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Oriana Bandiera, Andrea Prat
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Centre for Economic Policy Research
77 Bastwick Street, London EC1V 3PZ, UK
Tel: (44 20) 7183 8801
www.cepr.org

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MANAGING THE FAMILY FIRM: EVIDENCE FROM CEOS AT WORK[†]

Abstract

We develop a new survey instrument to codify CEOs' diaries in large samples and use it to measure the labor supply of 1,114 family and professional CEOs of manufacturing firms across six countries (Brazil, France, Germany, India, the United Kingdom and the United States). By this measure, family CEOs work 9% fewer hours relative to professional CEOs, even when we control for a wide range of CEO, firm and industry characteristics. The differences in hours worked between family and professional CEOs are larger when the opportunity cost of leisure is lower. We interpret these results as evidence of differences in preferences for leisure across CEOs rather than optimal responses to organizational differences correlated with ownership. Differences in labor supply are larger in countries where inheritance laws favor wealth concentration and are correlated with differences in firm performance.

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Oriana Bandiera o.bandiera@lse.ac.uk
London School of Economics and CEPR

Andrea Prat andrea.prat@columbia.edu
Columbia University and CEPR

Raffaella Sadun rsadun@hbs.edu
Harvard Business School and CEPR

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1 Introduction

The debate over the desirability of the separation between firm ownership and control is as old as the firm itself. Should firms be led by their owners or by professional managers? The argument in favor of owners is that they have more at stake. This is the standard prediction of the principal-agent model, as owners are residual claimants over the income generated by the business and hence are motivated to succeed, other things equal. The argument against is that, simply put, other things are not equal. In particular, firm owners are typically wealthier because they own the firm. Therefore, if leisure is a normal good,¹ they might demand more leisure than professional managers.² Given the ubiquity of family firms, understanding which of these effects prevails has important implications for aggregate income and growth (Caselli and Gennaioli 2013, La Porta et al 1999).

In this paper we provide evidence to inform the debate by measuring with unprecedented detail the labor supply of family and professional CEOs. We develop a new survey instrument to codify CEOs' diaries in large samples and use it to collect data on the time use of 1,114 CEOs of manufacturing firms across six countries: Brazil, France, Germany, India, the United Kingdom and the United States. To measure the CEOs' labor supply we reconstruct their time diaries via daily phone interviews over the course of one week. We ask respondents (the CEOs themselves or their personal assistants) to list sequentially all activities in their diaries longer than fifteen minutes and to report details of those activities. This allows us to build an accurate bottom-up estimate of how much time CEOs allocate to business activities. Our methodology is inspired by Mintzberg's (1973) celebrated analysis of the work week of five CEOs, extended to large random samples.³

We find that there is substantial variation in the number of hours CEOs devote to work activities: the average CEO in our sample spends 52 hours per week (10.4 hours per day) at work, while CEOs in the bottom quartile work on average 44.2 hours per week and those in the top quartile work on average 58.5 hours per week. To address our core question, we divide CEOs in two groups: "family" CEOs, who own the firm or belong to the family that owns the firm, and "professional" CEOs, who do not. We find a stark difference between these two groups: family CEOs, who account for 41% of our sample, record 6 fewer hours per week. The difference is driven by two factors: family CEOs

¹For example, Holtz-Eakin et al (1993) show that large inheritances reduce labor force participation and labor supply.

²The preferences for leisure might also arise endogenously. For example, Doepke and Zilibotti (2008) present a model of preference formation in which wealthy parents optimally transmit a strong taste for leisure to their offsprings.

³"Shadowing" exercises are common in the management literature but typically cover a handful of observations. To the best of our knowledge, the most extensive CEO time use study is still Mintzberg's (1973) seminal work, which comprises five CEOs. The largest observational dataset on top executives known to us – Kotter (1999) – includes 15 general managers. The largest time use study of managerial personnel we are aware of is Luthans (1988), which covers 44 mostly middle managers. Some surveys ask large numbers of CEOs general questions about their aggregate time use (e.g. McKinsey 2013), but they are not based on an analysis of their agendas for a specific time period. Compared to more commonly used recall methods, the time-diary method reduces the impact of recollection biases that have been shown to be relevant in other surveys (Robinson et al 2011). This notwithstanding, the diary method will also fail to capture some activities or still allow respondents to overestimate the time they devote to other activities, so that the hours of work recorded in our survey should be seen as a proxy of actual work hours. See Aguiar et al. (2012) for a comprehensive review of the growing literature in the economics of time use.

start work later in the day and are more likely to interrupt it to devote time to personal activities. In line with earlier work (Perez-Gonzalez 2006), in our sample family and professional CEOs have different education, experience and tenure. The firms they manage also differ, as family CEOs lead firms that are smaller, less likely to be part of a multinational organization, less likely to have a COO and with a smaller number of direct reports. In light of this evidence, differences in hours worked could be due to differences in the production technology or organization that make it optimal for family CEOs to work fewer hours. Alternatively, family CEOs may simply have a stronger taste for leisure.

We present a simple model of CEO labor supply that makes precise the conditions under which we can distinguish between the two hypotheses. The model illustrates that if family CEOs choose to work fewer hours because they put a higher weight on leisure relative to firm performance, the difference in hours worked between family and professional CEOs should decrease as the opportunity cost of leisure increases, or as the marginal cost of effort decreases. In contrast, if CEOs' work hours are an optimal response to technology or organization differences, the difference between family and professional CEOs should be unaffected by changes in the opportunity cost of leisure or in the marginal cost of effort common to both CEO types.

We take the model to the data in two steps. First, we examine how the differences in hours worked vary once we control for observable differences in CEO, industry and firm characteristics. The analysis shows that observable differences in CEOs' and firms' characteristics explain one quarter of the difference between family and professional CEOs: once we include the full set of firm, industry and CEO controls, family CEOs still work 8.8% fewer hours than their professional counterparts. Importantly, this is not due to family ownership per se: professional CEOs who run family firms work as much as their counterparts in non-family firms.

Second, informed by the model, we use natural experiments to identify factors that affect the opportunity cost of leisure and cost of effort regardless of CEO type to implement the difference in difference strategy illustrated above. We identify two factors that affect the opportunity cost of leisure *across firms*: size and the competitiveness of the industry in which they operate. The opportunity cost of leisure is likely to be higher in larger firms as CEOs' effort affects a larger volume of activity, analogue to the "scale of operations" effect discussed in Mayer (1960).⁴ The opportunity cost of leisure is also likely to be higher in more competitive industries, where the probability of survival is lower and high effort more likely to be essential to keep the firm in business. For the largest country in our sample, India, we are also able to measure variation in the opportunity cost of leisure and cost of effort within firm *across days* using instances of extreme monsoon rainfall and the broadcasting of popular sport events (Indian Premier League cricket matches).

The difference in differences estimates depict a consistent picture: the difference between family and professional CEOs is significantly smaller in larger firms and in firms active in more competitive industries where the opportunity cost of leisure is higher. Symmetrically, in our Indian sample

⁴This has been used to explain how small differences in ability can produce large differences in pay when more able CEOs work for larger firms, see e.g. Tervio (2008).

the difference between family and professional CEOs is significantly larger on days when torrential rains or cricket matches increase the marginal cost of effort.

Taken together, the four tests are consistent with the notion that family CEOs place a larger weight on leisure than on firm performance. A possible explanation for this difference is that family CEOs tend to be wealthier, as they own the firms they lead, and leisure is a normal good. To test the empirical relevance of this hypothesis in the absence of detailed data on individual CEO wealth, we use cross-country variation in inheritance laws that creates variation in wealth concentration (Ellul et al 2010) to proxy for the difference in wealth between firm owners and professional managers. Intuitively, more permissive laws favor the concentration of wealth in the hands of the individual designated to inherit the control of the family business. Other things equal, we therefore expect family CEOs to be wealthier in countries where the maximal share of transmissible wealth is larger. We find that the difference between family and professional CEOs is increasing in the share of wealth that can be bequeathed to a single heir. To the extent that wealth concentration is correlated with wealth differentials between owners and managers, the result provides some indicative evidence that labor supply differences may be due to wealth differences.

The question that follows naturally is why family CEOs do not delegate to professionals who are willing to work longer hours, so to enjoy both more leisure and higher profits? We explore two explanations. The first is that family CEOs are unable to delegate due to costly contract enforcement. To provide evidence on this hypothesis we proxy enforcement costs using measures of GDP per capita (both at the country and region level), the quality of the rule of law (at the country level) and generalized trust (at the region level). We find that differences in hours worked between family and professional CEOs do not systematically vary with any of these measures. Therefore, while the share of family CEOs is much larger in countries with worse governance (as in Burkart et al. 2003), development and institutions do not seem to account for the systematic difference in the work patterns between family and professional CEOs.

The second hypothesis we explore is whether the difference in hours worked between family and professional CEOs has a negligible effect on firm productivity, so that the potential benefit of hiring a professional CEO might be lower than the cost of doing so. To assess the relevance of this explanation, we match our time use data with balance sheet data and estimate a basic production function augmented by CEO hours. The estimates rule out that CEO hours have a negligible association with productivity: the elasticity of revenues with respect to CEO hours is .36, comparable to the labor (.48) and capital (.26) elasticities. The correlation between CEO hours and productivity is nil in the years before the CEO took office, alleviating the concern that firm time-invariant characteristics shape the CEO labor supply. CEO hours are also positively associated with profitability measures (ROCE and Tobin q). The fact that CEOs prefer to lead their firms despite foregone income and the feasibility of delegation to hard working professionals is in line with the idea that they might enjoy non-monetary benefits of control (Demsetz and Lehn 1985, Bandiera et al 2013).

The time use patterns we observe - taken together with the association between time use and firm

performance - provide a possible explanation for the fact that firms led by family CEOs generally underperform (Morck et al 2000, Villalonga and Amit 2006, Perez-Gonzalez 2006, Bennedsen et al. 2007, Bertrand et al 2008, Bertrand 2009). Our findings complement the observation that family CEOs are less likely to adopt managerial best practices (Bloom and Van Reenen 2007) and are characterized by a management style that is less conducive to shareholder value maximization (Mullins and Schoar 2013). In line with these literatures, our time use analysis shows that the incentives arising from having a higher stake in the firm may be offset by other factors that induce less effort on the part of family CEOs. More broadly, our research illustrates one channel through which CEOs may affect firm performance (Bertrand and Schoar 2003, Kaplan et al 2012, Malmendier and Tate 2005, 2008, Schoar and Zuo 2012). Finally, the paper is related to the strand of work emphasizing the importance of preferences in explaining differences in managerial effort (Bertrand and Mullainathan, 2003, Malmendier and Tate 2009).

The paper is organized as follows. Section 2 describes our sampling and data collection methodology, together with the characteristics of CEOs and their firms. Section 3 provides a simple model of labor supply to guide the identification strategy. Section 4 estimates the difference between family and professional CEOs and implements the difference in difference estimator to interpret the observed differences. Section 5 exploits cross-country variation in inheritance laws and contract enforcement to shed light on why family CEOs work less and yet choose to manage their firms. Section 6 concludes.

2 Measuring CEOs' Labor Supply

2.1 The CEO Time Use Survey

To measure CEOs' labor supply, we created a survey instrument that keeps track of the activities undertaken by executives on a daily basis.⁵ We use this instrument to collect information for a sample of CEOs over one work week. While titles may differ across countries (e.g. Managing Director in the UK) we always interview the highest-ranking authority in charge of the organization who has executive powers and reports to the board of directors. For brevity we refer to them as CEOs in what follows.

The survey collects information on all the activities lasting longer than 15 minutes in the order they happened during the day, with their starting and ending time and other activity details. Our main measure of CEO labor supply is the sum of time devoted to work activities over the week. To compare our diary measure with the standard recall measure used in time use survey we also asked CEOs to estimate the hours they worked during the same week. Figure A1 shows a screenshot of the survey tool.⁶

⁵A similar version of the survey was first used in a small scale study of about 100 Italian CEOs. See Bandiera, Guiso, Prat and Sadun (2011) for details.

⁶The survey tool can also be found online on www.executivetimeuse.org.

The data was collected by a team of enumerators we hired for this purpose through daily phone calls with the Personal Assistant (PA) of the CEO, or with the CEO himself (43% of the cases), over a week randomly chosen by us. On day one of this week, the enumerator called in the morning and gathered detailed information on all the activities planned in the CEO diary for the day. The enumerator then called again in the evening, to gather information on the actual activities undertaken by the CEO (including those that were not originally included in the planned agenda), and the activities planned for the following day. On subsequent days, the enumerator called in the evening, again to collect data on the actual activities undertaken during the day, and the planned schedule for the next day.⁷ On the last day of the data collection, the analysts also interviewed the CEO to validate the activity data (if collected through his PA) and to collect information on the characteristics of the CEO and of the firm, including firm ownership and organizational structure.

Sampling frame

The survey covers CEOs in six of the world's ten largest economies: Brazil, France, Germany, India, the United Kingdom and the United States. For comparability, we chose to focus on established market economies and opted for a balance between high and middle-low income countries.

Our sampling frame was drawn from ORBIS, an extensive commercial data set that contains company accounts for more than 30 million companies around the world. To maintain comparability of performance data we restricted the sample to manufacturing firms. We then selected firms with available sales and employment data.⁸ This yielded a sample of 6,527 firms in 32 two-digits SIC industries that we randomly assigned to different analysts to call to seek the CEOs' participation. We were able to interview 1,134 CEOs, a response rate of 17%. This figure is at the higher end of response rates for CEO surveys, which range between 9% and 16% (Graham et al 2011). Of the interviewed CEOs, 20 were later dropped from the sample because of low data quality (typically because the time use data covered less than 4 days of the week). Our final sample thus comprises of 1,114 CEOs, of which there are 282 in Brazil, 115 in France, 125 in Germany, 356 in India, 87 in the UK and 149 in the US.

The selection analysis in Table A1 shows that respondents have on average lower log sales (coefficient -0.071, standard error 0.011). However, we do not find any significant selection effect on performance variables, such as sales over employees and return on capital employed (ROCE).

Measurement concerns

Two measurement concerns are of note. First, we are able to measure only the activities that the CEO is willing to report. The sign of the bias this creates is ambiguous. CEOs might indeed be

⁷For 70% of the CEOs in our sample, the work week consisted of 5 days. The remaining 30% of the CEOs also reported to work during the weekend (21% for 6 days and 9% for 7 days). Analysts were instructed to call the CEO after the weekend to retrieve data on Saturdays and Sundays.

⁸The criteria for inclusion in the sampling frame and the survey methodology are detailed in the Data Appendix.

prone to overestimate the hours they work, e.g. by coding time spent in personal activities as work. At the same time, we will not pick up activities that take place out of business hours unless they are recorded in the CEO diary. Our working assumption throughout the paper is that the time use we measure is a valid proxy of the actual time use and captures meaningful differences across CEOs. We validate this assumption in subsequent analysis by showing that the number of hours worked by CEOs correlates with observable CEO and firm characteristics in predictable ways (e.g. older CEOs work fewer hours as their cost of effort is presumably higher).

Second, a week of detailed activity data might not be enough to capture typical CEO behavior. The allocation of time across activities might just be a reflection of high frequency shocks to the marginal cost or marginal product of time across CEOs. If so, the time use data would capture the relevance of these shocks, rather than explicit managerial choices. If this were true, however, we would expect little similarity in the way the time is allocated within the week by the same CEO (i.e. we would not see any within week autocorrelation in CEO time use). In contrast, we find a high degree of autocorrelation in the average number of hours worked during the week by the CEOs. A simple regression of the number of log(hours worked) on day t on the same variable measured on day $t-1$ delivers a coefficient of .40, statistically significant at the 1% level. In addition, CEO fixed effects explain 25% of the variance observed in the daily time use data. Finally, at the end of the survey week, we ask the CEOs to rank whether the week could be considered “representative” of their usual work activity on a scale 1-10. Reassuringly, we observe substantial heterogeneity in hours worked even if we restrict the sample to the 63% of CEOs who score the survey week as highly representative (i.e. a score of 8, 9 or 10 out of 10). This is at odds with the hypothesis that all observed variation is due to transitory shocks rather than actual differences in behavior.

2.2 Basic summary statistics on the labor supply of CEOs

Figure 1 shows the distribution of hours worked during the week using the diary method, namely the sum of the duration of all the activities the CEO undertakes while at work. The average CEO in our sample spends 52 hours per week (10.4 hours per day) at work, while CEOs in the bottom quartile work on average 44.2 hours per week and those in the top quartile work on average 58.5 hours per week.

Figures 2a and 2b compare the diary measure with a recall measure that we obtained by asking CEOs to estimate the number of hours worked at the end of the week.⁹ Three points are of note. First, Figure 2a shows that the distribution of the recall measure exhibits considerable bunching at round numbers, e.g. 26% of the sample CEOs report working 50 hours, while the diary measure shown in Figure 1 exhibits no bunching, i.e. no more than 1.5% of the sample take the same value. Second, Figure 2b shows that the two measures are positively correlated, but the correlation is well below 1 - regressing the recall measure on the diary measure yields a coefficient of .50, significantly different from 1 with $p\text{-value}=.000$. Third, the recall measure is larger than the diary measure for

⁹The sample included in this analysis excludes India since we did not collect recall time use in the first wave of the survey.

half of the CEOs whose diary measure is below the mean, but only for 16% of the CEOs whose diary measure is above the mean. Thus, the noise in the recall measure is not orthogonal to the actual hours recorded in the diary - CEOs who work fewer hours are equally likely to over- or underestimate their hours worked while those who work longer hours tend to underestimate it. The fact that noise is systematic implies that it can create a spurious correlation with outcomes of interest. Table A2 shows that total weekly hours worked are similar across countries and above 50 hours per week on average (or above 9.8 hours a day) across all countries except India, where the average number of hours worked across all CEOs is significantly lower (46 weekly hours, or 8.8 hours a day). Overall, country fixed effects are jointly significant at the 1% level and account for about 14% of the variation in total hours worked observed in the data. In contrast, industry fixed effects - while being jointly significant at the 1% level - account for only 3% of the overall cross sectional variation in total hours worked. While in the main analysis we rely primarily on within country, within industry comparisons of CEO hours worked across different ownership types, we exploit cross country variation in the last part of the paper to examine various alternative explanations for the patterns observed in our data.

2.3 Differences between family and professional CEOs in the raw data

In our sample 57% of the firms are owned by a family, 23% by disperse shareholders, 9% by private individuals, and 7% by private equity. Family CEOs are CEOs who belong to the family that owns the firm, and account for 41% of the sample. Of these, 329 (30% of the sample) are descendants of the original founders, and 126 (11%) are the founders themselves. As our research question addresses the difference in labor supply between CEOs who own (at least in part) the firm they manage and professional CEOs who do not, we pool across generations of family CEOs in most of the analysis that follows. After showing the main results, we will briefly discuss the differences between founders and descendants. Professional CEOs are CEOs who have no family bond with the owners of the firm. These account for 59% of the sample. Just over a quarter of them (16% of the sample) manage firms that are owned by a family. Later this will allow us to separate the effect of family ownership from the effect of family CEOs.

CEO labor supply

Figure 3 plots the distribution of weekly hours worked by family and professional CEOs as they appear in the raw data. While there is a wide heterogeneity in hours worked across both types of CEOs, the distribution of hours worked by family CEOs is entirely shifted to the left relative to professional CEOs. Table 1, Panel A provides some additional summary statistics to better qualify the nature of this difference. The first and second rows report the recall and diary measures of hours worked described earlier. By both measures family CEOs work fewer hours, but the difference is much larger (6.2 vs 3.6 hours) when we use the diary measure, as family CEOs tend to overestimate their time at work while professional CEOs underestimate it. The difference remains stable (6.8

hours) when we only count work activities (that is dropping travel time and personal time) that last longer than 15 minutes. The difference between ownership types is due to two factors. Family CEOs start working later in the morning, at 9.16AM vs. 8.31AM for professional managers, and devote a larger share of time to personal activities during business hours (12.3% vs 8.6%).

CEO, firm and industry characteristics

In line with earlier work (Perez-Gonzalez 2006), in our sample family and professional CEOs have different education, experience and tenure. The firms they manage also differ, as family CEOs lead firms that are smaller, less likely to be part of a multinational organization, less likely to have a COO and with a smaller number of direct reports.

We illustrate these points in Table 1, Panels B and C. Panel B shows that family and professional CEOs have similar demographics: the average CEO is 51 years old and 96% of the sample CEOs are men. However, the share of “skilled” CEOs (as measured by the attainment of a college degree and/or an MBA) is significantly lower (90% vs. 94% for a college degree, p-value $>.1$, and 43% vs 63% for an MBA degree, p-value $<.01$). Family CEOs are also less likely to have worked abroad (39% vs. 54% , p-value $<.01$) and more likely to have longer tenure both as CEOs (15 vs 7 years, p-value $<.01$) and in other positions with the same firm (23 vs 13 years, p-value $<.01$).

Panel C shows that the average firm in our sample has 1571 employees and that family CEOs manage smaller firms (1036 vs 1945 employees, p-value $>.1$). 24% of the sample firms are part of foreign multinationals, and these are less likely to be managed by family CEOs (19% vs 28%, p-value $<.01$). The organization of the firm also differs: family CEOs have fewer direct reports (7.4 vs 8, p-value $<.05$) and are also less likely to have a COO (18% vs 31%, p-value $<.01$), while they are much more likely to have their offsprings in executive positions within the firm (.24 sons and .09 daughters vs. .005 and .006, p-values $<.01$).

Finally, Panel D describes the external environment in which the sample firms operate. 57% of the sample firms are located in emerging economies (India or Brazil), with this number being higher for firms led by family CEOs (78% vs 43%, p-value $<.01$). The sample firms are distributed across 32 different SIC2 sectors, the largest of which, SIC 28 (Chemicals and Allied Products), accounts for 13% of the firms. The distribution of family and professional CEOs are generally balanced across sectors. We reject the null that the sector dummies do not predict CEO type only for 4 out of the 32 sectors, three of which account for less than 2% of the sample each. In line with this, Panel D shows that family and professional CEOs face a similar level of product market competition, as measured by the Lerner Index, which is defined as $(1 - \text{profit}/\text{sales})$ calculated as the average across the entire population of firms in Orbis in the sample countries for the 5 years preceding the data collection, and is specific to the firms’ three digit industry (Aghion et al, 2005). We obtain similar results when we use as a proxy for product market competition the degree of import penetration, measured as the share of total imports relative to domestic production in the industry in which the

firm operates, also aggregated up at the industry level.¹⁰

In Section 4 we will explore the extent to which differences in hours worked between family and professional CEOs observed in the raw data can be accounted for by the differences in CEO and firms characteristics just discussed. Before turning to the data, however, we introduce a simple theoretical framework that will inform the empirical analysis.

3 A Simple Model of CEO Labor Supply

In the previous section we have shown that family CEOs tend to work fewer hours relative to professional CEOs. In this section we present a simple model of CEO time use that allows us to specify the conditions under which observed differences in hours worked between family and professional CEOs may be interpreted as optimal responses to unobservable organizational or technological differences or, alternatively, as evidence of different CEO preferences for leisure. The model does not do justice to the literature on managerial incentives in corporate governance (Tirole 2006), but it does supply a parsimonious set-up to discuss the identification problem we face when interpreting the difference in hours worked by family and professional CEOs examined in Table 1 in a cross sectional setting.

3.1 Basic set-up

The model contains two main elements: a production function that depends on CEO work time in ways that depend on a) the characteristics of the CEO and the firm and; b) CEO preferences. Time allocated to an activity is taken as a proxy for CEO attention which, as in Milgrom and Geanakoplos (1991), is akin to a factor of production. Starting with technology, the productivity of a firm is given by:

$$y_{gs} = \bar{y}_{gs} + (a_g + b_s) h_{gs} - \frac{1}{2} h_{gs}^2,$$

where $g \in \{F, P\}$ indicate the type of CEO - family or professional - and $s \in \{L, H\}$ denotes a binary state of the world, to be discussed later. The firm's performance y_{gs} depends on the number of hours that the CEO works, h_{gs} . The marginal productivity of a CEO hour depends on his type and the state of the world through a_g and b_s respectively. The negative quadratic term captures the idea that the marginal return of CEO time is decreasing.

The firm's performance may also depend directly on the CEO type and on the state of the world through \bar{y}_{gs} . The only restriction that our formulation imposes, by having additive a_g and b_s rather than a generic a_{gs} , is that the identity of the CEO does not interact directly with the state of the world in determining the marginal effect of CEO time on performance. We do not take a stand on whether productivity is higher or lower in firms run by family CEOs or professional CEOs: \bar{y}_{F_s}

¹⁰See the Data Appendix for more information on the construction of the Lerner and the import penetration variables.

can be greater or smaller than \bar{y}_{Ps} . We also remain agnostic as to whether the return to CEO time is higher or lower for family compared to professional CEOs: a_F can be greater or smaller than a_P . For example, the marginal productivity of a professional CEO might be different from that of a family CEO because the family CEO can delegate more easily to other family members who are more likely to work for the firm, as seen in Table 1.

The CEO's utility depends on the performance of the firm and on the cost of spending time at work:

$$u_{gs} = c_g y - d_s h_{gs},$$

where c_g represents the relative weight of firm performance and work hours in the preference of a CEO of type g ; and d_s captures the possibility that the cost of effort, or the opportunity cost of leisure, depends on the state of the world.¹¹

In this simple set-up, given technology and preferences, the number of hours maximizing CEO payoff is derived as:

$$h_{gs}^* = a_g + b_s - \frac{d_s}{c_g}, \quad (1)$$

3.2 Identification

Equation (1) illustrates the main identification problem we face, i.e. the the cross-sectional difference between the hours worked by family and professional CEOs can be due to either differences in firm technology or organization that differ by CEO type and determine his productivity - a_g - or by differences in preferences that determine his cost of effort - c_g .

There are, however, a set of conditions under which we can use natural experiments that create variation in the state of the world to identify at least the sign of the difference between c_F and c_P . More specifically, variation in the state of the world that affects the opportunity cost of leisure/marginal cost of effort d_s to the same extent for both CEO types can be used to identify differences in preferences.

To see this, suppose that the cost of effort is higher (or the opportunity cost of leisure lower) in state H than in state L ($d_H > d_L$). In this case, we can show that, even if a change in the state of the world may affect the marginal productivity of CEO work through b_s , the sign of the difference-in-differences depends on the preference parameter c_g only:

Proposition 1. *The difference in difference in hours worked over CEO type and state of the world has the same sign as the difference in the preference parameter of family CEOs and professional CEOs. Formally, if $d_H > d_L$ then $h_{PH}^* - h_{FH}^* > h_{PL}^* - h_{FL}^*$ if and only if $c_P > c_F$.*¹²

¹¹Note that the utility function can be rewritten as $u_{gs} = \frac{c_g}{d_s} y - h_{gs}$, hence the parameter d_s captures differences in the trade-off between firm performance and leisure.

¹²Proof. Given the optimal h and the assumption that $d_H > d_L$,

$$\begin{aligned} \text{sign} [h_{FL}^* - h_{FH}^* - (h_{NL}^* - h_{NH}^*)] &= \text{sign} \left[\frac{d_H}{c_F} - \frac{d_L}{c_F} - \frac{d_H}{c_N} + \frac{d_L}{c_N} \right] \\ &= \text{sign} \left[- \left(\frac{1}{c_N} - \frac{1}{c_F} \right) (d_H - d_L) \right] = \text{sign} [c_N - c_F] \end{aligned}$$

Intuitively, if preferences are the same across CEOs, and the difference between family and professional CEOs is solely driven by differences in technology or organization that differ by CEO type and determine their productivity a_g , an increase in the marginal cost of effort d_s that affects both types equally should make both types reduce hours worked to the same extent, leaving their difference constant. By the same logic, if the difference in hours worked across CEOs instead increases with the shock, this is consistent with the idea that family CEOs have a stronger preference for leisure relative to firm performance.

4 Evidence on CEOs' Labor Supply

4.1 Cross-sectional differences

Main results

The first step in our analysis consists of assessing the extent to which the difference in hours worked between family and professional CEOs shows in Table 1 using the raw time use data can be explained by observable CEO, firm and industry differences across CEO types. To this end, we estimate a simple regression model of the form:

$$h_{ijc} = \alpha Fam_i + C_i\beta + F_i\gamma + \delta_j + \eta_c + \varepsilon_{ijc} \quad (2)$$

Where h_{ijc} is the log of total weekly hours worked by CEO i in industry j in country c , $Fam_i = 1$ if firm i is owned by a family and the CEO belongs to the family, while $Fam_i = 0$ if firm i is led by a professional CEO regardless of ownership status, C, F are vectors of CEO and firm characteristics, δ_j are industry fixed effects and η_c are country fixed effects.

Table 2 reports the estimates of (2) with a progressively larger set of controls that account for the differences in CEO traits, firm characteristics and firm organizational structure that proxy for the parameter a_g in equation (1).

Column 1 shows that the unconditional difference between the hours worked of family and professional CEOs is .18 log points. Column 2 shows that one third of this difference is due to differences across countries, namely CEOs in emerging economies record fewer hours and family CEOs are more likely to be located there (Table A2). Adding country fixed effects reduces the difference from .18 to .113 log points.

In Column 3 we explore the extent to which the differences in hours worked between family and professional CEOs may be driven by differences in CEO demographics, professional background and skills. We find that older CEOs tend to work fewer hours (coefficient on log CEO age is -0.157, significant at the 1% level), while proxies for CEO skills (college degree and MBA dummy, and an indicator to denote CEOs with work experience abroad) are all positively but only weakly correlated with hours worked (only the college degree dummy is significant at the 10% level). The

inclusion of these additional controls leaves the coefficient on the family CEO dummy practically unchanged, and still significant at the 1% level.

In Column 4 we examine the association between industry and firm characteristics and CEO hours worked by including a full set of industry dummies (defined at the SIC 2 level), and a set of variables likely to affect the magnitude and the complexity of CEO workload such as firm size (in terms of employees), firm age and a dummy denoting firms that are either domestic or foreign multinationals to capture the possibility of extended working hours due to the necessity of managing across different time zones. Among these variables, firm size stands out as the only one positively and significantly correlated with CEO hours worked. A 1% increase in firm size is associated with a 2.4% increase in CEO hours worked. Overall, industry fixed effects, CEO and firm characteristics explain a small portion of the difference in hours worked between family and professional CEOs, which falls from .113 log points in Column 2 to .110 when CEO characteristics are included and further to .104 when firm characteristics are added to the set of controls (Column 4).

In Column 5 we turn to examining the association between CEO hours worked and a set of organizational characteristics, i.e. the number of CEO direct reports, a dummy to denote the presence of a COO, and the number of sons and/or daughters employed in senior managerial positions. These variables are of particular interest for our purposes, since they differ systematically between firms managed by family and professional CEOs - as shown in Table 1 - and may at the same time significantly shape overall the demands on CEO time.¹³ Differences in organizational structure are indeed correlated with CEO hours worked. Namely, CEOs who have a larger number of direct reports work longer hours, while those whose sons hold senior management positions in the firm work fewer hours. Differences in organizational structure further reduce the coefficient on family CEOs, but this remains large (.088) and significant at the 1% level.

Overall, while differences in CEO, industry, firm and organizational characteristics appear to explain some of the observed variation in CEO hours worked, the correlation between any of these variables and hours worked is an order of magnitude smaller than the effect of CEO type. For example, in column (6) the college degree dummy is associated with an increase in hours worked of .063 log points (standard error 0.029), a one standard deviation increase in firm size increases hours worked by .032 log points, a one standard deviation increase in the number of direct reports increases hours worked by .026 log points, and a one standard deviation increase in the number of sons in management decreases hours worked by .018 log points.

Column 6 further probes the robustness of the family CEO result to the inclusion of a set of interview noise controls, which proxies for the systematic differences in measurement error across CEO types. Reassuringly, the inclusion of these controls leaves the magnitude and the significance of the family CEO dummy unchanged. We also note that there is no correlation between the identity of the survey respondent (the PA or the CEO himself) and hours worked, which allays concerns that PAs have more limited information or that CEOs who choose to report their own

¹³For example, the presence of other family members in top managerial positions may facilitate the distribution of CEO workload across a team of trusted managers (Bloom et al, 2013).

time use overstate hours worked.¹⁴

Table A3 in appendix shows additional robustness checks including results when we express the dependent variable in terms of levels instead of logs, the use of a negative binomial regressions to take into account the count nature of the hours data, the inclusion of industry*country fixed effects, and estimating the regression separately for developing (Brazil and India) and developed (France, Germany, UK and US) economies, and between the first wave of the survey (which focused on India exclusively) and the second wave of the survey (in which all the other countries were covered). The magnitude and significance of the family CEO dummy are remarkably stable across all experiments. Since 16% of the sample firms are owned by a family and managed by a professional CEO we can separately identify the effect of family CEOs from the effect of family ownership. Column 7 shows that professional CEOs working in firms owned by a founder or a family are statistically undistinguishable from other professional CEOs. We interpret this finding as *prima facie* evidence that the differences in hours worked between family and professional CEOs are not due to unobservable technological characteristics that are specific to family firms.

Finally, Column 8 replicates the analysis using the recall measure to shed light on whether professional CEOs might be more likely to overstate hours worked to impress the board. If so, we would expect the difference to be larger when using the recall measure that is easier to manipulate. In contrast, Column 8 shows that the difference is smaller. This is consistent with the fact that - as shown in Table 1 - family CEOs are more likely to overstate hours worked relative to professional CEOs.

Founder CEOs

In our baseline specifications we group founder CEOs and their descendants in the same category, since in both cases these CEOs have a direct and sizable ownership stake in the company they run. Appendix Tables A4 and A5 provide additional evidence on the difference between founders and their descendants. Table A4 shows that, unconditionally, founders work 1.3 fewer hours per week relative to professional CEOs, but they are also older, less educated, have longer tenure and are mostly located in emerging economies. Once all observable characteristics are controlled for, Columns 5 and 6 in Table A5 show that both founder and descendant CEOs work 9% fewer hours than professional CEOs. While it is important to notice that the founders managed firms in our sample are not start-ups (the average founder has been managing his firm for 22 years), the finding that founder and descendant CEOs behave similarly is in line with recent findings that both adopt worse managerial practices (Bloom et al 2012) and that they share a similar business philosophy and firm governance (Mullins and Schoar 2013). In a related literature, Hurst and Pugsley (2011) document that non-pecuniary benefits of control - which include the ability to self-determine the number of hours spent at work - play a key role among founders of small businesses in the US.

¹⁴The coefficient remains stable at .088 even if we include all the other noise controls but we remove the variable capturing the identity of the respondent.

Summary

Taken together, differences in CEO and firm observable characteristics, including family ownership, explain a quarter of the difference in total hours between family and professional CEOs. The remaining gap in hours worked might be due to unobservable differences in technology or organization that are specific to family firms, but only when managed by family CEOs, or to differences in the preferences of the CEOs. We attempt to disentangle these two potential sources of variation in Section 4.2 below.

4.2 Difference in Differences

State of the world variation I: across firms

Informed by Proposition 1, we exploit differences in factors that affect the CEO opportunity cost of leisure as a way to isolate the role of differences in managerial preferences in explaining the lower number of hours worked by family CEOs relative to professional CEOs. We look specifically at two such factors: firm size and the level of competition the firm is exposed to. In both cases, the intuition is straightforward. The opportunity cost of leisure is likely to be higher in larger firms because the CEO controls a larger volume of activity. Therefore, the marginal hour of leisure deprives more people of the input of the CEO, and each decision not taken during that hour has larger monetary value. This is akin to the “scale of operations” effect (Mayer 1960). Symmetrically, the opportunity cost of leisure is likely to be higher in more competitive settings because the baseline probability of survival is lower, and CEO effort is more likely to be essential to keep the firm in business. The marginal hour of leisure can make the difference between firm death and survival in competitive industries while its consequences are less dire for firms that are sheltered from competition.

Table 3 reports the estimates of

$$h_{ijc} = \alpha Fam_i + \beta Fam_i * X_{ij} + \gamma X_{ij} + C_i \varphi + F_i \phi + \delta_j + \eta_c + \varepsilon_{ijc} \quad (3)$$

where X_{ij} is a measure of firm i size, or a measure of competition in industry j , and all other variables are as defined above. Proposition 1 makes clear that, under the assumption that the opportunity cost of leisure is higher in larger firms and in more competitive industries, the difference in difference parameter β has the same sign as the difference in preferences between professional and family CEOs, namely $\beta > 0$ implies that, compared to family CEOs, professional CEOs put more weight on firm performance relative to leisure.

In Table 3 we use two measures of firm size, number of employees and revenues, and two measures of competition, the Lerner index and import penetration, both defined at the industry (SIC 3 and ISIC Rev1, respectively) level. The estimates in columns 1 to 4 reveal a consistent picture: when the opportunity cost of leisure is higher, the difference in hours worked between family and professional CEOs is smaller. The estimates of β are positive and statistically different from zero for all four measures, and the magnitudes are economically meaningful. The difference between family

and professional CEOs is .13 (.12) log points in firms at the 10th percentile of the distribution of log employment (log sales) but only .04 (.05) log points in firms at the 90th percentile. Thus, family CEOs in large firms work almost as much as their professional counterparts, while those in small firms work significantly less. Likewise, the difference between family and professional CEOs is .11 (.12) log points in low competition industries at the 10th percentile of the Lerner (import penetration) index but only .05 (.05) log points in high competition industries at the 90th percentile. In light of Proposition 1, the difference in differences estimates with respect to size and competition indicates that family CEOs put lower weight on firm performance relative to leisure, that is $c_P > c_F$. An observationally equivalent explanation is that there is a distribution of preferences for leisure among family CEOs, and variation in the opportunity cost of leisure at the firm or industry level determines selection, so that leisure-loving family CEOs are only found in small firms and low-competition industries. In this case, leisure-loving family CEOs drop out rather than working longer hours, but differences in preferences still explain differences in hours worked. To shed light on whether family and professional CEOs adjust their hours differently in response to shocks, the next subsection exploits variation in the cost of effort across days.

State of the world variation II: across days

For the largest of our sample countries - India (357 CEOs) - we are able to exploit shocks affecting the cost of CEO effort *during* our sample week. We focus on India because the data collection period coincided with monsoon rainfall and a popular sport tournament, both of which increased the cost of effort on some days but not on others.¹⁵ Extreme rainfall disrupts local transportation in urban areas (where most of the CEOs in our sample are located), adding delays and inconveniences that increase the cost of effort. We obtain rainfall data for all the major weather stations in India and classify a day as having extreme rain if its deviation from the pre-monsoon benchmark falls in the upper third of the station level distribution of the same variable. By this measure, 256 CEOs experience extreme rain at least once during the survey week.¹⁶

The second natural experiment we exploit is the broadcasting of important cricket matches. Cricket is the most popular sport in India, and the cost of effort is likely to be higher during a match for an average individual, including CEOs. For this test we take advantage of the fact that our data collection partially overlapped with the playoffs, semifinals and finals of a major cricket tournament, the Indian Premier League (IPL). We collect data on the timing of these matches and classify a

¹⁵The expected arrival of the monsoon is around June 1st, starting from the southwestern coast of Kerala, and gradually covering the entirety of India by July 15th.

¹⁶To build the rain shock variable we proceed in four steps. First, we obtain rainfall data for all the major weather stations in India starting in May through the end of July 2011. Second, we use this data to compute the average station level rainfall in the pre-monsoon period in May, and for each station level observation in June and July we compute the percentage difference in rainfall with respect to the pre-monsoon period. Third, we define a given day to have extreme rain if its deviation from the May benchmark falls in the upper third of the station level distribution of the same variable. Fourth, we match the CEO time use information with the rainfall data of the closest weather station by using the modal (manually collected) zip code of the activities undertaken by the CEO during the week. Further details on the construction of this variable is provided in the Data Appendix.

day to have a cricket match if one is broadcasted on the day. 28 CEOs are exposed to at least one match during the survey week.

Table 4 uses the total hours of work at the daily level to estimate the following difference in differences specification:

$$h_{id} = \alpha Fam_i + \beta Fam_i * X_d + \gamma X_d + C_i \rho + F_i \varphi + S_i \delta + I_i \eta + \varepsilon_{id} \quad (4)$$

where h_{id} is one plus the log of daily hours worked by CEO i on day d , $Fam_i = 1$ if CEO i belongs to the owning family as defined above, $X_d = 1$ if day d has extreme rainfall in Columns 1-2 and a cricket match in Columns 3-6 and C, F, S, I are vectors of CEO, firm, state and industry characteristics as defined in equation 2; standard errors are clustered at the CEO level to take into account unobservables that affect a given CEO over the week.¹⁷ The coefficient of interest is β , the difference in differences estimator that measures how different CEOs react to higher marginal cost of effort.

Column 1 replicates our baseline specification using daily data from India alone, controlling for extreme rain. The estimate in column 1, Table 4 indicates that, in line with earlier estimates, the difference between family and professional CEOs is .07 log points while the effect of extreme rain is small and not significant. Column 2 shows that the difference in differences coefficient is $-.083$ and precisely estimated at the 5% level. In light of Proposition 1, this indicates that family CEOs put lower weight on firm performance, that is $c_P > c_F$. The results in column 2 also indicate that family CEOs do not make up lost time by working more on days without extreme rain. The difference between family and professional CEOs on days without extreme rain is negative rather than positive and not significantly different from zero.

The model indicates that the difference in differences estimate identifies the sign of the difference in preferences if and only if the cost shock (rain) affects all CEOs equally regardless of firm ownership. This assumption fails if factors correlated with family ownership affect the effect of rain shocks on the marginal cost or the marginal product of CEO time, namely $cov(\varepsilon_{id}, Fam_i * Rain_d) \neq 0$. For example, firms run by family CEOs might have characteristics that make them more prone to be disrupted by rain (for example, due to the presence of old machinery or bad maintenance processes). To test the robustness of the results to these factors, in Appendix Table A6a we augment the specification with additional CEO and firms controls and interactions between rain and state, and between industry, CEO and firm characteristics. Reassuringly, the inclusion of these interactions does not generally affect the magnitude and precision of the difference in difference estimate allaying the concern that this captured unobservables at the firm day level.

Column 3 shows that on days when cricket matches are played the average CEO works 5.8% fewer hours. Column 4 shows that the difference in differences β is negative ($-.049$) albeit not precisely estimated. Since IPL matches are generally held in the evenings, we can use the exact timings of activities to increase the precision of our estimates. To do so, we divide the work day in two

¹⁷In the cricket regressions the standard errors are clustered at the CEO and day level.

intervals, before and after 3PM¹⁸. This analysis (shown in columns 5 and 6) shows that professional CEOs *increase* their hours worked in advance of cricket games, while they tend to work significantly less in the hours immediately preceding the game (from 3PM onwards). In contrast, family CEOs work fewer hours throughout the day. Therefore, while all CEOs reduce hours to watch the match in the afternoon, professional CEOs compensate by working harder before the match, while family CEOs do not. Finally, Appendix Table A6b allows for a rich set of interactions between cricket matches and CEO, firm, industry and state characteristics. The conclusions are generally robust to these more flexible specifications.¹⁹

Taken together, the results in this section cast doubt on the explanation that differences in hours worked are optimal responses to differences in firm level technology or organization, and rather point to the fact that the leisure-performance tradeoff differs between family and professional CEOs, with the former putting a larger weight on leisure. The next section provides indicative evidence of why that might be the case.

5 Mechanisms

5.1 Wealth and the demand for leisure

The difference in hours worked between family and professional CEOs can be rationalized with a simple labor supply model where leisure is a normal good and family CEOs have more non-labor income or wealth. While it is intuitive that the average family CEO, who owns a sizable share of the firm, may be wealthier than the average professional CEOs, who owns a small share of the firm (if any), a test of the hypothesis requires comparing the difference in hours worked at different levels of wealth differentials. Measuring personal wealth via surveys is notoriously difficult and we have no information, let alone a plausible source of variation, on the CEOs' wealth.

Instead, we approach this question using as a proxy for wealth differentials between family and professional CEOs exploiting cross-country differences in inheritance laws compiled by Ellul et al (2010), which provide a country-specific measure of the largest share of the family wealth that can be bequeathed to a single heir. Intuitively, more permissive laws favor the concentration of wealth in the hands of the individual designated to inherit the control of the family business. Other things equal, we therefore expect family CEOs to be wealthier in countries where the maximal share of transmissible wealth is larger. To test whether this results in larger differences in hours worked between family and professional CEOs we estimate:

$$h_{ijc} = \alpha Fam_i + \beta Fam_i * (S_c - \bar{S}) + C_i\varphi + F_i\phi + \delta_j + \eta_c + \varepsilon_{ijc} \quad (5)$$

where S_c is the largest admissible inheritance share in country c and \bar{S} is the sample mean. Standard

¹⁸We obtain similar results using 2pm and 4pm as alternative cutoff times.

¹⁹The interaction Family CEO*Cricket game retains its negative sign but loses significance at conventional levels when we include a full set of CEO characteristics*Cricket interactions (Table A4b, column 2) and when we include firm characteristics*Cricket interactions (Table A4b, column 3).

errors are clustered at the country level and bootstrapped using the wild bootstrapping technique proposed by Cameron et al (2008) given the small number of clusters. Our coefficient of interest is β , the interaction between the family CEO dummy and the inheritance share variable. Under the assumption that the latter proxies for family CEOs wealth, the hypothesis that the demand for leisure is increasing in wealth implies $\beta < 0$. We scale S_c in deviation from its sample mean, so that the coefficient on the family CEO dummy α measures the difference between family and professional CEOs at the mean values of S_c . S_c ranges from .5 (France and India) to 1 (UK and US).²⁰

Column 1, Table 5 reports the estimates of (5). We find $\beta < 0$ and precisely estimated. Its magnitude implies that going from an average share of .69 to the highest share of 1 increases the difference in hours worked by .07 log points, 79% of the mean effect. In other words, family CEOs located in countries with the average level of the inheritance variable work 9% fewer hours than professional CEOs; those in countries with the highest level of the inheritance variable work 16% fewer hours than professional CEOs. Below we show that these findings are robust to allowing the effect of family CEOs to be heterogeneous along other dimensions that might vary at the country or regional level.

5.2 Unable or unwilling to delegate?

The results discussed above suggest that family CEOs demand more leisure, possibly because they are wealthier. The question that naturally arises is why do they work at all, that is why don't family CEOs simply delegate their role to professional managers? One possibility is that delegation is prohibitively costly in countries with poor contract enforcement like India (Bloom et al 2013). If delegation costs entirely explain why family CEOs stay at the helm of their firms, we should observe no difference in the time use of family and professional CEOs in countries where contracts are easily enforced. Intuitively, when delegation is feasible all family CEOs who have a higher marginal utility of leisure should delegate to hard working professionals and enjoy the extra profits these generate, while the only family CEOs who choose not to delegate should work as hard as professional CEOs.

To test this hypothesis, Columns 2-5 in Table 5 estimate (5) using different proxies of contract enforcement in lieu of S . Column 2 uses regional GDP, a country specific measure of the level of development (Gennaioli et al, 2013), which is presumably correlated with the quality of contractual enforcement. Column 3 uses cross-country differences in the rule of law and Column 4 uses regional variation in the level of generalized trust, which we take as a proxy for the ease to manage incomplete

²⁰For India we refer to the Hindu Succession Act (1956) that stipulates that the head of a family firm (HUF or Hindu United Family) must bequeath his share of the firm in equal parts to all members of the HUF. In our sample, 81% of the family firms are confirmed HUF but we do not know the number of members (for 19% we could not find information on HUF status). We take 0.5 to be the upper bound of the inheritance share as there must be at least two members in a HUF. Results are robust to assuming there are three surviving members hence the maximal share is 0.33. In contrast, Ellul et al (2010) use the value from the Indian Succession Act. This, however, does not apply to Hindus who account for 80.5% of the population.

contracts (Bloom, Sadun and Van Reenen, 2012). As above, we scale these variables in deviation from their sample means. Columns 2-4 show that none of the interactions with these country-specific measures are significant. Finally, Column 5 includes together all the interactions between the family CEO dummy and all the proxies of contract enforcement, plus the interaction with the inheritance law variable discussed in the previous section. The latter remains of a similar magnitude and statistically significant at the 10% level.

Taken together, the findings in Table 5 cast some doubts on the hypothesis that family CEOs would prefer to delegate but are not able to do so due to costly contract enforcement. Instead, family CEOs appear to be unwilling rather than unable to delegate. We speculate on possible reasons below.

5.3 CEO hours and firm performance

The last possibility we investigate is that the differences in hours worked between family and professional CEOs has a negligible effect on firm productivity. If this were the case, it would not be worth incurring the cost of hiring a professional CEO. To assess whether differences in hours worked across CEOs are associated with differences in productivity we use panel data at the firm-year level to estimate a basic production function of the form:

$$y_{it} = \alpha^l l_{it} + \alpha^k k_{it} + \alpha^m m_{it} + \alpha^h h_i + \gamma' Z_{it} + u_{it} \quad (6)$$

Where y_{it} are sales, l_{it} is labor, k_{it} capital, m_{it} materials of firm i at time t and lower case letters denote natural logarithms. CEO log daily hours worked are denoted by h_i . To the extent that our measures reflect time use shocks that hit in that particular week or biases in reporting time use that are orthogonal to yearly firm outcomes, the estimated coefficients will be biased towards zero.

The accounting data are extracted from accounts published on ORBIS. We restrict the analysis to the years in which the manager we interviewed actually had the role of CEO, and for each firm we keep the three most recent years in the data to avoid selection on CEOs with longer tenure. We also include a vector of interview noise controls as in previous specifications, and full set of year*country and industry*country dummies to control for differences in the business cycle across industries and countries. Standard errors are clustered at the firm level to account for correlated shocks within the same firm through time.

The results of the analysis are presented in Table 6. Column 1 shows that the association between hours worked and log sales controlling for employment is positive and precisely estimated: a 1% change in weekly hours worked is associated with a 0.45% increase in labor productivity. Including controls for capital and materials reduces the magnitude of the coefficient on log hours to 0.36, but leaves its significance unchanged (column 2). For comparison, a 1% increase in capital (employment) is associated with a 0.26% (0.48%) increase in log sales. Using the coefficient on CEO hours worked estimate of column 2, increasing hours worked by the amount of the difference between family and professional CEOs is associated with a 6% increase in productivity ($0.364 * .168$, i.e. the coefficient

on log hours worked of column 2 multiplied by the difference in log hours worked between family and professional CEOs shown in Table 1, third row from the top).

While in the absence of exogenous variation in hours worked we cannot identify causal effects, columns 3 and 4 present two placebo tests that partially allay concerns that the observed correlation is due to reverse causality or measurement error. First, we observe 357 firms at least one year before the appointment of the current CEO. This allows us to test whether unobservable time-invariant firm characteristics correlated with firm performance determine hours worked. If this were the case, we should observe that productivity and hours worked are correlated even when the CEO is not actually in office. Column 3 shows that this is not the case: the correlation between productivity before the CEO appointment and his hours worked after being appointed is negative and not precisely estimated.²¹

A second concern is that the correlation between hours worked and productivity is driven by measurement error in the time use data. For instance, more productive firms might hire more talented PAs who keep a more complete record of the CEOs' activities, thus creating a spurious correlation between *hours recorded* and productivity, while the underlying correlation between *hours worked* and productivity is zero. To test the practical relevance of this concern, in Column 4 we regress productivity on hours devoted to travel. Intuitively, if the correlation due to PAs in more productive firms recording hours more carefully, non-work activities should also be positively correlated with productivity. The findings in Column 4 allay this concern: the correlation between productivity and time spent traveling is zero.

A question of interest is whether the advantages of having a hard working CEO are competed away, namely if CEOs capture the entire surplus they generate by working longer hours. To shed light on this issue, we test whether time use is correlated to firm profitability. Columns 5 and 6 estimate equation 6 using two measures of firm profitability: the return on capital employed (ROCE) and Tobin's q. Our measure of hours worked is positively correlated with both. The magnitude of the estimates implies that an increase in hours worked equal to the difference between professional and family CEOs is associated with an increase in ROCE (Tobin's q) of 3% (5%) of the sample mean. Finally, column 7 shows that hours worked are also associated with faster sales growth: an increase in hours worked equal to the difference between professional and family CEOs is associated with .003 (7.5% of the sample mean) faster sales growth over one year.

The positive correlation between CEO hour worked and firm performance, coupled with the fact that family CEOs prefer to lead their firms even when delegation to professional managers is feasible, suggests that family CEO might enjoy non-monetary benefits of control (Demsetz and Lehn 1985, Bandiera et al 2013).

²¹This is not driven by sample composition. The correlation between productivity and hours after the CEO appointment is the same for this group of firms as for the larger sample when we condition the sample on years in which the CEO is in office.

6 Conclusion

The evidence presented in this paper paints a consistent picture of the difference in behavior between family and professional CEOs. Family CEOs tend to work fewer hours relative to professional managers. The difference between the two types of managers is smaller when the opportunity cost of leisure is larger, and when the marginal cost of effort is smaller. These patterns can be accounted for by a difference in the preferences of family and professional CEOs, with the former placing a higher relative weight on leisure, presumably due to wealth effects. To provide support to this idea, we show that the differences in hours worked between family and professional CEOs are greater where inheritance laws favor wealth concentration.

The data also reveals a strong correlation between CEO hours and firm performance. While no causal inference can be made, combining this correlation with the difference in hours worked translates into a 6% productivity difference between family and professional CEOs. The behavioral difference is hence a potential candidate to account for at least some of the performance differential between family and non-family firms documented in the literature (Morck et al 2000, Villalonga and Amit 2006, Perez-Gonzalez 2006, Bennedsen et al. 2007, Bertrand et al 2008, Bertrand 20).

More generally, the evidence presented here highlights the importance of how corporate leaders allocate their limited attention. Attention is a scarce resource, particularly so at the top of the organization. The allocation of time reflects the allocation of attention, which in turns depends on the strategic priorities of the CEO. The importance for effective corporate leaders of aligning their own time management to their goals has been a cornerstone of leadership theories for many years (Drucker 1966). According to Simon (1976), “attention is the chief bottleneck in organizational activity, and the bottleneck becomes narrower and narrower as we move to the tops of organizations.” Attention constraints at the top feature prominently in economic models of organizational hierarchies, which study how managers should allocate this resource optimally. This study documents differences in attention allocation at the top, but does not identify the channel through which they may affect firm performance. Halac and Prat (2014) model the effects of attention misallocation on the quality of management and the engagement of the workforce. Future research should investigate this and other possible channels for this effect.

Finally, the finding that family CEOs put less effort than professional CEOs because of a wealth effect raises a public finance question. Would an increase in taxation that affects the owners of family firms bring about an increase in productive efficiency? Such taxation might include an inheritance tax, a wealth tax, or a reduction in the various forms of exemptions that family firms enjoy in many parts of the world. Our evidence that inheritance laws are strongly correlated with the hours worked by family CEOs is a case in point.

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A Data Appendix

A.1 The Time Use Survey

A.1.1 Survey Management

The time use survey took place in two stages: in the Spring of 2011 a team of 15 analysts based in Mumbai and led by one of our project managers collected data on India, while the rest of the countries were covered in a second survey wave in the Spring of 2013 by a team of 40 enumerators based at the London School of Economics. To ensure comparability, we adopted the same protocol and retained the same project manager across both waves. The enumerators were typically graduate students (often MBAs) recruited specifically for this project. All enumerators were subject to a common intensive training on the survey methodology for three days at the beginning of the project, plus weekly team progress reviews and one to one conversations with their supervisors to discuss possible uncertainties with respect to the classification of the time use data. Each interview was checked off at the end of the week by one supervisor, who would make sure that the data was complete in every field, and that the enumerator had codified all the activities according to the survey protocol. Each enumerator ran on average 30 interviews.

Each enumerator was allocated a random list of about 120 companies, and was in charge of calling up the numbers of his or her list to convince the CEO to participate in the survey, and to collect the time use data in the week allocated to the CEO. One project manager, five full time supervisors and one additional manager working on a part time basis led the survey team.

We actively monitored and coached the enumerators throughout the project, which intensified their persistence in chasing the CEOs and getting them to participate. We also offered the CEOs a personalized analysis of their use of time (which was sent to them in January 2012 to the Indian CEOs and in June 2014 to the rest of the countries) to give them the ability to monitor their time allocation, and compare it with peers in the industry.

A.1.2 Sampling Frame

The sampling frame was drawn from ORBIS, an extensive commercial data set that contains company accounts for several millions of companies around the world. Our sampling criteria were as follows. First, we restricted the sample to manufacturing and additionally kept firms that were classified as “active” in the year prior to the survey (2010 in India and 2012 for the other countries) and with available recent accounting data.²² These conditions restricted our sample to 11,500 firms. Second, we further restricted the sample to companies for which we could find CEOs contact details. To gather contact information we hired a team of research assistants based in Mumbai, London and

²²For the Indian sample, we also restricted the sample to firms headquartered in the fifteen main Indian states. This excluded firms located in Assam, Bihar, Chandigarh, Chhattisgarh, Dadra, Daman and Diu, Goa, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Orissa and Uttarakhand, each of which accounts for less than 3% of Indian GDP.

Boston who verified the CEOs names and found their phone numbers and emails. This restricted the sample to 7,744 firms. Of these, 907 later resulted not to be eligible for the interviews upon the first telephonic contact (the reasons for non eligibility included recent bankruptcy or the company not being in manufacturing), and 310 were never contacted because the project ended before this was possible. The final number of eligible companies was thus 6,527, with median yearly sales of \$53,000,000. Of these, we were able to secure an interview with 1,131 CEOs, although 17 CEOs dropped out before the end of the data collection week for personal reasons and were thus removed from the sample before the analysis was conducted.

The selection analysis in Table A1 shows that firms in the final sample have on average slightly lower log sales relative to the sampling frame (coefficient 0.071, standard error 0.011). However, we do not find any significant selection effect on performance variables, such as labor productivity (sales over employees) and return on capital employed (ROCE).

A.2 Firm Data

A.2.1 Accounts

The data on sales, employment, capital, materials, profits, return on capital employed, market values came from ORBIS.²³ In the regressions shown in Table 6, columns 1, 2 and 4-8 we restrict the sample to the three most recent years in the interval running from 2007 to 2011 in India and 2008 to 2012 for the rest of the sample, and use only years in which the CEO was in office. The summary statistics for this sample are shown in Table A7.

A.2.2 Ownership

Ownership data is collected in interviews with the CEOs and independently checked using several Internet sources (e.g. The Economic Times of India, Bloomberg, etc.), information provided on the company website and supplemental phone interviews. We define a firm to be owned by an entity if this controls more than 25.01% of the shares; if no single entity owns at least 25.01% of the share the firm is labeled as “Dispersed shareholder”. Family firms are defined as those where a family (combined across all family members, all second generation relative to the founder or beyond) are the largest shareholders. Founder firms are defined as those where the original founder of the company is the largest shareholder. For both family 2nd generation and founder firms, we distinguish between cases in which a family firm or the founder are also CEOs of the company, in contrast to cases in which a professional manager (i.e. a person not affiliated with the founder or the family) has been nominated CEO. In the analysis we combine founder CEO and family, 2nd generation CEOs in a single category (41% of the sample). The omitted category in all regressions includes family or founder owned firms with professional CEOs (16.2%), dispersed shareholders

²³The main exception is India, where employment figures are typically not published in the public accounts. Therefore, we gathered this information from the survey questionnaire.

(22.5%), government (0.8%), private equity/venture capital (7.5%), private individuals who are not founders or heirs to the founders of the company (9.3%). In 2.7% of the sample, the firm was owned by joint venture with equal split of the ownership shares.

A.3 Industry Data

Our industry classification is the US SIC (1987). Each firm is allocated to each main two digit sector based on sales. We have 32 distinct two digit industries, and at least two companies for all of these industries except 4 (0.4% of the sample of firms).

The Lerner index of competition is constructed following Aghion et al. (2005) as the mean of (1-profit/sales) in the entire database excluding the firm itself for every three digit SIC industry, using accounting data relative to the six countries in our sample (data averaged between 2006 and 2010 for India and between 2008 and 2012 for the rest of the countries).

The import competition measure is built as real industry imports divided by industry sales, using STAN data produced by the OECD. The measure is obtained by taking averages across all countries in our sample for which the industry measures were available (France, Germany, UK and US). The years used to build this measures are 2006 to 2008, i.e. the latest years for which the data was produced using the ISIC REV3 classification (the coverage of the countries included in our sample declines dramatically in the data produced using the ISIC REV4 classification).

A.4 Shocks

A.4.1 Monsoons

The climate data was extracted on 12/08/2011 from <http://www7.ncdc.noaa.gov/CDO/cdodata.cmd>. The data was merged with station coordinates (latitude and longitude), and these were in turn used to merge the data with the time use dataset using the date and zipcode of each of the activities recorded in the data (data matched with the closest station, distance computed by generating the vertical and horizontal distance using the latitude and longitude points and applying Pythagoras). The definition of days of intense rain is based on the comparison of the daily rainfall precipitation with the average precipitation in the pre-Monsoon month of May for the same station. We first compute a variable measuring for each day between June 1st and July 31st the change in precipitation relative to the average May values for the same station. We then define a variable “Extreme Rain” which takes value one if the change in rainfall lies in the third tercile of the overall distribution computed using data across all stations in the sample.

The measure can be constructed for 350 CEOs in the sample. About 45% of the sample includes days of extreme rain (standard deviation is .49). 253 CEOs in the sample (159 Family CEOs and 94 professional CEOs) have at least one day of extreme rain during the sample week. 289 CEOs in the sample (194 Family CEOs and 95 professional CEOs) have at least one day of non-extreme rain

during the sample week. 192 CEOs in the sample (118 Family CEOs and 74 professional CEOs) have at least one day of extreme rain and one day of non-extreme rain during the sample week.

A.4.2 Cricket Games

We use data on the 2011 Indian Premier League (IPL) Cricket tournament. We focus on four games: two playoffs (Royal Challengers vs. Chennai Super Kings, played on 5/25/2011) and Mumbai Indians vs. Kolkata Knight Riders, played on 5/25/2011), one semi-final for the 3rd and 4th place (Royal Challengers vs. Mumbai Indians, played on 5/27/2011) and the final (Chennai Super Kings vs. Royal Challengers (played on 5/28/2011).

Since we surveyed multiple CEOs within the same day, the sample includes 88 CEO-days with a cricket game (the mean of the cricket dummy is 0.048, standard deviation is 0.21). Overall, we have 28 CEOs which were exposed to the cricket game during the survey week. Of these, 18 are family CEOs and the rest are professional CEOs.

A.5 Country and Region Data

Data on cross country differences in inheritance laws is drawn from Ellul et al (2010). The variable “Max % of inheritable wealth” used in Table 5 measures the largest share of the estate that in each country a testator can bequeath to a single child in presence of a surviving spouse and two siblings (Ellul et al show that the median number of children of firm owners is estimated to be two across almost all countries where this could be calculated). We use the measure published on Table 1, column 4 of the paper for all countries except for India. The measure proposed for India by Ellul et al is based on the Indian Succession Act, which applies to all non Hindu and non Muslim citizens. Since the vast majority (81%) of the Indian family firms in our sample are organized as Hindu United Family (HUF) organizations, we refer instead to the Hindu Succession Act (1956) which stipulates that the head of a HUF family firm must bequeath his share of the firm in equal parts to all members of the HUF. Since there must be at least two members in a HUF and we do not know the number of family members, we take 0.5 to be the upper bound of the inheritance share. Results are robust to assuming there are three surviving members hence the maximal share is 0.33.

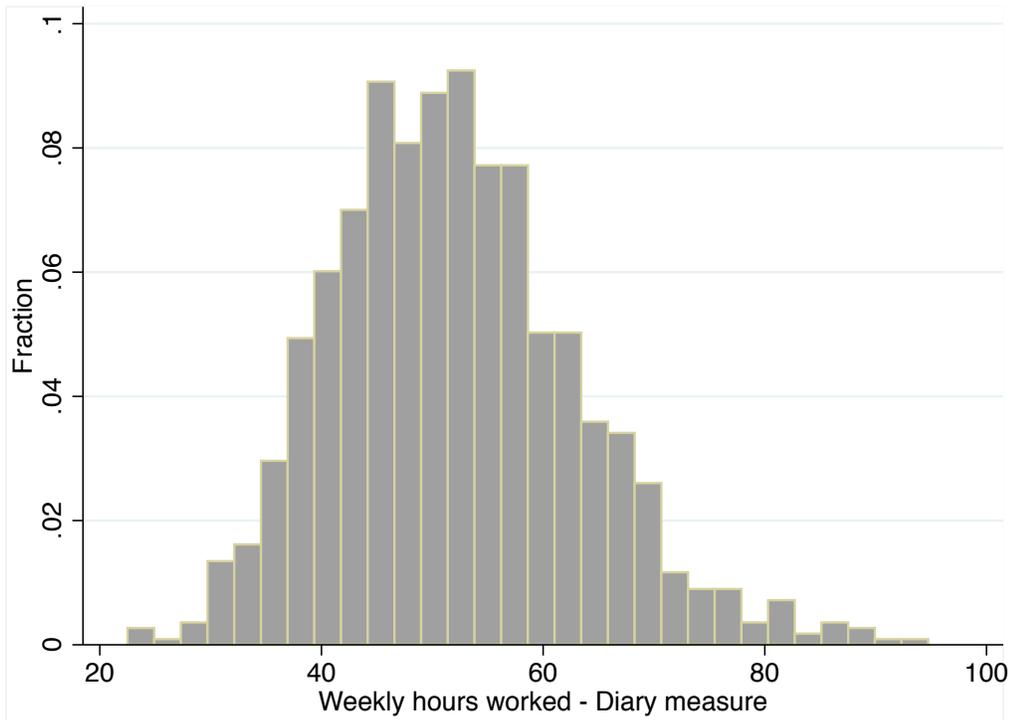
The Rule of Law measure captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country’s score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. and is drawn from the Kauffman et al (2010).

Data on regional GDP per capita is drawn from Gennaioli et al (2103). The measure is expressed in PPP constant 2005 international dollars.

Data on regional trust has been calculated from the World Values Survey (WVS). The WVS is a cross-country project coordinated by the Institute for Social Research of the University of

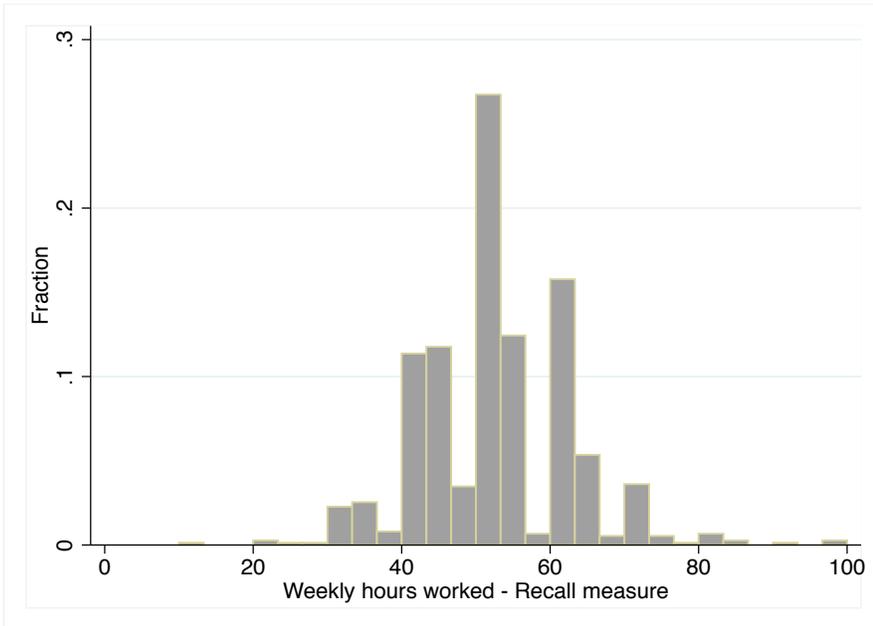
Michigan. Each wave carries out representative surveys of the basic values and beliefs of individuals in a large cross-section of countries. The questionnaire contains answers to specific questions about religion and social attitudes, including several questions on generalized and specific trust (e.g. trust in the family, government etc.), as well as detailed information on the social and education background of the respondents (age, income, and education). The key question we use is the standard one: “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?”. The WVS data can be downloaded from the WVS website (www.worldvaluessurvey.org). For the purposes of our analysis, we pool together four successive waves of data collection (1981–1984, 1989–1993, 1994–1999 and 1999–2004), and we use only individual entries with information on the respondents’ region of residence. We compute the regional level of trust by taking the simple average over all observations available for the region across all WVS waves (see Bloom, Sadun and Van Reenen, 2012 for further details).

Figure 1 - Weekly hours worked, diary measure



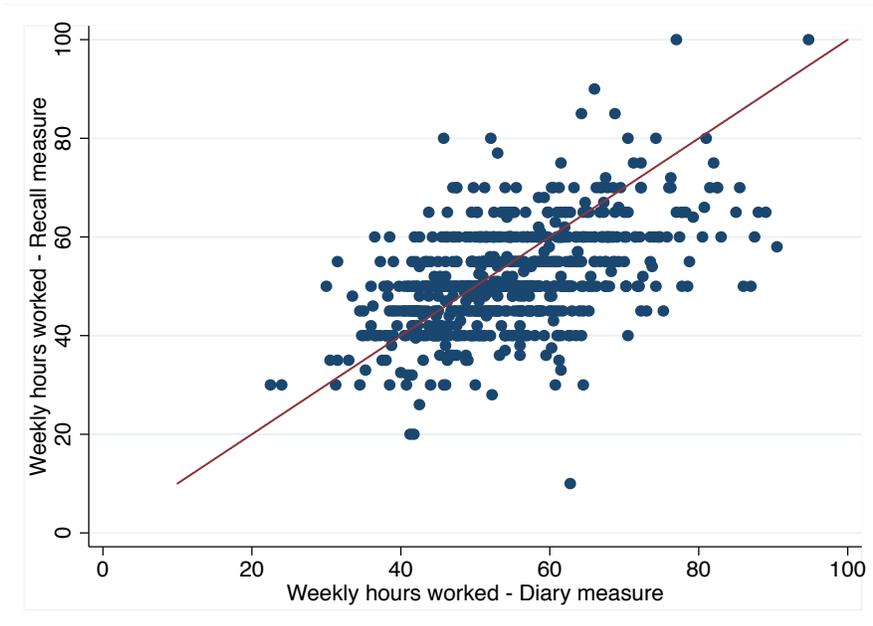
Notes: The graph shows the histogram of total weekly hours worked (built from actual diary data) by a sample of 1114 CEOs.

Figure 2a - Weekly hours worked - Recall Measure



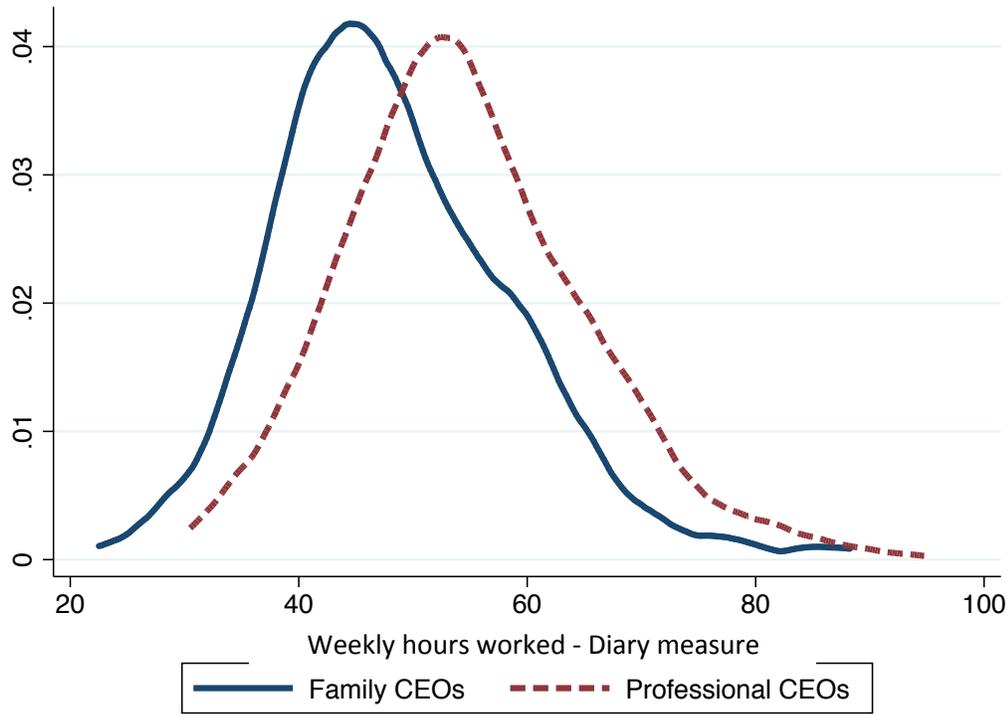
Notes: The graph shows the histogram of total weekly hours worked (CEO estimates recorded at the end of the data collection week) by a sample of 758 CEOs (all CEOs in sample excluding India, where the recall question was not asked).

Figure 2b - Weekly hours worked - Diary vs. Recall Measure



Notes: The graph shows the linear regression of total weekly hours worked (CEO estimates recorded at the end of the data collection week) and actual hours worked (built from diary data) for a sample of 758 CEOs (all CEOs in sample excluding India, where the recall question was not asked).

Figure 3 - Weekly hours worked, Family and Professional CEOs



Notes: The graph shows the kernel distribution of total weekly hours worked (built from actual diary data) by a sample of 1114 CEOs, of which 458 classified as "family CEOs", and 656 classified as "professional CEOs".

Table 1 - Summary Statistics (means, standard deviation in parentheses except for column 4)

	(1)	(2)	(3)	(4)
Panel A. Use of Time	All	Family CEOs	Professional CEOs	Difference (3)-(2) (T-statistic)
Total weekly hours worked - recall measure	51.719 (10.105)	49.147 (10.727)	52.749 (9.665)	3.602*** (4.46)
Total weekly hours worked - diary measure	52.009 (11.026)	48.378 (10.504)	54.543 (10.674)	6.165*** (9.55)
Total weekly hours worked excluding activities < 15 mins, personal & travel	41.439 (10.035)	37.415 (9.740)	44.249 (9.258)	6.834*** (11.87)
Number of days at work	5.356 (0.695)	5.303 (0.639)	5.393 (0.729)	0.0898* (2.13)
Beginning of work day (hour)	8.826 (1.161)	9.260 (1.213)	8.524 (1.019)	-0.736*** (-10.96)
End of work day (hour)	18.270 (1.566)	18.239 (1.383)	18.291 (1.682)	0.0511 (0.54)
Share of time spent in personal activities	0.101 (0.099)	0.123 (0.113)	0.086 (0.084)	-0.0379*** (-6.42)
Panel B. CEO characteristics				
Age	50.930 (8.458)	50.562 (9.738)	51.187 (7.425)	0.625 (1.21)
Male (=1 if CEO is male)	0.961 (0.193)	0.950 (0.219)	0.970 (0.172)	0.0197 (1.68)
College degree (=1 if CEO has a college degree)	0.925 (0.264)	0.904 (0.295)	0.939 (0.239)	0.0351* (2.19)
MBA (=1 if CEO has been awarded an MBA)	0.548 (0.498)	0.430 (0.496)	0.631 (0.483)	0.201*** (6.76)
Tenure as CEO (number of years)	10.298 (9.550)	15.586 (10.514)	6.602 (6.677)	-8.984*** (-17.40)
Tenure in firm (number of years)	17.116 (11.597)	22.862 (10.497)	13.119 (10.611)	-9.742*** (-15.11)
Experience abroad (=1 if CEO has had worked experience abroad)	0.482 (0.500)	0.393 (0.489)	0.544 (0.498)	0.151*** (5.02)
CEO holds positions in other firms (=1 if CEO hold managerial positions in other firms)	0.418 (0.494)	0.456 (0.499)	0.392 (0.489)	-0.0646* (-2.15)
Panel C. Firm characteristics				
Domestic or Foreign Multinational (=1 if firm is owned by a foreign or domestic MNE)	0.242 (0.429)	0.188 (0.391)	0.280 (0.450)	0.0927*** (3.57)
Number of Employees	1571.051 (10127.428)	1036.575 (3660.922)	1945.432 (12837.271)	908.9 (1.47)
Number of CEO direct reports	7.775 (3.774)	7.389 (3.979)	8.044 (3.604)	0.656** (2.86)
COO (=1 if COO exists)	0.259 (0.439)	0.177 (0.382)	0.317 (0.466)	0.140*** (5.32)
Number of sons in management positions	0.103 (0.304)	0.245 (0.430)	0.005 (0.068)	-0.240*** (-14.04)
Number of daughters in management positions	0.043 (0.203)	0.096 (0.295)	0.006 (0.078)	-0.0900*** (-7.45)
Data collected through the CEO personal assistant	0.428 (0.495)	0.373 (0.484)	0.466 (0.499)	0.0931** (3.10)
Panel D. External Environment				
Located in emerging economies (=1 if India or Brazil)	0.573 (0.495)	0.779 (0.415)	0.428 (0.495)	-0.351*** (-12.43)
Lerner Index	1.227 (0.412)	1.225 (0.419)	1.229 (0.408)	0.00337 (0.13)
Import Penetration	0.614 (0.566)	0.638 (0.623)	0.597 (0.523)	-0.0406 (-1.12)
Number of Observations	1114	458	656	

Notes: The table shows summary statistics (means, standard deviation in parentheses in columns 1-3; differences and t-statistic in parentheses in column 4) of CEO time use, CEO characteristics, firm and industry level data for the sample CEOs. Family CEOs are those who own the firm or belong to the family that owns the firm. All variables in Panel A, B and C collected in the CEO time use survey. Import penetration = $\ln(\text{import}/\text{production})$ in the firm ISIC REV3 industry, computed by averaging OECD STAN data relative to the 2006–2008 time period (last available year for all countries) across France, Germany, US and UK at the industry level. Lerner index of competition = $(1 - \text{profit}/\text{sales})$ in the firm 3 digit SIC industry computed, as in Aghion et al. (2005), by averaging firm level data in ORBIS relative to the 2008-2012 time period across Brazil, France, Germany, India, US and UK at the industry level.

Table 2 - Family vs. Professional CEOs - Cross sectional differences in Hours Worked

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ln(Hours Worked) -Diary Measure							ln(Hours Worked) - Recall measure
Family CEO	-0.180*** (0.015)	-0.113*** (0.017)	-0.110*** (0.019)	-0.104*** (0.019)	-0.088*** (0.020)	-0.088*** (0.019)	-0.082*** (0.020)	-0.051** (0.022)
Family Ownership, External CEO							0.020 (0.018)	
CEO holds positions in other firms			0.015 (0.015)	0.010 (0.015)	0.013 (0.015)	0.008 (0.015)	0.007 (0.015)	0.014 (0.016)
Ln(CEO age)			-0.157*** (0.040)	-0.170*** (0.040)	-0.127*** (0.042)	-0.129*** (0.041)	-0.131*** (0.041)	-0.014 (0.049)
Ln(1+CEO tenure in firm)			-0.003 (0.010)	-0.007 (0.010)	-0.006 (0.010)	-0.005 (0.010)	-0.005 (0.010)	-0.010 (0.010)
CEO holds College degree			0.056* (0.029)	0.051* (0.029)	0.049* (0.029)	0.063** (0.029)	0.062** (0.029)	0.035 (0.031)
CEO holds MBA degree			0.013 (0.016)	0.007 (0.016)	0.008 (0.016)	0.011 (0.016)	0.011 (0.016)	0.025 (0.018)
CEO has study/work experience abroad			0.022 (0.016)	0.011 (0.016)	0.008 (0.016)	0.002 (0.016)	0.002 (0.016)	0.005 (0.016)
Ln(Employment)				0.024*** (0.006)	0.019*** (0.006)	0.023*** (0.007)	0.023*** (0.007)	0.021*** (0.008)
Ln(Firm age)				0.006 (0.009)	0.004 (0.009)	0.001 (0.009)	0.000 (0.009)	-0.005 (0.010)
MNE				0.022 (0.018)	0.018 (0.018)	0.025 (0.018)	0.025 (0.018)	0.016 (0.018)
Number of CEO direct reports					0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.005** (0.002)
COO exists					-0.006 (0.018)	-0.016 (0.018)	-0.015 (0.018)	0.008 (0.017)
Number of sons in management positions					-0.045** (0.022)	-0.057*** (0.021)	-0.056*** (0.021)	-0.022 (0.031)
Number of daughters in management positions					-0.016 (0.030)	-0.024 (0.027)	-0.024 (0.027)	0.035 (0.035)
Data collected through the CEO personal assistant						-0.001 (0.016)	-0.000 (0.016)	0.039** (0.017)
Constant	3.767*** (0.008)	3.587*** (0.017)	4.098*** (0.169)	4.005*** (0.168)	3.783*** (0.177)	3.799*** (0.184)	3.811*** (0.184)	3.875*** (0.215)
R-squared	0.118	0.209	0.223	0.237	0.250	0.345	0.345	0.212
Number of firms	1114	1114	1114	1114	1114	1114	1114	748
Country dummies	n	y	y	y	y	y	y	y
Industry dummies	n	n	y	y	y	y	y	y
Noise controls	n	n	n	n	n	y	y	y

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS (robust standard errors in parenthesis). The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey week. The variable "CEO Hours Worked - Recall Measure" is the log of the total hours the CEO devoted to work activities as recalled by the CEO at the end of the survey week. **Family CEO=1** for those who own the firm or belong to the family that owns the firm, and 0 otherwise. **Industry dummies** are 33 two digits SIC codes. **Noise controls** include: a dummy to denote if the time use data was recorded by the PA; 55 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 29 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday.

Table 3 - Difference in difference estimates I

	(1)	(2)	(3)	(4)
	ln(Hours Worked)			
Dependent Variable				
Family CEO	-0.267*** (0.074)	-0.252*** (0.086)	-0.165*** (0.043)	-0.123*** (0.030)
ln(Employment)	0.012 (0.008)	0.016* (0.009)	0.023*** (0.007)	0.025*** (0.006)
Family CEO*ln(Employment)	0.029** (0.011)			
ln(Sales)		0.004 (0.007)		
Family CEO*ln(Sales)		0.016** (0.008)		
Lerner index			0.027 (0.017)	
Family CEO*Lerner index			0.058** (0.026)	
Family CEO*Import Penetration (OECD)				0.045** (0.018)
Constant	3.755*** (0.235)	3.657*** (0.215)	3.712*** (0.189)	3.860*** (0.129)
R-squared	0.349	0.357	0.350	0.276
Number of firms	1107	912	1020	1006
Country dummies	y	y	y	y
Industry dummies	y	y	y	y
CEO characteristics	y	y	y	y
Firm characteristics	y	y	y	y
Noise controls	y	y	y	y

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS. In all columns robust standard errors under coefficient, except for columns 6, 7 and 8 (clustered by 3 digits SIC codes). The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey week. Family CEO=1 for those who own the firm or belong to the family that owns the firm, and 0 otherwise. **Industry dummies** are 33 two digits SIC codes. **CEO characteristics** are a dummy to denote CEOs holding a managerial or board position in another firm, the log of CEO age, the log of one plus number of years CEO has been employed in the firm, a dummy to denote CEOs holding a college degree, a dummy to denote CEOs holding an MBA or equivalent degree, a dummy to denote CEO that have worked or studied abroad. **Firm characteristics** are the log of one plus firm age, a dummy to denote foreign or domestic multinationals, the number of people reporting directly to the CEO, a dummy to denote whether the firm employs a COO, the number of CEO's sons and daughters holding a managerial position in the same firm. **Noise controls** include: a dummy to denote cases in which the time use data was recorded by the CEO's Personal Assistant; 55 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 29 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday. Import penetration = $\ln(\text{import/production})$ in the firm ISIC REV3 industry, computed by averaging OECD STAN data relative to the 2006–2008 time period (last available year for all countries) across France, Germany, US and UK at the industry level. Lerner index of competition = $(1-\text{profit/sales})$ in the firm 3 digit SIC industry computed, as in Aghion et al. (2005), by averaging firm level data in ORBIS relative to the 2008-2012 time period across Brazil, France, Germany, India, US and UK at the industry level.

Table 4 - Difference in difference estimates II

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	ln(1+ Hours Worked) - Day Level				ln(1+Hours Before 3PM)	ln(1+Hours After 3PM)
Family CEO	-0.070*** (0.024)	-0.031 (0.029)	-0.077*** (0.025)	-0.074*** (0.025)	-0.083** (0.032)	0.022 (0.039)
Dummy=1 if extreme rain	-0.023 (0.019)	0.033 (0.025)				
Dummy=1 if extreme rain * Family CEO		-0.083** (0.033)				
Cricket game			-0.058** (0.025)	-0.027 (0.019)	0.074* (0.040)	-0.090** (0.039)
Cricket game *Family CEO				-0.049 (0.048)	-0.120** (0.048)	-0.044 (0.080)
Constant	2.018*** (0.288)	1.989*** (0.287)	2.268*** (0.256)	2.271*** (0.256)	1.527*** (0.382)	0.559 (0.414)
R-squared	0.189	0.193	0.176	0.176	0.096	0.093
Observations	1603	1603	1832	1832	1832	1832
Number of firms	349	349	349	349	349	349
Industry dummies	y	y	y	y	y	y
CEO characteristics	y	y	y	y	y	y
Firm characteristics	y	y	y	y	y	y
Noise controls	y	y	y	y	y	y
Test Rain+Family CEO*Rain=0 (p-value)		0.04				
Test Cricket+Family CEO*Cricket=0 (p-value)				0.12	0.01	0.07

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. This table is based on day level data collected from CEOs in India. All columns estimated by OLS. Standard errors under coefficient are clustered by firm in columns 1 and 2, and by firm and date in columns 3 to 6. The variable "CEO Hours Worked" is the log of 1 plus the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey day. Family CEO=1 for those who own the firm or belong to the family that owns the firm, and 0 otherwise. "Extreme Rain" is a dummy denoting intense rainfall (relative to the non Monsoon period) in the area and day where the CEO is located (data measured by the closest weather station, matched to the zipcode of the CEO activities for the day). "Cricket game" is a dummy denoting that an Indian Premier League playoff, semifinal or final game was played and broadcasted on television on the day. Industry dummies are 19 two digits SIC codes. **Firm characteristics** are the log of one plus firm age, a dummy to denote foreign or domestic multinationals, the number of people reporting directly to the CEO, a dummy to denote whether the firm employs a COO, the number of CEO's sons and daughters holding a managerial position in the same firm. **CEO characteristics** are a dummy to denote CEOs holding a managerial or board position in another firm, the log of CEO age, the log of one plus number of years CEO has been employed in the firm, a dummy to denote CEOs holding a college degree, a dummy to denote CEOs holding an MBA or equivalent degree, a dummy to denote CEO that have worked or studied abroad. **Noise controls** include: a dummy to denote cases in which the time use data was recorded by the CEO's Personal Assistant; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday.

Table 5- Wealth Concentration, Development and Contract Enforcement

Dependent Variable	(1)	(2)	(3)	(4)	(5)
Family CEO	-0.093*** (0.024)	-0.089*** (0.023)	-0.089*** (0.023)	-0.087*** (0.023)	-0.090*** (0.023)
Family CEO*Max % of inheritable wealth, country	-0.229** (0.118)				-0.399* (0.208)
ln(GDP), region		0.043 (0.031)			0.020 (0.034)
Family CEO*ln(GDP), region		-0.018 (0.019)			0.030 (0.048)
Family CEO*Rule of Law, country			-0.008 (0.025)		0.008 (0.062)
Trust, region				-0.171 (0.174)	-0.144 (0.194)
Family CEO*Trust, region				0.074 (0.121)	0.066 (0.214)
R-squared	0.349	0.346	0.345	0.345	0.349
Observations	1114	1114	1114	1114	1114
Country dummies	y	y	y	y	y
Industry dummies	y	y	y	y	y
CEO characteristics	y	y	y	y	y
Firm characteristics	y	y	y	y	y
Noise controls	y	y	y	y	y

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS. In all columns standard errors under coefficient are clustered by country (wild cluster bootstrap, Webb 6 point distribution). The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey week. Family CEO=1 for those who own the firm or belong to the family that owns the firm, and 0 otherwise. **Industry dummies** are 33 two digits SIC codes. **CEO characteristics** are a dummy to denote CEOs holding a managerial or board position in another firm, the log of CEO age, the log of one plus number of years CEO has been employed in the firm, a dummy to denote CEOs holding a college degree, a dummy to denote CEOs holding an MBA or equivalent degree, a dummy to denote CEO that have worked or studied abroad. **Firm characteristics** are the log of one plus firm age, a dummy to denote foreign or domestic multinationals, the number of people reporting directly to the CEO, a dummy to denote whether the firm employs a COO, the number of CEO's sons and daughters holding a managerial position in the same firm. **Noise controls** include: a dummy to denote cases in which the time use data was recorded by the CEO's Personal Assistant; 55 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 29 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday. The variable "Max % of inheritable wealth" is a country specific measure taken from Ellul et al (2010) for all countries, except for India where the measure is set to 0.50 to take into account the fact that the vast majority of family firms in our sample are organized as Hindu Undivided Family organizations (see main text for more details). The variables ln(GDP), region" and "Rule of Law, country" are taken from Gennaioli et al (2013). The variable "Trust, region" is computed using respondent level data from the World Values Survey and measures the % of people responding "Yes" to the question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?".

Table 6 - CEO Hours Worked and Firm Performance

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ln(Sales)				Profitability (ROCE, %)	Tobin's q	Growth (Sales, 1 year, %)
	CEO in office	CEO in office	CEO not in office	CEO in office	CEO in office	CEO in office	CEO in office
ln(Hours Worked)	0.448** (0.208)	0.364** (0.155)	-0.198 (0.312)		0.039* (0.022)	0.580** (0.284)	0.036** (0.016)
ln(1+Hours Travel)				0.027 (0.036)			
ln(Employment)	0.973*** (0.045)	0.478*** (0.063)	0.664*** (0.080)	0.484*** (0.062)	0.003 (0.003)	0.193*** (0.058)	0.002 (0.004)
ln(Capital)		0.265*** (0.039)	0.139*** (0.047)	0.269*** (0.040)			
ln(Materials)		0.410*** (0.034)	0.388*** (0.056)	0.412*** (0.035)			
R-squared	0.537	0.755	0.835	0.754	0.171	0.264	0.212
Observations	2849	2849	868	2849	2080	1183	2199
Number of firms	909	909	357	912	493	298	780
Year*Country dummies	Y	Y	Y	Y	Y	Y	Y
Industry*Country dummies		Y	Y	Y	Y	Y	Y
Noise controls		Y	Y	Y	Y	Y	Y

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS (standard errors under coefficient clustered by firm). The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey week. The dependent variable in columns 1 to 4 is the log sales; in column 5, Return on Capital Employed (ROCE); in column 6, 1 year sales growth; in column 7, Tobin's Q. Accounting data run between 2007 and 2013. Each column includes a full set of country and year dummies. We include only years in which the CEO was in office in all columns except for column 4, and allow for a maximum of three years of accounts for each firm (3 most recent years with non missing data in ORBIS). In column 4 we include only years in which the CEO was not in office. In columns 3-6 materials and capital are set to -99 if not available, and a dummy to denote this is included as additional control in the regression. **Noise controls** include: a dummy to denote case in which the time use data was recorded by the CEO's Personal Assistant; 55 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 29 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday.

A Data Appendix

A.1 The Time Use Survey

A.1.1 Survey Management

The time use survey took place in two stages: in the Spring of 2011 a team of 15 analysts based in Mumbai and led by one of our project managers collected data on India, while the rest of the countries were covered in a second survey wave in the Spring of 2013 by a team of 40 enumerators based at the London School of Economics. To ensure comparability, we adopted the same protocol and retained the same project manager across both waves. The enumerators were typically graduate students (often MBAs) recruited specifically for this project. All enumerators were subject to a common intensive training on the survey methodology for three days at the beginning of the project, plus weekly team progress reviews and one to one conversations with their supervisors to discuss possible uncertainties with respect to the classification of the time use data. Each interview was checked off at the end of the week by one supervisor, who would make sure that the data was complete in every field, and that the enumerator had codified all the activities according to the survey protocol. Each enumerator ran on average 30 interviews.

Each enumerator was allocated a random list of about 120 companies, and was in charge of calling up the numbers of his or her list to convince the CEO to participate in the survey, and to collect the time use data in the week allocated to the CEO. One project manager, five full time supervisors and one additional manager working on a part time basis led the survey team.

We actively monitored and coached the enumerators throughout the project, which intensified their persistence in chasing the CEOs and getting them to participate. We also offered the CEOs a personalized analysis of their use of time (which was sent to them in January 2012 to the Indian CEOs and in June 2014 to the rest of the countries) to give them the ability to monitor their time allocation, and compare it with peers in the industry.

A.1.2 Sampling Frame

The sampling frame was drawn from ORBIS, an extensive commercial data set that contains company accounts for several millions of companies around the world. Our sampling criteria were as follows. First, we restricted the sample to manufacturing and additionally kept firms that were classified as “active” in the year prior to the survey (2010 in India and 2012 for the other countries) and with available recent accounting data.²² These conditions restricted our sample to 11,500 firms. Second, we further restricted the sample to companies for which we could find CEOs contact details. To gather contact information we hired a team of research assistants based in Mumbai, London and

²²For the Indian sample, we also restricted the sample to firms headquartered in the fifteen main Indian states. This excluded firms located in Assam, Bihar, Chandigarh, Chhattisgarh, Dadra, Daman and Diu, Goa, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Orissa and Uttarakhand, each of which accounts for less than 3% of Indian GDP.

Boston who verified the CEOs names and found their phone numbers and emails. This restricted the sample to 7,744 firms. Of these, 907 later resulted not to be eligible for the interviews upon the first telephonic contact (the reasons for non eligibility included recent bankruptcy or the company not being in manufacturing), and 310 were never contacted because the project ended before this was possible. The final number of eligible companies was thus 6,527, with median yearly sales of \$53,000,000. Of these, we were able to secure an interview with 1,131 CEOs, although 17 CEOs dropped out before the end of the data collection week for personal reasons and were thus removed from the sample before the analysis was conducted.

The selection analysis in Table A1 shows that firms in the final sample have on average slightly lower log sales relative to the sampling frame (coefficient 0.071, standard error 0.011). However, we do not find any significant selection effect on performance variables, such as labor productivity (sales over employees) and return on capital employed (ROCE).

A.2 Firm Data

A.2.1 Accounts

The data on sales, employment, capital, materials, profits, return on capital employed, market values came from ORBIS.²³ In the regressions shown in Table 6, columns 1, 2 and 4-8 we restrict the sample to the three most recent years in the interval running from 2007 to 2011 in India and 2008 to 2012 for the rest of the sample, and use only years in which the CEO was in office. The summary statistics for this sample are shown in Table A7.

A.2.2 Ownership

Ownership data is collected in interviews with the CEOs and independently checked using several Internet sources (e.g. The Economic Times of India, Bloomberg, etc.), information provided on the company website and supplemental phone interviews. We define a firm to be owned by an entity if this controls more than 25.01% of the shares; if no single entity owns at least 25.01% of the share the firm is labeled as “Dispersed shareholder”. Family firms are defined as those where a family (combined across all family members, all second generation relative to the founder or beyond) are the largest shareholders. Founder firms are defined as those where the original founder of the company is the largest shareholder. For both family 2nd generation and founder firms, we distinguish between cases in which a family firm or the founder are also CEOs of the company, in contrast to cases in which a professional manager (i.e. a person not affiliated with the founder or the family) has been nominated CEO. In the analysis we combine founder CEO and family, 2nd generation CEOs in a single category (41% of the sample). The omitted category in all regressions includes family or founder owned firms with professional CEOs (16.2%), dispersed shareholders

²³The main exception is India, where employment figures are typically not published in the public accounts. Therefore, we gathered this information from the survey questionnaire.

(22.5%), government (0.8%), private equity/venture capital (7.5%), private individuals who are not founders or heirs to the founders of the company (9.3%). In 2.7% of the sample, the firm was owned by joint venture with equal split of the ownership shares.

A.3 Industry Data

Our industry classification is the US SIC (1987). Each firm is allocated to each main two digit sector based on sales. We have 32 distinct two digit industries, and at least two companies for all of these industries except 4 (0.4% of the sample of firms).

The Lerner index of competition is constructed following Aghion et al. (2005) as the mean of (1-profit/sales) in the entire database excluding the firm itself for every three digit SIC industry, using accounting data relative to the six countries in our sample (data averaged between 2006 and 2010 for India and between 2008 and 2012 for the rest of the countries).

The import competition measure is built as real industry imports divided by industry sales, using STAN data produced by the OECD. The measure is obtained by taking averages across all countries in our sample for which the industry measures were available (France, Germany, UK and US). The years used to build this measures are 2006 to 2008, i.e. the latest years for which the data was produced using the ISIC REV3 classification (the coverage of the countries included in our sample declines dramatically in the data produced using the ISIC REV4 classification).

A.4 Shocks

A.4.1 Monsoons

The climate data was extracted on 12/08/2011 from <http://www7.ncdc.noaa.gov/CDO/cdodata.cmd>. The data was merged with station coordinates (latitude and longitude), and these were in turn used to merge the data with the time use dataset using the date and zipcode of each of the activities recorded in the data (data matched with the closest station, distance computed by generating the vertical and horizontal distance using the latitude and longitude points and applying Pythagoras). The definition of days of intense rain is based on the comparison of the daily rainfall precipitation with the average precipitation in the pre-Monsoon month of May for the same station. We first compute a variable measuring for each day between June 1st and July 31st the change in precipitation relative to the average May values for the same station. We then define a variable “Extreme Rain” which takes value one if the change in rainfall lies in the third tercile of the overall distribution computed using data across all stations in the sample.

The measure can be constructed for 350 CEOs in the sample. About 45% of the sample includes days of extreme rain (standard deviation is .49). 253 CEOs in the sample (159 Family CEOs and 94 professional CEOs) have at least one day of extreme rain during the sample week. 289 CEOs in the sample (194 Family CEOs and 95 professional CEOs) have at least one day of non-extreme rain

during the sample week. 192 CEOs in the sample (118 Family CEOs and 74 professional CEOs) have at least one day of extreme rain and one day of non-extreme rain during the sample week.

A.4.2 Cricket Games

We use data on the 2011 Indian Premier League (IPL) Cricket tournament. We focus on four games: two playoffs (Royal Challengers vs. Chennai Super Kings, played on 5/25/2011) and Mumbai Indians vs. Kolkata Knight Riders, played on 5/25/2011), one semi-final for the 3rd and 4th place (Royal Challengers vs. Mumbai Indians, played on 5/27/2011) and the final (Chennai Super Kings vs. Royal Challengers (played on 5/28/2011).

Since we surveyed multiple CEOs within the same day, the sample includes 88 CEO-days with a cricket game (the mean of the cricket dummy is 0.048, standard deviation is 0.21). Overall, we have 28 CEOs which were exposed to the cricket game during the survey week. Of these, 18 are family CEOs and the rest are professional CEOs.

A.5 Country and Region Data

Data on cross country differences in inheritance laws is drawn from Ellul et al (2010). The variable “Max % of inheritable wealth” used in Table 5 measures the largest share of the estate that in each country a testator can bequeath to a single child in presence of a surviving spouse and two siblings (Ellul et al show that the median number of children of firm owners is estimated to be two across almost all countries where this could be calculated). We use the measure published on Table 1, column 4 of the paper for all countries except for India. The measure proposed for India by Ellul et al is based on the Indian Succession Act, which applies to all non Hindu and non Muslim citizens. Since the vast majority (81%) of the Indian family firms in our sample are organized as Hindu United Family (HUF) organizations, we refer instead to the Hindu Succession Act (1956) which stipulates that the head of a HUF family firm must bequeath his share of the firm in equal parts to all members of the HUF. Since there must be at least two members in a HUF and we do not know the number of family members, we take 0.5 to be the upper bound of the inheritance share. Results are robust to assuming there are three surviving members hence the maximal share is 0.33.

The Rule of Law measure captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country’s score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. and is drawn from the Kauffman et al (2010).

Data on regional GDP per capita is drawn from Gennaioli et al (2103). The measure is expressed in PPP constant 2005 international dollars.

Data on regional trust has been calculated from the World Values Survey (WVS). The WVS is a cross-country project coordinated by the Institute for Social Research of the University of

Michigan. Each wave carries out representative surveys of the basic values and beliefs of individuals in a large cross-section of countries. The questionnaire contains answers to specific questions about religion and social attitudes, including several questions on generalized and specific trust (e.g. trust in the family, government etc.), as well as detailed information on the social and education background of the respondents (age, income, and education). The key question we use is the standard one: “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?”. The WVS data can be downloaded from the WVS website (www.worldvaluessurvey.org). For the purposes of our analysis, we pool together four successive waves of data collection (1981–1984, 1989–1993, 1994–1999 and 1999–2004), and we use only individual entries with information on the respondents’ region of residence. We compute the regional level of trust by taking the simple average over all observations available for the region across all WVS waves (see Bloom, Sadun and Van Reenen, 2012 for further details).

Figure A1 - Survey screenshot

Tuesday
TUE, Overview | TUE, Activity 1-5 | TUE, Activity 6-10 | TUE, Activity 11-15 | [Go to WEDNESDAY PLANNED AGENDA](#) | [Back to Contact Log](#)

Company Name: XXXXXXXXXX

ACTUAL AGENDA

Tuesday

On Tuesday, at what time did the Executive START working? Please consider all work-related activities (e.g. calls from home, breakfast meetings). 09:30 AM

On Tuesday, at what time did the Executive FINISH working? Please consider all work-related activities (e.g. calls from home, dinner meetings). 09:15 PM

Please enter all activities lasting more than 15 minutes for Tuesday. You can report up to 15 activities if necessary.

Activity 1:	Preparing daily schedule/HQ/alone	Start Time:	09:30 AM	End Time:	10:00 AM
Activity 2:	Checking MIS from Finance dept./HQ/alone	Start Time:	10:00 AM	End Time:	10:30 AM
Activity 3:	meeting / HQ/ consultant	Start Time:	10:30 AM	End Time:	12:00 PM
Activity 4:	Emails/ HQ/ alone	Start Time:	12:00 PM	End Time:	12:30 PM
Activity 5:	Phonecall/ HQ/ Deputy CFO	Start Time:	12:30 PM	End Time:	01:15 PM
Activity 6:	Emails/ HQ/ alone	Start Time:	01:15 PM	End Time:	01:30 PM
Activity 7:	Lunch/ HQ/ Executives	Start Time:	01:30 PM	End Time:	02:30 PM
Activity 8:	Meeting/ HQ/ Business Head (Drill)	Start Time:	02:30 PM	End Time:	02:45 PM
Activity 9:	Phonecall/HQ/Marketing Head	Start Time:	02:45 PM	End Time:	03:15 PM
Activity 10:	Phonecall/ HQ/ Customer	Start Time:	03:15 PM	End Time:	03:30 PM
Activity 11:	Increment Meeting/ HQ/HR Head	Start Time:	03:30 PM	End Time:	04:00 PM
Activity 12:	Meeting for grading people/ HQ/ Finance Head	Start Time:	04:00 PM	End Time:	04:30 PM
Activity 13:	Phonecall / HQ / Manufacturing Head	Start Time:	04:30 PM	End Time:	06:00 PM
Activity 14:	Emails/ HQ/ alone	Start Time:	06:00 PM	End Time:	07:00 PM
Activity 15:	Phonecall/HQ/ Marketing Head (South & west)	Start Time:	07:00 PM	End Time:	07:45 PM

Checked by supervisor? Jaidav

Record: 1 of 1
Filtered
Search

Activity 3:
meeting / HQ/ consultant

Type: Meeting

When was the activity scheduled in agenda?
3) 1-2 weeks ago

Who participated in the activity, excluding the Executive? (check all that apply)

People employed by firm INSIDERS

People not employed by firm OUTSIDERS

What type of INSIDERS participated in the activity? (i.e. people employed by the firm)

Most JUNIOR person participating reports to the Executive?

What type of OUTSIDERS participated in the activity? (i.e. people NOT employed by the firm)

Finance

Marketing/Communication

Production/Logistics

Strategy

Human Resources

Business Unit Directors

Others

If "Others", specify: _____

Clients

Suppliers

Banks

Investors

Lawyers

Management

Consultants

Politicians

Government

Officials

Journalists

Unions

Competitors

Others

If "Others", specify: _____

Did the activity take place inside the firm and/or HQ?
Inside firm - at HQ

Where did the activity take place, relative to HQ?
Same state

How many people were present at the activity, excluding the Executive?
1

Table A1 - Selection

Sample	(1)	(2)	(3)	(4)
Dependent Variable	All	All	All	All
		Dummy=1 if CEO participated		
Country=Brazil	0.677*** (0.074)	0.695*** (0.075)	0.655*** (0.079)	0.559* (0.288)
Country=France	0.210*** (0.073)	0.256*** (0.074)	0.143 (0.104)	0.562** (0.221)
Country=Germany	0.115 (0.072)	0.194** (0.078)	0.152* (0.082)	0.476** (0.222)
Country=India	0.658*** (0.247)	0.699** (0.272)	1.227*** (0.371)	0.672 (0.425)
Country=UK	-0.178** (0.074)	-0.139* (0.074)	-0.153** (0.077)	0.088 (0.218)
Ln(Sales)		-0.071*** (0.011)		
ln(Sales/Employees)			-0.018 (0.030)	
ROCE				0.000 (0.001)
Number of firms	6256	5993	4090	3492

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by probit (marginal effects reported, robust standard errors under coefficient). The dependent variable in all columns is a dummy=1 if the CEO participated in the survey. The selection regression is run on the latest available year of accounting data. All columns include 2 digits SIC industry dummies.

Table A2 - Summary Statistics by Country (means)

	Brazil	France	Germany	India	UK	US	Total
Panel A. Time use							
Total weekly hours worked - recall measure	50.26	50.81	52.11	n.a.	52.08	54.97	51.72
Total weekly hours worked - diary measure	52.60	58.30	55.88	46.27	54.40	55.09	52.01
Total weekly hours worked excluding activities < 15 mins, personal & travel	40.80	47.02	46.69	35.94	44.31	45.41	41.44
Number of days at work	5.29	5.21	5.54	5.25	5.52	5.61	5.36
Beginning of work day (hour)	8.51	8.19	8.58	9.80	8.45	8.03	8.83
End of work day (hours)	18.13	18.92	18.19	18.57	17.89	17.60	18.27
Share of time spent in personal activities	0.14	0.09	0.05	0.10	0.07	0.09	0.10
Panel B. CEO characteristics							
Age	51.90	49.53	49.26	50.61	49.02	53.47	50.93
Male	0.97	0.96	0.93	0.99	0.94	0.93	0.96
College degree	0.91	0.92	0.94	0.96	0.84	0.91	0.92
MBA	0.63	0.60	0.85	0.41	0.47	0.48	0.55
Tenure as CEO	11.39	7.12	7.85	12.82	7.00	8.57	10.30
Tenure in firm	19.34	12.29	14.98	19.11	14.16	15.29	17.12
Experience abroad	0.55	0.56	0.69	0.33	0.59	0.42	0.48
CEO holds positions in other firms	0.34	0.35	0.58	0.47	0.40	0.38	0.42
Panel C. Firm Characteristics							
Domestic or Foreign Multinational	0.17	0.24	0.48	0.17	0.32	0.32	0.24
Number of Employees	1185.64	730.21	4942.14	1224.86	486.78	1559.61	1571.05
Number of CEO direct reports	6.60	8.54	9.50	7.79	7.93	7.85	7.77
COO	0.19	0.19	0.42	0.05	0.74	0.54	0.26
Number of sons in management positions	0.08	0.01	0.03	0.22	0.06	0.04	0.10
Number of daughters in management positions	0.05	0.03	0.00	0.07	0.01	0.03	0.04
Data collected through the CEO personal assistant	0.56	0.40	0.58	0.35	0.34	0.31	0.43
% of Family Firms	0.41	0.14	0.31	0.67	0.17	0.21	0.41
Panel D. Industry Characteristics							
Lerner Index	1.18	1.18	1.19	1.34	1.16	1.16	1.23
Import Penetration	0.63	0.56	0.66	0.66	0.48	0.58	0.61
ln(GDP per Capita), region	9.22	10.30	10.36	8.03	10.39	10.65	9.36
Rule of Law, country	-0.29	1.41	1.64	0.09	1.67	1.55	0.62
Trust, region	0.06	0.22	0.35	0.39	0.35	0.42	0.28
Max % Inheritance, country	0.67	0.66	0.67	0.50	1.00	1.00	0.68

Notes: The table shows summary statistics (means, standard deviation in parentheses in columns 1-3; differences and t-statistic in parentheses in column 4) of CEO time use, CEO characteristics, firm and industry level data for a sample of 1114 CEOs in Brazil (N=282), France (N=115), Germany (N=125), India (N=356), UK (N=87) and US (N=149). All variables in Panel A, B and C collected in the CEO time use survey. Import penetration = $\ln(\text{import}/\text{production})$ in the firm ISIC REV3 industry, computed by averaging OECD STAN data relative to the 2006–2008 time period (last available year for all countries) across France, Germany, US and UK at the industry level. Lerner index of competition = $(1 - \text{profit}/\text{sales})$ in the firm 3 digit SIC industry computed, as in Aghion et al. (2005), by averaging firm level data in ORBIS relative to the 2008-2012 time period across Brazil, France, Germany, India, US and UK at the industry level.

Table A3 - Family vs. Professional CEOs - Additional Robustness Tests

Experiment	(1) Baseline	(2) Levels	(3) Negative binomial	(4) Adding country*industry interactions	(5) Restricting sample to Brazil & India	(6) Restricting sample to France, Germany, UK and US	(7) First survey wave (India only)	(8) Second survey wave (Brazil, France, Germany, UK and US)
Dependent Variable	ln(Hours Worked)	Hours Worked	Hours Worked	ln(Hours Worked)	ln(Hours Worked)	ln(Hours Worked)	ln(Hours Worked)	ln(Hours Worked)
Family CEO	-0.088*** (0.019)	-3.164*** (0.742)	-0.077*** (0.017)	-0.087*** (0.020)	-0.083*** (0.022)	-0.082** (0.036)	-0.063** (0.030)	-0.096*** (0.025)
CEO holds positions in other firms	0.008 (0.015)	0.025 (0.560)	0.004 (0.013)	0.014 (0.015)	0.026 (0.018)	0.000 (0.026)	0.044* (0.024)	-0.006 (0.020)
Ln(CEO age)	-0.129*** (0.041)	-4.696*** (1.651)	-0.119*** (0.037)	-0.143*** (0.045)	-0.151*** (0.052)	-0.087 (0.071)	-0.173** (0.069)	-0.109** (0.054)
Ln(1+CEO tenure in firm)	-0.005 (0.010)	-0.129 (0.380)	-0.006 (0.008)	-0.006 (0.010)	0.001 (0.013)	-0.008 (0.014)	-0.005 (0.020)	0.001 (0.012)
CEO holds College degree	0.063** (0.029)	2.525** (1.045)	0.054** (0.024)	0.054* (0.033)	0.062 (0.038)	0.028 (0.043)	0.059 (0.050)	0.055 (0.033)
CEO holds MBA degree	0.011 (0.016)	0.532 (0.618)	0.012 (0.014)	0.006 (0.018)	-0.017 (0.021)	0.030 (0.024)	0.012 (0.027)	0.011 (0.021)
CEO has study/work experience abroad	0.002 (0.016)	0.225 (0.605)	0.006 (0.013)	-0.003 (0.017)	0.013 (0.020)	-0.016 (0.025)	-0.018 (0.030)	0.011 (0.020)
Ln(Employment)	0.023*** (0.007)	0.870*** (0.269)	0.021*** (0.006)	0.024*** (0.007)	0.029*** (0.008)	0.013 (0.012)	0.028*** (0.010)	0.021** (0.009)
Ln(Firm age)	0.001 (0.009)	0.031 (0.382)	0.005 (0.008)	0.003 (0.011)	0.003 (0.016)	-0.001 (0.012)	-0.025 (0.023)	0.007 (0.011)
MNE	0.025 (0.018)	0.939 (0.710)	0.021 (0.015)	0.033* (0.019)	0.042* (0.026)	0.025 (0.028)	0.071* (0.037)	0.008 (0.021)
Number of CEO direct reports	0.007*** (0.002)	0.286*** (0.099)	0.006*** (0.002)	0.006*** (0.002)	0.011*** (0.003)	0.004 (0.003)	0.009** (0.004)	0.006** (0.003)
COO exists	-0.016 (0.018)	-0.562 (0.737)	-0.012 (0.016)	-0.018 (0.020)	-0.042 (0.029)	0.011 (0.025)	-0.017 (0.055)	-0.010 (0.019)
Number of sons in management positions	-0.057*** (0.021)	-1.877** (0.730)	-0.048** (0.021)	-0.061*** (0.021)	-0.047** (0.023)	-0.153** (0.059)	-0.022 (0.024)	-0.175*** (0.045)
Number of daughters in management positions	-0.024 (0.027)	-1.210 (0.955)	-0.029 (0.024)	-0.013 (0.029)	-0.034 (0.032)	-0.013 (0.069)	-0.039 (0.038)	0.015 (0.038)
Data collected through the CEO personal assistant	-0.001 (0.016)	-0.120 (0.638)	-0.005 (0.014)	-0.001 (0.017)	-0.007 (0.020)	0.006 (0.026)	0.009 (0.027)	-0.002 (0.020)
Constant	3.799*** (0.184)	45.258*** (7.453)	3.801*** (0.166)	4.021*** (0.371)	3.616*** (0.251)	3.682*** (0.316)	3.418*** (0.325)	3.771*** (0.220)
R-squared	0.345	0.352	0.348	0.348	0.345	0.143	0.250	0.263
Number of firms	1114	1114	1114	1114	638	476	356	758
Country dummies	y	y	y	y	y	y	y	y
Industry dummies	y	y	y	y	y	y	y	y
Country*Industry dummies	n	n	n	y	n	n	n	n
Noise controls	y	y	y	y	y	y	y	y

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS (robust standard errors in parenthesis), except for column 3, estimated using a negative binomial regression. The dependent variable is the log of the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey week in columns 1 and 4-6, while the level of hours worked is used in columns 2 and 3. **Family CEO=1** for those who own the firm or belong to the family that owns the firm, and 0 otherwise. **Industry dummies** are 33 two digits SIC codes. **Noise controls** include: a dummy to denote if the time use data was recorded by the PA; 55 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 29 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday.

Table A4 - Summary Statistics (means, standard deviation in parentheses except for columns 5-7)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All	Founder CEOs	Family CEOs (2nd generation onwards)	Professional CEOs	Difference (4)-(2)	Difference (4)-(3)	Difference (2)-(3)
Panel A. Use of Time							
					(T-statistic)	(T-statistic)	(T-statistic)
Total weekly hours worked - recall measure	51.719 (10.105)	49.371 (12.452)	49.038 (9.826)	52.749 (9.665)	3.711*** (4.07)	3.378** (2.65)	-0.333 (-0.21)
Total weekly hours worked - diary measure	52.009 (11.026)	47.445 (10.714)	48.740 (10.415)	54.543 (10.674)	5.804*** (8.12)	7.098*** (6.88)	1.294 (1.18)
Total weekly hours worked excluding activities < 15 mins, personal & travel	41.439 (10.035)	35.805 (10.410)	38.039 (9.410)	44.249 (9.258)	6.210*** (9.88)	8.444*** (9.24)	2.234* (2.21)
Number of days at work	5.356 (0.695)	5.211 (0.570)	5.339 (0.662)	5.393 (0.729)	0.0539 (1.13)	0.182** (2.67)	0.128 (1.94)
Beginning of work day (hour)	8.826 (1.161)	9.225 (1.271)	9.273 (1.192)	8.524 (1.019)	-0.749*** (-10.28)	-0.701*** (-6.82)	0.0483 (0.38)
End of work day (hours)	18.270 (1.566)	18.008 (1.713)	18.329 (1.223)	18.291 (1.682)	-0.0387 (-0.37)	0.283 (1.73)	0.321* (2.24)
Share of time spent in personal activities	0.101 (0.099)	0.144 (0.121)	0.115 (0.109)	0.086 (0.084)	-0.0299*** (-4.76)	-0.0585*** (-6.67)	-0.0286* (-2.44)
Panel B. CEO characteristics							
Age	50.930 (8.458)	55.367 (7.392)	48.693 (9.908)	51.187 (7.425)	2.494*** (4.42)	-4.180*** (-5.83)	-6.674*** (-6.91)
Male	0.961 (0.193)	0.984 (0.125)	0.936 (0.244)	0.970 (0.172)	0.0331* (2.47)	-0.0149 (-0.93)	-0.0480* (-2.12)
College degree	0.925 (0.264)	0.852 (0.357)	0.924 (0.265)	0.939 (0.239)	0.0148 (0.88)	0.0875*** (3.45)	0.0727* (2.38)
MBA	0.548 (0.498)	0.297 (0.459)	0.482 (0.500)	0.631 (0.483)	0.149*** (4.53)	0.334*** (7.22)	0.185*** (3.63)
Tenure as CEO	10.298 (9.550)	21.211 (10.223)	13.398 (9.802)	6.602 (6.677)	-6.796*** (-12.79)	-14.61*** (-20.50)	-7.813*** (-7.56)
Tenure in firm	17.116 (11.597)	24.320 (9.928)	22.291 (10.672)	13.119 (10.611)	-9.171*** (-12.74)	-11.20*** (-11.03)	-2.030 (-1.86)
Experience abroad	0.482 (0.500)	0.227 (0.420)	0.458 (0.499)	0.544 (0.498)	0.0866* (2.57)	0.318*** (6.76)	0.231*** (4.64)
CEO holds positions in other firms	0.418 (0.494)	0.445 (0.499)	0.461 (0.499)	0.392 (0.489)	-0.0688* (-2.07)	-0.0535 (-1.13)	0.0153 (0.29)
Panel C. Firm characteristics							
Domestic or Foreign Multinational	0.242 (0.429)	0.109 (0.313)	0.218 (0.414)	0.280 (0.450)	0.0623* (2.11)	0.171*** (4.11)	0.109** (2.69)
Number of Employees	1571.051 (10127.428)	633.701 (1165.430)	1192.091 (4240.615)	1945.432 (12837.271)	753.3 (1.04)	1311.7 (1.15)	558.4 (1.46)
Number of CEO direct reports	7.775 (3.774)	6.594 (2.863)	7.697 (4.299)	8.044 (3.604)	0.347 (1.34)	1.450*** (4.30)	1.103** (2.68)
COO	0.259 (0.439)	0.180 (0.385)	0.176 (0.381)	0.317 (0.466)	0.141*** (4.77)	0.137** (3.13)	-0.00393 (-0.10)
Number of sons in management positions	0.103 (0.304)	0.438 (0.498)	0.170 (0.376)	0.005 (0.068)	-0.165*** (-10.91)	-0.433*** (-21.34)	-0.268*** (-6.22)
Number of daughters in management positions	0.043 (0.203)	0.156 (0.365)	0.073 (0.260)	0.006 (0.078)	-0.0666*** (-6.05)	-0.150*** (-9.52)	-0.0835** (-2.74)
Data collected through the CEO personal assistant	0.428 (0.495)	0.406 (0.493)	0.361 (0.481)	0.466 (0.499)	0.106** (3.18)	0.0602 (1.25)	-0.0456 (-0.91)
Panel D. External Environment							
Located in emerging economies (=1 if India or Brazil)	0.573 (0.495)	0.844 (0.365)	0.755 (0.431)	0.428 (0.495)	-0.326*** (-10.18)	-0.415*** (-9.02)	-0.0892* (-2.07)
Lerner Index	1.227 (0.412)	1.186 (0.322)	1.240 (0.450)	1.229 (0.408)	-0.0112 (-0.38)	0.0426 (1.05)	0.0538 (1.16)
Import Penetration	0.614 (0.566)	0.602 (0.632)	0.651 (0.621)	0.597 (0.523)	-0.0536 (-1.36)	-0.00465 (-0.08)	0.0490 (0.70)
Number of Observations	1114	128	330	656	986	784	458

Notes: The table shows summary statistics (means, standard deviation in parentheses in columns 1-3; differences and t-statistic in parentheses in column 4) of CEO time use, CEO characteristics, firm and industry level data for a sample of 1114 CEOs). All variables in Panel A, B and C collected in the CEO time use survey. Import penetration = $\ln(\text{import}/\text{production})$ in the firm ISIC REV3 industry, computed by averaging OECD STAN data relative to the 2006–2008 time period (last available year for all countries) across France, Germany, US and UK at the industry level. Lerner index of competition = $(1 - \text{profit}/\text{sales})$ in the firm 3 digit SIC industry computed, as in Aghion et al. (2005), by averaging firm level data in ORBIS relative to the 2008-2012 time period across Brazil, France, Germany, India, US and UK at the industry level.

Table A5 - Founders vs. Descendants vs. Professional CEOs - Cross sectional differences in Hours Worked

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable	ln(Hours Worked)						
Family CEO (2nd generation onwards)	-0.162*** (0.017)	-0.094*** (0.019)	-0.102*** (0.021)	-0.099*** (0.020)	-0.088*** (0.020)	-0.087*** (0.020)	-0.082*** (0.021)
Founder CEO	-0.228*** (0.026)	-0.160*** (0.027)	-0.130*** (0.028)	-0.116*** (0.028)	-0.088*** (0.031)	-0.090*** (0.028)	-0.086*** (0.029)
Family Ownership, External CEO							0.029 (0.018)
Founder Ownership, External CEO							-0.021 (0.041)
CEO holds positions in other firms			0.015 (0.015)	0.010 (0.015)	0.013 (0.015)	0.008 (0.015)	0.007 (0.015)
Ln(CEO age)			-0.147*** (0.042)	-0.164*** (0.042)	-0.127*** (0.042)	-0.128*** (0.042)	-0.130*** (0.042)
Ln(1+CEO tenure in firm)			-0.004 (0.010)	-0.007 (0.010)	-0.006 (0.010)	-0.005 (0.010)	-0.004 (0.010)
CEO holds College degree			0.055* (0.029)	0.051* (0.029)	0.049* (0.029)	0.063** (0.028)	0.063** (0.029)
CEO holds MBA degree			0.012 (0.016)	0.007 (0.016)	0.008 (0.016)	0.011 (0.016)	0.010 (0.016)
CEO has study/work experience abroad			0.020 (0.016)	0.010 (0.016)	0.008 (0.016)	0.002 (0.016)	0.001 (0.016)
Ln(Employment)				0.023*** (0.006)	0.019*** (0.006)	0.023*** (0.007)	0.022*** (0.007)
Ln(Firm age)				0.004 (0.009)	0.004 (0.009)	0.001 (0.010)	-0.001 (0.010)
MNE				0.022 (0.018)	0.018 (0.018)	0.025 (0.018)	0.024 (0.018)
Number of CEO direct reports					0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)
COO exists					-0.006 (0.018)	-0.016 (0.018)	-0.015 (0.018)
Number of sons in management positions					-0.045** (0.023)	-0.056** (0.022)	-0.056** (0.022)
Number of daughters in management positions					-0.016 (0.030)	-0.024 (0.027)	-0.023 (0.027)
Data collected through the CEO personal assistant						-0.000 (0.016)	0.002 (0.016)
Constant	3.767*** (0.008)	3.634*** (0.027)	4.088*** (0.169)	4.003*** (0.168)	3.783*** (0.178)	3.797*** (0.184)	3.801*** (0.184)
R-squared	0.123	0.213	0.223	0.237	0.249	0.344	0.345
Number of firms	1114	1114	1114	1114	1114	1114	1114
Test Family CEO (2nd gen)= Founder CEO, p-value	0.0209	0.0195	0.328	0.5628	0.9982	0.9268	0.8946
Country dummies	n	y	y	y	y	y	y
Industry dummies	n	n	y	y	y	y	y
Noise controls	n	n	n	n	n	y	y

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS (robust standard errors in parenthesis). The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey week. The variable "Start(End) of the Day" denotes the hour at which the CEO reported to start(end) the work-day. The variable "Share time spent in personal activities" denotes the share of hours reported by the CEO as dedicated to leisure activities during working hours. **Family CEO (2nd generation)=1** for those who own the firm or belong to the family that owns the firm but have not founded it themselves, and 0 otherwise. **Founder CEO=1** for those who own the firm or belong to the family that owns the firm and have founded it themselves, and 0 otherwise. Industry dummies are 33 two digits SIC codes. **Noise controls** include: a dummy to denote if the time use data was recorded by the PA; 55 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 29 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday.

Table A6a - Response to Rain Shocks by Ownership - Robustness

Dependent Variable	ln(1+CEO Hours Worked) - Day Level					
	(1) Baseline	(2) Include CEO*rain interactions	(3) Include firm*rain interactions	(4) Include org*rain interactions	(5) Include industry*rain interactions	(6) Include state*rain interactions
Family CEO	-0.031 (0.029)	-0.025 (0.030)	-0.026 (0.029)	-0.036 (0.029)	-0.033 (0.029)	-0.026 (0.031)
Dummy=1 if extreme rain	0.033 (0.025)	0.302 (0.354)	0.172 (0.117)	0.033 (0.041)	-0.093 (0.117)	0.017 (0.088)
Dummy=1 if extreme rain * Family CEO	-0.083** (0.033)	-0.099*** (0.037)	-0.087*** (0.033)	-0.072** (0.035)	-0.077** (0.034)	-0.078** (0.035)
Dummy=1 if extreme rain * CEO works for other firms		0.021 (0.036)				
Dummy=1 if extreme rain * Ln(CEO age)		-0.040 (0.088)				
Dummy=1 if extreme rain * Ln(1+CEO tenure in firm)		0.020 (0.023)				
Dummy=1 if extreme rain * CEO College		-0.171* (0.100)				
Dummy=1 if extreme rain *CEO studied/worked abroad		-0.001 (0.039)				
Dummy=1 if extreme rain * CEO MBA		0.003 (0.036)				
Dummy=1 if extreme rain * Ln(Employment)			-0.011 (0.013)			
Dummy=1 if extreme rain * Ln(Firm age)			-0.021 (0.028)			
Dummy=1 if extreme rain * MNE			0.005 (0.042)			
Dummy=1 if extreme rain *Number of direct reports				-0.000 (0.004)		
Dummy=1 if extreme rain *COO exists				0.064 (0.078)		
Dummy=1 if extreme rain *Sons in Management				-0.023 (0.029)		
Dummy=1 if extreme rain *Daughters in Management				-0.025 (0.058)		
Ln(Employment)	0.025*** (0.008)	0.025*** (0.008)	0.029*** (0.010)	0.025*** (0.008)	0.025*** (0.008)	0.027*** (0.009)
Ln(Firm age)	-0.036** (0.016)	-0.036** (0.016)	-0.027 (0.020)	-0.036** (0.016)	-0.035** (0.016)	-0.037** (0.016)
MNE	0.059* (0.030)	0.058* (0.030)	0.057 (0.035)	0.059* (0.030)	0.061** (0.029)	0.055* (0.029)
Number of direct reports	0.006** (0.003)	0.006** (0.003)	0.006** (0.003)	0.006** (0.003)	0.006** (0.003)	0.007** (0.003)
COO exists	-0.035 (0.042)	-0.038 (0.043)	-0.034 (0.042)	-0.056 (0.047)	-0.022 (0.044)	-0.050 (0.046)
Number of sons in management	-0.016 (0.017)	-0.016 (0.018)	-0.015 (0.017)	-0.007 (0.021)	-0.023 (0.018)	-0.016 (0.018)
Number of daughters in management	-0.036 (0.031)	-0.037 (0.031)	-0.039 (0.031)	-0.026 (0.036)	-0.038 (0.032)	-0.035 (0.031)
CEO works for other firms	0.031 (0.020)	0.023 (0.024)	0.032* (0.020)	0.031 (0.020)	0.029 (0.020)	0.030 (0.021)
Ln(CEO age)	-0.139** (0.058)	-0.123* (0.070)	-0.138** (0.058)	-0.141** (0.058)	-0.138** (0.058)	-0.149** (0.059)
Ln(1+CEO tenure in firm)	0.002 (0.013)	-0.006 (0.016)	0.002 (0.013)	0.002 (0.013)	0.003 (0.013)	-0.000 (0.014)
College degree	0.090* (0.049)	0.130* (0.068)	0.089* (0.049)	0.089* (0.049)	0.095* (0.052)	0.086 (0.053)
CEO studied/worked abroad	0.019 (0.022)	0.016 (0.024)	0.020 (0.022)	0.019 (0.022)	0.014 (0.022)	0.019 (0.022)
Dummy CEO MBA	-0.003 (0.024)	-0.002 (0.027)	-0.002 (0.023)	-0.003 (0.024)	0.004 (0.023)	-0.000 (0.024)
Constant	1.989*** (0.287)	1.895*** (0.340)	1.915*** (0.301)	1.995*** (0.288)	2.301*** (0.257)	2.025*** (0.282)
R-squared	0.193	0.195	0.194	0.193	0.203	0.206
Observations	1603	1603	1603	1603	1603	1603
Number of firms	349	349	349	349	349	
Industry dummies	y	y	y	y	y	y
Noise controls	y	y	y	y	y	y
Test Rain+Family CEO*Rain=0 (p-value)	0.04	0.55	0.44	0.36	0.14	0.50
Test joint significance of Rain*CEO characteristics (p-value)		0.67				
Test joint significance of Rain* firm characteristics (p-value)			0.67			
Test joint significance of Rain* org characteristics (p-value)				0.90		
Test joint significance of Rain*Industry interactions (p-value)						
Test joint significance of Rain*State interactions (p-value)					0.00	0.05

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS. In all columns standard errors under coefficient are clustered by firm. The variable "CEO Hours Worked" is the log of 1 plus the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey day. Family CEO=1 for those who own the firm or belong to the family that owns the firm, and 0 otherwise. "Extreme Rain" is a dummy denoting intense rainfall (relative to the non Monsoon period) in the area and day where the CEO is located (data measured by the closest weather station, matched to the zipcode of the CEO activities for the day). Column 4 includes a full set of industry dummiesXExtreme rain interactions. Column 5 includes a full set of state dummiesXExtreme rain interactions. Industry dummies are 19 two digits SIC codes. Noise controls include: a dummy to denote cases in which the time use data was recorded by the CEO's Personal Assistant; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday.

Table A6b - Response to Cricket Shocks by Ownership - Robustness

Dependent Variable	ln(1+CEO Hours before 3PM)					
	(1) Baseline	(2) Include CEO*Cricket interactions	(3) Include firm*Cricket interactions	(4) Include org*Cricket interactions	(5) Include industry*Cricket interactions	(6) Include state*Cricket interactions
Family CEO	-0.083** (0.032)	-0.087*** (0.032)	-0.086*** (0.032)	-0.084*** (0.033)	-0.085*** (0.033)	-0.084*** (0.033)
Cricket game	0.074* (0.040)	-1.097** (0.477)	0.223 (0.148)	0.219** (0.095)	0.094 (0.118)	0.048 (0.114)
Cricket game * Family CEO	-0.120** (0.048)	-0.043 (0.071)	-0.024 (0.045)	-0.148** (0.070)	-0.099* (0.056)	-0.131** (0.062)
Cricket game * Ln(CEO age)		0.310*** (0.108)				
Cricket game * Ln(1+CEO tenure in firm)		-0.078 (0.058)				
Cricket game*College		0.175 (0.119)				
Cricket game*CEO studied/worked abroad		-0.003 (0.084)				
Cricket game * CEO works for other firms		-0.067 (0.075)				
Cricket game * CEO MBA		-0.024 (0.107)				
Cricket game * Ln(Employment)			-0.021 (0.056)			
Cricket game * Ln(Firm age)			-0.058 (0.086)			
Cricket game * MNE			0.288** (0.115)			
Cricket game *Number of direct reports				-0.017** (0.008)		
Cricket game *COO				-0.085 (0.133)		
Cricket game *Sons in Management				-0.037 (0.087)		
Cricket game *Daughters in Management				0.116** (0.049)		
Ln(Employment)	-0.011 (0.011)	-0.011 (0.011)	-0.011 (0.011)	-0.011 (0.011)	-0.012 (0.011)	-0.007 (0.011)
Ln(Firm age)	0.021 (0.028)	0.024 (0.029)	0.032 (0.028)	0.021 (0.029)	0.027 (0.029)	0.018 (0.030)
MNE	0.063 (0.044)	0.060 (0.043)	0.039 (0.044)	0.062 (0.045)	0.059 (0.044)	0.042 (0.044)
CEO works for other firms	0.045* (0.027)	0.047* (0.027)	0.050* (0.027)	0.045* (0.027)	0.043 (0.027)	0.043 (0.029)
Ln(CEO age)	-0.062 (0.079)	-0.077 (0.081)	-0.072 (0.078)	-0.060 (0.079)	-0.067 (0.080)	-0.088 (0.082)
Ln(1+CEO tenure in firm)	0.008 (0.018)	0.013 (0.018)	0.011 (0.018)	0.008 (0.019)	0.010 (0.019)	0.012 (0.019)
College degree	0.080** (0.041)	0.067 (0.045)	0.076* (0.041)	0.085** (0.041)	0.079* (0.045)	0.056 (0.048)
Dummy CEO MBA	-0.002 (0.029)	-0.004 (0.029)	-0.005 (0.028)	-0.002 (0.029)	-0.004 (0.029)	0.003 (0.030)
Did the Executive study or worked abroad?	0.040 (0.031)	0.043 (0.031)	0.038 (0.030)	0.042 (0.031)	0.045 (0.030)	0.043 (0.031)
Number of direct reports	0.005 (0.004)	0.004 (0.005)	0.005 (0.004)	0.006 (0.004)	0.005 (0.004)	0.005 (0.004)
COO exists	-0.001 (0.066)	0.001 (0.067)	-0.009 (0.067)	0.003 (0.071)	0.002 (0.066)	0.015 (0.069)
Number of sons in management	0.010 (0.023)	0.011 (0.023)	0.010 (0.023)	0.012 (0.023)	0.012 (0.023)	0.020 (0.023)
Number of daughters in management	-0.039 (0.044)	-0.040 (0.044)	-0.030 (0.043)	-0.044 (0.046)	-0.033 (0.045)	-0.029 (0.043)
Constant	1.527*** (0.382)	1.580*** (0.388)	1.522*** (0.376)	1.490*** (0.382)	1.500*** (0.382)	1.674*** (0.396)
R-squared	0.096	0.097	0.100	0.097	0.100	0.113
Observations	1832	1832	1832	1832	1832	1832
Number of firms	353	353	353	353	353	
Industry dummies	y	y	y	y	y	y
Noise controls	y	y	y	y	y	y
Test Cricket*Family CEO*Cricket=0 (p-value)	0.01	0.01	0.09	0.08	0.94	0.22
Test joint significance of Cricket*CEO characteristics (p-value)		0.00				
Test joint significance of Cricket* firm characteristics (p-value)			0.00			
Test joint significance of Cricket*org characteristics (p-value)				0.00		
Test joint significance of Cricket*Industry interactions (p-value)					0.00	
Test joint significance of Cricket*State interactions (p-value)						0.00

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS. In all columns standard errors under coefficient are clustered by firm and date. The variable "CEO Hours Worked" is the log of 1 plus the total hours the CEO devoted to work activities lasting more than 15 minutes (excluding travel) during the survey day until 3pm. Family CEO=1 for those who own the firm or belong to the family that owns the firm, and 0 otherwise. "Cricket game" is a dummy denoting that an IPL playoff, semifinal or final game was played and broadcasted on television on the day. Column 5 includes a full set of industry dummiesXCricket interactions. Column 6 includes a full set of state dummiesXCricket interactions. Industry dummies are 19 two digits SIC codes. State dummies are 15 indicators denoting the state in which the firm is headquartered. Noise controls include: a dummy to denote cases in which the time use data was recorded by the CEO's Personal Assistant; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 interview week dummy; a self reported score given by the CEO to rank the representativeness of the week and a dummy to denote weeks with a national or religious holiday.

Table A7 - Accounting Data - Summary Statistics

	Mean	Standard Deviation	Number of firms with available information
Number of Employees	1502.35	10625.26	909
Sales per Employee (\$)	295.51	3266.02	909
Capital per Employee (\$)	61.15	283.03	700
Materials per Employee (\$)	125.08	659.24	443
ROCE	0.12	0.10	493
Sales growth (1 year)	0.06	0.12	780
Tobin's q	1.03	1.00	298

Notes: All data drawn from ORBIS, averages across the 3 years of accounting data used in Table 6 (only years in which the CEO was in office are included). All variables expressed in US\$. Accounting data run between 2007 and 2013.