of time spent in all activities where the CEO was alone with outsiders for longer than fifteen minutes. Weekly hours with outsiders alone is the sum of time spent in all activities where the CEO was with at

**Table 1 Sample Descriptives**

	Mean	Median	Std. Dev.	Obs
Size (Number of Employees)	8330	1244	30014	94
Productivity (Sales/Employees X1000 USD)	4234	600	13664	80
Sector: (%)				98
<i>Manufacturing</i>	39.4			
<i>Services</i>	13.8			
<i>Finance, Insurance, Real Estate</i>	14.9			
<i>Transportation and Communication</i>	12.8			
<i>Wholesale and Retail</i>	8.5			
<i>Mining</i>	3.2			
<i>Construction</i>	4.2			
Ownership (%)				94
<i>Widely Held</i>	37.2			
<i>Family</i>	22.3			
<i>State</i>	18.1			
<i>Other</i>	13.3			
Nationality (%)				98
<i>Domestic</i>	29.9			
<i>Italian MNE</i>	36.1			
<i>Foreign MNE</i>	34			
Firm is listed	0.19			94
Board size	13.1	10	8.1	91
At least one woman on the board in an executive role	0.56			91
At least one woman on the board in a non executive role	0.68			91
Private benefit index	0.023	0.038	0.049	30

**Data Sources and Variable Definitions:** Data on firm size, productivity and sector are drawn from AMADEUS. Productivity is not available for firms in the financial sector. Ownership and multinational status has been obtained through manual search. Board data is drawn from the Infocamere dataset. Accounting, ownership and board information are relative to 2007. The private benefit index is measured (only for non Italian multinationals) at the country of origin level and it is drawn from Dyck and Zingales (2004), Table V, col 2.

**TABLE 2: CEOs' Time Use**

	Average	Share of CEOs with hrs>0
Total Hours	47.7 (9.98)	
Total Hours Recorded	36.94 (8.33)	
Working alone	5.66 (4.65)	.91
With at least one insider	24.2 (9.35)	1
With outsiders only	4.88 (4.83)	.84
<b>Insiders, Top 5 Categories:</b>		
Finance	8.69 (6.96)	.79
Marketing	8.32 (7.62)	.73
BU Directors	6.85 (7.18)	.71
Strategy	5.87 (5.97)	.69
Human Resources	5.47 (5.86)	.74
<b>Outsiders, Top 5 Categories</b>		
Clients	2.59 (4.03)	.40
Suppliers	1.27 (2.19)	.34
Investors	1.74 (3.05)	.33
Consultants	4.70 (4.82)	.67
Banks	1.38 (2.68)	.30

**Data Sources and Variable Definitions:** All variables are drawn from the time use survey. Total hours include all activities, including those shorter than 15 minutes and travel. Total hours recorded only contains activities that are longer than 15 minutes and does not include travel. The first column reports average hours spent by the sample CEOs over the relevation week with each of the listed categories in activities longer than 15 minutes. The second column reports the share of CEOs that spend at least 15 minutes with each of the listed categories.

**TABLE 3. CEOs' Time Use and Hours Worked****Panel A - Insiders and Outsiders**

	1	2
log(total hours) spent:	with at least one insider	with outsiders only
log (total hours)	1.179*** (0.147)	-0.693** (0.337)
H0: log(total hours)=1	.23	.00
Adjusted R-squared	0.473	0.207
Controls	size, listed	size, listed
Industry Dummies	yes	yes
Observations	94	94

**Panel B - Insiders and Outsiders, by number of categories involved**

	3	4	5	6
log(total hours) spent:	with one category of insiders	with more than one category of insiders	with one category of outsiders	with more than one category of outsiders
log (total hours)	0.909*** (0.260)	1.082** (0.448)	-0.926*** (0.317)	0.381* (0.223)
log (number of employees)	0.024 (0.038)	0.028 (0.054)	-0.053 (0.046)	0.029 (0.027)
listed firm (=1 if yes)	-0.164 (0.255)	-0.631** (0.287)	0.906*** (0.214)	0.146 (0.202)
H0: log(total hours)=1	.73	.85	.00	.00
Adjusted R-squared	0.138	0.253	0.205	0.166
Controls	size, listed	size, listed	size, listed	size, listed
Industry Dummies	yes	yes	yes	yes
Observations	94	94	94	94

**Panel C - Insiders and Outsiders, by number of participants involved**

	7	8	9	10
log(total hours) spent:	with fewer than two participants and at least one insider	with more than two participants and at least one insider	with outsiders only and fewer than two participants	with outsiders only and more than two participants
log (total hours)	0.594* (0.303)	1.387*** (0.224)	-0.789*** (0.276)	-0.075 (0.365)
log (number of employees)	-0.010 (0.040)	0.027 (0.032)	-0.040 (0.037)	-0.013 (0.039)
listed firm (=1 if yes)	-0.082 (0.201)	-0.182 (0.130)	0.566** (0.251)	0.640** (0.248)
H0: log(total hours)=1	.18	.08	.00	.00
Adjusted R-squared	0.136	0.422	0.168	0.142
Controls	size, listed	size, listed	size, listed	size, listed
Industry Dummies	yes	yes	yes	yes
Observations	94	94	94	94

**Notes:** \*, \*\*, \*\*\* indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS Estimates, robust standard errors in parentheses. All regressions include industry dummies, the logarithm of the number of employees and a dummy equal to 1 if the firm is listed.

**TABLE 4. CEOs' Time Use and Governance**

dependent variable is log(total hours) spent with:	1 with at least one insider	2 outsiders only	3 at least one insider	4 outsiders only	5 at least one insider	6 outsiders only	7 at least one insider	8 outsiders only	9 at least one insider	10 outsiders only	11 at least one insider	12 outsiders only
Foreign MNE	0.428*** (0.123)	-0.594** (0.257)			0.438*** (0.125)	-0.612** (0.260)						
Domestic MNE	0.288** (0.122)	-0.233 (0.227)			0.217* (0.124)	-0.122 (0.233)						
Family owned- External CEO		0.277** (0.125)	-0.337 (0.293)	0.313** (0.135)	-0.486 (0.301)							
Family owned- Family CEO		-0.115 (0.106)	0.135 (0.272)	-0.072 (0.118)	0.046 (0.288)							
Log (board size)						-0.243* (0.135)	0.474** (0.230)					
At least one woman on the board in an executive role								0.165* (0.096)	-0.328* (0.190)			
At least one woman on the board in a non executive role								0.032 (0.108)	-0.250 (0.241)			
Private benefit index										-2.605* (1.152)	9.095* (4.266)	
Industry Dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Firm Size	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Firm Listed	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.199	0.230	0.115	0.190	0.243	0.253	0.128	0.218	0.103	0.206	0.291	0.299
Observations	94	94	94	94	94	94	88	88	88	88	30	30

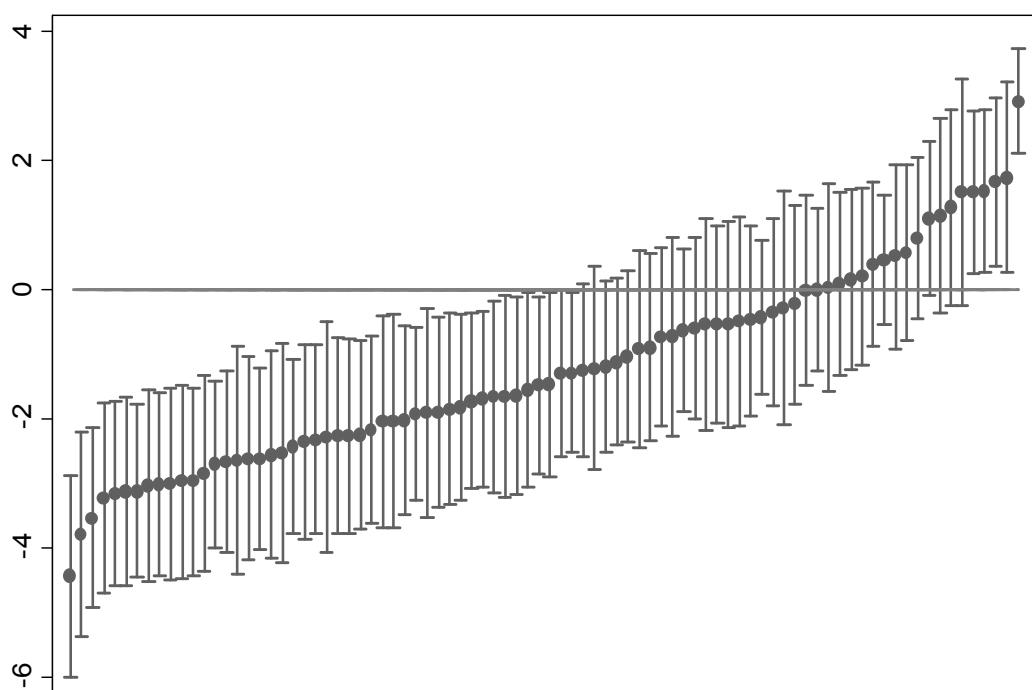
**Notes:** \*, \*\*, \*\*\* indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS Estimates, robust standard errors in parentheses. All regressions include industry dummies, the logarithm of employees and a dummy equal to 1 if the firm is listed. Sample size in columns 7-10 falls due to missing values of the board variables. The private benefit index is the country-level indicator of private benefits of control computed by Compton et al. (2004) on the basis of block control transactions in 39 countries., which we match to the country of origin of the foreign multinationals in our sample. Consequently, the sample in columns 11-14 is restricted to foreign multinationals.

Table 5: CEOs' Time Use and Firm Performance

	(1)	(2)	(2)	(3)	(4)	(5)	(7)	(8)
dependent variable:	Log(productivity)	Log(productivity)	Log(productivity)	Log(productivity)	Log(productivity)	Log(productivity)	Profits/Employees	Sales growth rate
Log total hours	2.145*** (0.611)							
Log total hours with at least one insider		1.229*** (0.431)	1.274*** (0.413)	1.223*** (0.418)		0.740** (0.319)	72.340* (41.758)	0.071 (0.077)
Log total hours with outsiders only		0.227 (0.249)				0.072 (0.189)	31.758 (21.187)	-0.016 (0.061)
Log total hours working alone		0.258 (0.162)	0.278 (0.168)	0.284* (0.161)	0.237 (0.157)	0.166 (0.152)	3.619 (13.439)	0.005 (0.046)
Log total hours with outsiders at headquarters		0.326 (0.294)						
Log total hours with outsiders outside		0.114 (0.152)						
Log total hours with outsiders planned in advance				0.210 (0.215)	0.205 (0.204)			
Log total hours with outsiders unplanned				-0.196 (0.342)	-0.219 (0.347)			
Log total hours with insiders planned in advance					0.857*** (0.323)			
Log total hours with insiders unplanned					0.340* (0.186)			
<b>H0: hours with insiders=hours with outsiders</b>	<b>.000</b>					<b>.006</b>	<b>.184</b>	<b>.244</b>
H0: hours with outsiders at HQ=hours with outsiders outside			<b>.421</b>					
H0: hours with insiders planned=hours with insiders unplanned					<b>.131</b>			
H0: hours with outsiders planned=hours with outsiders unplanned				<b>.288</b>	<b>.247</b>			
Industry Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Controls	size , listed	size , listed, log (capital), log(materials)	size , listed	size , listed				
Adjusted R-squared	0.480	0.476	0.491	0.483	0.478	0.526	0.476	0.111
Observations	80	80	80	80	80	78	76	66

Notes: \*, \*\*, \*\*\* indicate that the coefficient is significantly different from zero at the 10%, 5%, 1% level, respectively. OLS Estimates, robust standard errors in parentheses. All regressions include industry dummies, the logarithm of the number of employees and a dummy equal to 1 if the firm is listed. Productivity is defined as sales/employees. Sales growth rate is computed as the logarithmic change over a three year period.

**Figure A1: CEO Fixed Effects with 95% Confidence Interval**



**Note:** Each dot represents the coefficient on each CEO dummy in a regression of  $\log(\text{time}$  with at least one insider) on firm size, industry dummies and CEO dummies at the activity level. The bars are the 95% confidence intervals.

**TABLE A1. Selection into the sample.**

dependent variable:	1	2	3	4	5
	Dummy=1 if firm is in sample				
log (number of employees)	0.020** (0.009)	0.026** (0.010)	0.026** (0.011)	0.022** (0.011)	0.030** (0.012)
Part of "Amici Fondazione De Benedetti" list (=1 if yes)	0.373*** (0.101)	0.251** (0.108)	0.250** (0.109)	0.271** (0.110)	0.443*** (0.132)
MNE firm (1=yes)	0.038 (0.038)	0.038 (0.038)	0.047 (0.038)	0.055 (0.040)	
listed firm (=1 if yes)	0.082 (0.075)	0.082 (0.076)	0.107 (0.079)	0.039 (0.083)	
Geographical Area: Islands	0.003 (0.112)	0.012 (0.124)	-0.004 (0.115)	0.161 (0.167)	
Geographical Area: North-East	0.010 (0.044)	0.010 (0.045)	0.009 (0.045)	0.041 (0.047)	
Geographical Area: North-West	0.057 (0.041)	0.057 (0.041)	0.060 (0.041)	0.053 (0.043)	
Geographical Area: South	-0.024 (0.063)	-0.032 (0.065)	-0.023 (0.062)	0.007 (0.076)	
Finance, Insurance	0.187*** (0.062)	0.190*** (0.063)	0.199*** (0.065)	0.171** (0.073)	
Manufacturing	0.029 (0.036)	0.030 (0.037)	0.030 (0.036)	0.012 (0.039)	
Mining	0.729*** (0.193)	0.725*** (0.192)	0.740*** (0.209)	0.349*** (0.134)	
Public Administration	0.637*** (0.116)	0.639*** (0.118)	0.602*** (0.119)	0.482*** (0.146)	
Retail Trade	-0.002 (0.077)	-0.002 (0.076)	-0.001 (0.078)	-0.008 (0.073)	
Services	0.289*** (0.092)	0.290*** (0.095)	0.284*** (0.093)	0.337*** (0.110)	
Transportation	0.005 (0.045)	0.005 (0.045)	0.018 (0.046)	-0.019 (0.049)	
log(sales)		0.050 (11.431)			
Profits/Employees (millions)				-0.041 (0.070)	
Sales Growth Rate (3 years)					-0.076 (0.054)
Constant	0.030 (0.054)	-0.111 (0.073)	-0.114 (0.160)	-0.091 (0.081)	-0.127 (0.085)
Adjusted R-squared	0.0614	0.1432	0.1429	0.1476	0.1847
Observations	535	523	521	515	422

Notes: \*, \*\*, \*\*\* indicated that the coefficient is significantly different from zero at the 10%, 5% and 1% level, respectively. OLS Estimates, robust standard errors in parentheses. The omitted category for geographical area is "Centre". The omitted category for sector is "construction".