Managing the Family Firm: Evidence from CEOs at Work*

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Abstract

CEOs affect the performance of the firms they manage, and family CEOs seem to weaken it. Yet little is known about what top executives actually do, and whether it differs by firm ownership. We study CEOs in the Indian manufacturing sector, where family ownership is widespread and the productivity dispersion across firms is substantial. Time use analysis of 356 CEOs of listed firms yields three sets of findings. First, there is substantial variation in the number of hours CEOs devote to work activities, and longer working hours are associated with higher firm productivity, growth, profitability and CEO pay. Second, family CEOs record 8% fewer working hours relative to professional CEOs. The difference in hours worked is more pronounced in low-competition environments and does not seem to be explained by measurement error. Third, difference in differences estimates with respect to the cost of effort, due to weather shocks and popular sport events, reveal that the observed difference between family and professional CEOs is consistent with heterogeneous preferences for work versus leisure. Evidence from six other countries reveals similar findings in economies at different stages of development.

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1 Introduction

The identity and characteristics of CEOs are known to matter for firm performance. In particular, the comparison between CEOs who have a family affiliation with the owners of the firm they manage and professional CEOs who do not, reveals that the former weaken firm performance.[1] Given the ubiquity of family firms, understanding the root causes of this differential has important implications for aggregate income and growth (Caselli and Gennaioli 2013, La Porta et al 1999).

In this paper we provide evidence on a simple, yet critical, difference between family and professional CEOs: the time they devote to working for their firms. To do so, we develop a new survey instrument to measure CEO time use in large samples. This allows us to provide quantitative evidence on what CEOs do, whether it correlates with firm performance and whether it differs by ownership structure. We then combine the time use data with two natural experiments to test whether differences in time use are due to differences in firm "technology" or organization, or to differences in motivation between family and professional CEOs.

We collect data on the time use of 356 CEOs of listed firms in the Indian manufacturing sector, where family ownership is widespread (La Porta et al 1999) and the productivity dispersion across firms is substantial (Hsieh and Klenow 2009). To measure time use we reconstruct the CEOs time diary via daily phone interviews with their personal assistants over the course of one week. We ask respondents to use their diaries to list sequentially all activities longer than fifteen minutes, and for each activity we inquire about its type (meeting, phone call, etc.), the type and number of people involved, the location, the start and end time, and scheduling horizon. This allows us to build an accurate bottom-up estimate of how much time CEOs allocate to business activities and how they allocate it to different activities. Our methodology is inspired by Mintzberg's (1973) celebrated analysis of a week of work of five CEOs, extended to a much larger and randomly drawn sample.[2] 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 time-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.

We find that there is substantial variation in the number of recorded hours CEOs devote to work activities: the average CEO in our sample spends 9 hours per day at work, while CEOs in the bottom quartile work on average 6.9 hours per day and those in the top quartile work on average 10.7 hours a day. To validate our measure of work hours, we match our time use data external measures of

[1] See survey by Bertrand 2009 and more detailed references below.

[2] "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. None of them are CEOs. 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. It is well known that time use perception and recollection can be very different from actual time use (Robinson et al 2011).

firm productivity, firm profitability, and CEO remuneration. We find a strong positive correlation between the number of hours worked by the CEO, firm performance and CEO remuneration. Controlling for other factors, a one standard deviation increase in hours worked is associated with an increase in Total Factor Productivity of 17%, 0.027 percentage points in ROCE, and .137 higher Tobin's Q, and 26% in CEO total compensation.

We find a stark difference between family and professional CEOs: family CEOs record 8% fewer hours. In line with earlier work (Perez-Gonzalez 2006), family and professional CEOs differ on observables, namely education, age and tenure. The difference in hours, however, is not due to observable differences between family-run and professionally-run firms, or between family and professional CEOs. Moreover, the external environment in which the firm operates, namely the specific industry and state policies and infrastructure, does not explain much of the variation in time use we observe in the data.

The rest of the paper explores the origin of the difference in hours worked between family and professional CEOs. One category of possible explanations for the difference relates to measurement error correlated with ownership. Family CEOs face less external pressure to be physically present in the office and might enjoy more flexibility in optimally organizing their time. This might generate two types of measurement error. First, they might organize their time more efficiently, for instance by planning more activities in advance or meeting several people at once, so that the number of recorded hours corresponds to more effective hours. Second, family CEOs might be more likely to work hours that our survey fails to capture. For instance, family CEOs might be more inclined to work alone from home, or meet other family executives or external non business related events outside the firm.

We present two tests to gauge whether measurement error can explain the observed differences. Our first test is based on the intuition that measurement error correlated with ownership, if any, has precise implications for the hours we do record, and therefore we can exploit the granularity of the data to test for these. For the first type of measurement error - i.e. differential ability to organize the time in the office more efficiently - we can test directly whether family CEOs plan more activities in advance or meet several people at once. Our findings suggest the opposite: the share of activities that are planned in advance, that involve several people or several distinct functions is actually lower for family CEOs. For the second type of measurement error - i.e. differential ability to conduct working activities outside the firm - we can test whether the time allocation reveals that the CEO does more in the office of the activities he cannot do outside. For instance, if our concern is that we record fewer hours of those actually worked because the CEO spends unrecorded time working alone from home, we should observe him spending more time meeting people during the time periods that are recorded in our survey. Likewise, if we record fewer hours because the CEO spends unrecorded time out of the firm with third parties, we should observe him spending more time with firm employees during the times recorded in our survey. Finally, if we record fewer hours because the CEO spends unrecorded time meeting other top executives in the family home, we should observe him spending more time with firm employees at lower rungs of the hierarchy, who

do not report directly to him, when he is in the office. Again, the findings do not provide support for any of these outcomes.

Our second test exploits cross industry differences in the exposure to competition, which affect the marginal benefit of effort but should be uncorrelated with difference in measurement error between the time use of family and of professional CEOs. The intuition behind the test is that if the observed differences in hours worked are driven entirely by differences in measurement error, they should not be affected by factors that affect incentives. In contrast, we find that the difference between family and professional CEOs is larger in firms that are not exposed to competition.

In light of these results, we analyze whether the observed difference is due to differences in technology or organization that make it optimal for family CEOs to work fewer hours, or to the fact that family CEOs face a different tradeoff between leisure and work. A simple model illustrates that, if CEOs' work hours are an optimal response to technology or organization differences correlated with ownership, the difference between family and professional CEOs should be unaffected by changes in the marginal return or the marginal cost of effort common to both ownership types. In contrast, if family CEOs choose to work less because they attribute a lower weight to the marginal benefit of work (or, symmetrically, if their cost of effort is higher), the difference between family and professional CEOs should increase as the marginal cost (benefit) of effort increases (decreases).

We use natural experiments to study the work-leisure tradeoff between family and professional CEOs. Our difference in differences estimator exploits changes in the marginal return or the marginal cost of effort affecting all managers regardless of ownership structure. To measure variation in the marginal cost of effort, we use instances of extreme monsoon rainfall and the broadcasting of popular sport events (International Premier League cricket games) across days of the sample week. The two tests depict a consistent picture: the difference between family and professional CEOs is significantly larger on days when torrential rains or cricket matches increase the marginal cost of effort.

In fact, all the patterns we observe are consistent with a simple preference story. Compared to their professional counterpart, family CEOs have on average more wealth and job security, and therefore place higher weight on personal leisure than firm performance. This would explain why they spend less time at work, especially when going to work is costlier. Market pressure reduces family CEOs' job security and future rents, which explains why they take less time off when they operate in a competitive environment. Of course other factors may be at work too, but the patterns we observe – differences in hours worked and allocation of time across activities, the relationship with competition, the effect of monsoon rains and cricket matches – are difficult to explain unless the leisure-performance tradeoff differs between family and professional CEOs. Our wealth/security effect is consistent with Malmendier and Tate's (2009) finding that award winning CEOs, who earn more, devote more time to leisure at the expense of managing their firms.

The question that follows naturally from this is why family CEOs do not delegate to professionals who are willing to work longer hours and generate higher profits for the firm owners. Delegation might be prohibitively costly in countries with poor contract enforcement like India, but 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 richer countries. Intuitively, when delegation is feasible all family CEOs who have a higher marginal utility of leisure should delegate, and the only family CEOs who do not should work as hard as professional CEOs. To investigate this issue and to provide evidence on the external validity of our results, we analyze the differences in time use data between family and professional CEOs for a large sample of firms in Brazil, Britain, France, Germany and the United States. While we do find that the share of family CEOs is much larger in countries with worse governance (as in Burkart et al. 2003), the difference in hours worked by professional and family CEOs has the same sign and is of the same order of magnitude as in India. Some CEOs may prefer to lead their firms even when delegation to hard working professionals would be feasible, which is in line with them enjoying non-monetary benefits of control (Demsetz and Lehn 1985, Bandiera et al 2013). Our international comparison indicates that, while the share and, possibly, the raison d'être of family-run firms vary across countries, there is a systematic difference in the work patterns of family and professional CEOs even beyond India.

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 adopt worse managerial practices (Bloom and Van Reenen 2007) and adopt 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 are offset by other factors that induce less effort from the part of family CEOs. More broadly, our research illustrates one channel through which CEOs impact 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).

Our analysis underscores the importance of managerial attention. As in Geanakoplos and Milgrom (1991), firm performance depends on what activities managers devote their limited attention to. As time is a proxy of attention, our approach provides direct evidence on CEO attention patterns.[3]

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 evidence on the relationship between time use, firm performance and CEO compensation. Section 4 tests whether family and professional CEOs use their time differently. Section 5 implements the difference in difference estimator to interpret the observed differences between family and professional CEOs. Section 6 compares the difference between family and professional CEOs in a cross-section of seven

[3]Ocasio (1997) presents an attention-based view of the firm. Attention constraints can be generated by different cognitive limits. For instance, attention relates to information acquisition in Geanakoplos and Milgrom (1991), information processing in Radner and Van Zandt (1992), communication in Bolton and Dewatripont (1994), and problem solving in Garicano (2000). See Garicano and Prat (2013) for a survey.

countries. Section 7 concludes.

2 Sample Selection and Survey Methodology

2.1 *Sampling Frame*

Our sampling frame consists of all listed manufacturing firms based in India and is drawn from ORBIS, an extensive commercial data set that contains company accounts for the population of listed Indian firms. Starting from the universe of manufacturing firms, in the Appendix we explain how we select those with sufficient accounting data and for which we could find contact details. Out of a sample of 1,429 companies, we were able to collect detailed time diaries for 356 CEOs, with a response rate of 25%. This figure is higher than standard CEO surveys, which range between 9% and 16% (Graham et al 2011).[4]

The selection analysis in Table A1 shows that firms in the final sample have on average slightly lower log sales (a difference of 1.8%, significant at the 1% level). However, we do not find any significant selection effect on performance variables, such as return on capital employed (ROCE) return on assets (ROA) and profits over sales.[5]

The interview was conducted with the highest-ranking authority in charge of the organization that has executive powers and reports to the board of directors. This position is commonly titled chief executive officer (CEO) in the US, and managing director (MD) in Canada and in the UK. As both titles are used in India, and the same title can mean different things in different firms, to maintain comparability we selected individuals based on their job description rather than their official title. For brevity we refer to them as CEOs in what follows.

2.2 *The CEO Time Use Survey*

The time use survey took place between May 1^{st} and July 31^{st} 2011. For each CEO we collected time use data over one randomly selected week during that period. This avoids biases arising from endogenous week choice, for instance due to the fact that CEOs might prefer to report time use during atypical weeks.

To measure time use we asked respondents to enumerate all the activities in the order they happened during the day, and to report detailed information about each. Project analysts collected this information through daily phone calls with the Personal Assistant (PA) of the CEO. On the first day of the week, the analyst would call the PA in the morning, in order to gather detailed information on all the activities planned in the CEO diary for the day. The analyst would call again in the evening, to gather information on the actual activities undertaken by the CEO (hence checking off activities that were planned but did not happen), and the activities planned for the following

[4]The criteria for inclusion in the sampling frame and the survey methodology are detailed in the Data Appendix.
[5]We cannot compare firm size since this is typically not reported in the Indian accounting data.

day. The second day, the analyst would call the PA only in the evening, again to collect data on the actual activities undertaken during the day, and the planned agenda for the next day. This pattern would continue until the end of the week. Compared to the alternative recall method where individuals are asked to estimate their time at work and its allocation across activities, the time-diary approach reduces the impact of recollection biases that have been shown to be relevant in other surveys (Robinson et al 2011).[6] On the last day of the data collection, the analysts were instructed to talk directly with the CEO for about 30 minutes to make sure that the activity data collected through the PA was accurate.

For each activity longer than 15 minutes we collect information on starting and ending time, type of activity (e.g. meeting, work alone, attending a public event, traveling etc.), location, number and type of participants involved. The participants are classified according to their employment relationship to the firm (insiders or outsiders), their function (e.g. production or finance for insiders, suppliers or banks for outsiders). For activities involving insiders, we also know whether the activity included only people reporting directly to the CEO, or if it included employees across lower levels of the firm's hierarchy. Finally, we also inquire about the planning horizon of the activity: whether it was planned in advance and, if so, how long in advance, and if it was undertaken due to an emergency. Figure A1 shows a screenshot of the survey tool.[7]

Two concerns are of note. First, 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 (no within week autocorrelation in CEO time use). In fact, as we report below, we find a high degree of autocorrelation in CEO choices over the week of observation, and CEO fixed effects explain 24% of the variance observed in the daily time use data. Furthermore, at the end of the survey week, we also 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 time use even if we restrict the sample to the 60% of CEOs who score the survey week as highly representative (9 or 10 out of 10). This is at odds with the hypothesis that all observed variation is due to shocks rather than actual differences in behavior.

Second, we are able to measure only the activities that the PA knows about or the CEO is willing to report. The sign of the bias this creates is ambiguous. CEOs might indeed be 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 is that the time use we measure is a valid proxy of the actual

[6] Robinson et al (2011) compare the time use estimates obtained by ex-post time-use survey questions in the CPS with time diaries from the American Time Use Survey, and conclude that ex-post recollection methods tend to generate over-estimates of the time at work, especially in subjects who tend to work longer hours.

[7] The survey tool can also be found online on www.executivetimeuse.org.

time use and captures meaningful differences across CEOs. To validate this assumption, in Section 3 we present evidence that our time use measure is correlated with external measures of firm performance and CEOs' compensation.

2.3 *Descriptive Statistics: Firms and CEOs*

Table 1 reports means and standard deviations on key characteristics of sample firms and their CEOs. Most firms (58%) are owned by a family (i.e. the owners are affiliated to the original founder of the firm, second generation onwards), followed by founders (20%) and disperse shareholders (14%).[8] Two thirds of CEOs in our sample belong to the family who owns the firm (16% are founders, 51% are 2nd generation onwards, overall 90% of founder and family firms). The managers of these firms are labeled as family CEOs. One third are CEOs not related to the owners, and these are labeled as professional CEOs.

We matched our survey data with ORBIS, which contain information on employees, inputs, sales, ROCE, Tobin's q, and growth, and with PROWESS, which contains information on CEO pay. Table 1, Panel B shows that the average firm in our sample has 1,225 employees, but the distribution is skewed to the left, as the median firm has 450, and the firm at the 75^{th} percentile has 1000. 81% of the firms in sample export their products and 16% are subsidiaries of foreign multinationals. The sample firms are located in fifteen different states. Among these, Maharashtra has the highest concentration (36%) followed by Gujarat (15%). Figure 1 illustrates the distribution of firms by state.

Table 1, Panel C shows that the average CEO is 51 years old and has been holding the same position for 13 years, and working for the same firm for 19. This is partly determined by the fact that, as we saw in Panel A, 67% of CEOs belong to the family who owns the firm, and most firms are family owned, and these have longer tenures as CEOs (15 years). The average tenure of professional CEOs is however also long - the professional CEOs in our sample have an average tenure of 8 years and have been with the firm for 15.[9] 96% of the CEOs hold at least a college degree, and 41% also hold an MBA and about a third have experience working or studying abroad. A sizable minority also holds positions in other firms (29%) or sits on other firms' boards (42%). Finally, our sample includes only five women and two non-Indian CEOs.

2.4 *Descriptive Statistics: Time Use*

Table 2, Panel A, illustrates that the average CEO reports activities for 5.26 days and spends 8.8 hours per day at work on average. As discussed above, some work activities may inevitably not be recorded by the CEO or the PA on our survey tool (e.g. extemporaneous after dinner work),

[8] Smaller ownership groups are government (2.2%), private equity/ venture capital (1.4%) and private individuals who are not founders or heirs to the founders of the company (4.4%).

[9] As a comparison, in a random sample of 122 CEOs based in the UK and the US for which we were able to collect time use data, the average tenure in the company for professional CEOs is 6.5 years and on average they have been in the firm for 12.

so that our time measure should be seen as a lower bound of the total hours worked by the CEO. Of these, 8.3 hours a day are spent in activities that last longer than 15 minutes each and are thus recorded by our analysts. Seventeen percent of these activities are classified as "personal", i.e. non-business related, and travel.

Figure 2 illustrates that there is considerable variation in hours worked. Executives in the bottom quartile of the distribution work on average 6.9 hours per day while executives in the top quartile work on average 10.7 hours a day. The data also reveals that the distribution of work hours is balanced across business days.[10]

There is 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 .30, statistically significant at the 1% level.[11] Therefore, while there is day-by-day variation in the number of hours worked by the CEO (which we will exploit in Section 5), the data also shows a high degree of consistency in the level of effort chosen by the CEO within the survey week.

The granularity of the time use data allows us to look at differences in the allocation of time across different activities and function, conditional on the total number of hours worked by the CEO during the week. Given that daily hours are naturally bounded, these shares are informative of the differences in the attention dedicated by the CEO to different types of activities. The data is summarized in Table 2, Panel B.

In line with earlier studies of managerial behavior (Mintzberg, 1973), the majority of CEO time (67%) is spent in structured business interactions that include face to face meetings, phone calls, and teleconferences; working alone and informal work interactions (such as public events, business meals) account for 26% and 7% of CEO time respectively. These averages, however, mask substantial heterogeneity as illustrated in Figure A2.

To measure the ability of the CEO to organize his time via advance planning, and to engage in "complex" interactions, Table 2, Panel B reports the share of time devoted to pre-planned activities and activities involving several participants and/or functions at a time. We find that the average CEO spends one in three hours in activities that were not planned in advance. The percentage is the same for activities that involve the CEO alone or with other people, suggesting that a sizable share of meetings is not pre-planned.[12] CEOs are also very different in their propensity to involve multiple functions and participants in their interactions. On average, 67% of the meetings involves just another participant, and 75% just another function, but similarly to other aspect of CEO time

[10] CEOs work on average fewer hours as the week progresses. The average number of hours on Mondays is 7.25 vs. 6.74 on Fridays.

[11] Another way to evaluate the autocorrelation of CEO choices during the week is to look at the fraction of the variation in the daily CEO averages of the time use data accounted for by CEO fixed effects. We find that CEO fixed effects account for about 24% of the variation in the data vs. 4% when only state and industry fixed effects are included.

[12] Neither the mean nor the variation is due to CEOs whom we interview in an "unusual" week. The 60% of CEOs who score the survey week as highly representative spend a sizable 30% of their time in unplanned activities and the share increases to 36% those who score the week as not perfectly representative.

use, we report significant variation across CEOs along these dimensions (Figure A3).

Finally, Table 2, Panel B shows that the average CEOs spends 58% of his time with employees of the company. 13% of the time is spent alone and 29% just with outsiders, but time allocation along this dimension also varies substantially across CEOs. 34% of CEO time involves exclusively people reporting directly to him, and again we find significant heterogeneity across CEOs (Figure A4). Not surprisingly for manufacturing firms, the largest share of CEOs time, 19% on average, is dedicated to production followed by sales and finance and the share of time that CEOs dedicate to these different functions exhibits considerable variation (Figure A5).

3 Time Use, Firm Performance and CEO Pay

To validate our measure of hours worked, we test whether this is correlated with external measures of firm performance derived from public accounts data. While in the absence of exogenous variation in time use we cannot identify its causal impact on performance, establishing whether the two are correlated is a powerful mean to validate whether our time use data capture meaningful differences (as opposed to noise) across CEOs.

We use panel data at the firm-year level to estimate a basic production function of the form:

$$y_{it} = \alpha^l l_{it} + \alpha^k k_{it} + \alpha^m m_{it} + \alpha^h h_i + \gamma^{'} Z_{it} + u_{it} \quad (1)$$

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. We estimate the correlation between firm i performance and its CEO average daily hours worked, 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. In our basic specification we also control a full set of industry, state and year dummies and a vector of noise controls.[13] In what follows we report OLS estimates of equation (1) with standard errors clustered at the firm level to account for correlated shocks within the same firm through time.

3.1 *CEO Time Use and Firm Performance*

The results of the analysis are presented in Table 3. Column 1 regresses log sales at the firm level on log of average daily hours worked in the week including only log employees, year dummies and noise controls as additional covariates. Hours worked are significantly and positively associated

[13] These are a dummy to denote cases in which the data was collected by the PA (rather than the CEO himself), 15 interviewer dummies, a dummy to denote CEOs who formally report to an Executive Chairman, 6 dummies to control for the week in which the interview was collected, and a score given by the CEO to rank the representativeness of the work week.

with firm level labor productivity. A 1% increase in the number of weekly hours worked by the CEO is associated with a 1.04% increase in productivity. In column 2 we augment the specification with capital, materials, and a full set of dummies to control for differences in the states in which the firms is headquartered and the industry of activity (three digits SIC dummies) to evaluate the correlation between CEO hours worked and Total Factor Productivity (TFP). The association between the time use variables and productivity is large and precisely estimated: a 1% change in weekly hours worked is associated with a 0.75% increase in productivity. A standard deviation increase in CEO log hours worked (0.23, or 1.25 hours per week) is associated with an increase in productivity of 0.75*0.23=17%, which amounts to 8% of a standard deviation in the distribution of log sales observed in our data. For comparison, a standard deviation increase of log capital is associated with a 60% increase in productivity, and 30% of a standard deviation of log sales.

A 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 3 we regress productivity on hours devoted to travel. Intuitively, if the correlation due to PAs in more productive firms recording more hours, non-work activities should also be positively correlated with productivity. The findings in Column 3 allay this concern: the correlation between productivity and time spent traveling is zero.

Finally, column 4 shows that hours worked are also associated with faster sales growth: a 1% increase in hours worked is associated with 0.1% faster sales growth over a 5 years window.

3.2 *CEO Time Use and Profits*

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, we test whether time use is correlated to firm profitability and, in the next subsection, to CEO remuneration.

Columns 5 and 6 estimate equation 1 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 a standard deviation increase in CEO log hours worked is associated with an increase in ROCE (Tobin's q) of .027 (.137) which amounts to 14% (15%) of a standard deviation in the distribution of ROCE (Tobin's q) observed in our data.

3.3 *CEO Time Use and Pay*

For the final validation test, we match our data on time use with data on CEO remuneration published in the company accounts, which is available for two thirds of our sample firms. Table 4

shows that the time use variables are both strongly and positively correlated with CEO remuneration. These results are largely robust to the inclusion of observable measures of firm and CEO characteristics, such as age, cognitive skills (as proxied by a dummy capturing whether the CEO holds an MBA degree) and tenure in the firm (column 2). Column 2 shows that a 1% change in CEO hours worked is associated with 0.96% change in total CEO remuneration. This implies that a standard deviation increase in hours worked increases pay by .22 log points, that is 15% of the standard deviation of log pay in our sample. The association between time use and CEO remuneration generally holds for both the fixed and the variable component of pay (columns 3 and 4), although the correlation between hours worked and variable pay is not precisely estimated.

Taken together, the positive correlations between our time use measure and productivity, profitability and pay provide reassuring evidence that, while we cannot possibly record all the work activities CEOs engage in, our measure of hours worked captures meaningful differences in working activities across CEOs. We now turn to using this data to assess whether family and professional CEOs devote different hours to work for their firms.

4 Family vs. Professional CEOs: Cross-Sectional Differences in Hours Worked

In this section we analyze the difference in hours worked across family and professional CEOs. We note that a priori the differences are ambiguous. On the one hand, family CEOs can appropriate a larger share of the surplus they generate, as they co-own the firm, hence have a stronger interest in generating large profits through their effort. On the other hand, family CEOs are likely to have more job security and more wealth (as they co-own the firm), both factors leading to valuing personal leisure relatively more than firm performance. Moreover, being selected from a narrower pool, family CEOs might have fewer of the skills that are complementary to effort (Burkart et al 2003, Perez-Gonzalez 2006). The existing evidence indicates that family CEOs have generally been found to underperform compared to professional managers, both in terms of firm performance (Bennedsen et al. 2007, Bertrand et al 2008, Bertrand 2009, Morck et al 2000, Perez-Gonzalez 2006, Villalonga and Amit 2006) and managerial capabilities (Bloom and Van Reenen, 2007). We contribute to this debate by showing whether they choose to work fewer hours.

To this end, we estimate a simple regression model of the form:

$$h_i = \alpha Fam_i + C_i\beta + F_i\gamma + S_i\delta + I_i\eta + \varepsilon_i \tag{2}$$

Where h_i is the log of total weekly hours worked by CEO i, $Fam_i = 1$ 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 [14] and, C, F, S, I are vectors of CEO, firm, state and industry characteristics. We include CEOs characteristics that might be correlated with the income vs. leisure trade-off

[14] While ideally we would want to also look separately at family firms run by professional managers, in practice we are limited by the fact that we have only 23 of them in our sample.

that determines labor supply, namely the age and tenure of the CEO, and a dummy to distinguish CEOs with an MBA. We use these to capture differences in hours worked due to demographics and cognitive skills. We also include a dummy to capture CEOs who have managerial roles in other organizations, since this could crowd out time at work. To absorb differences driven by firm characteristics that are correlated with ownership, we control for size (log of employees, collected during the interview process) and firm age (since older firms in general tend to be larger), whether the firm operates in global markets (either through exports or by being part of a multinational) and a full set of two digits SIC industry dummies. State and industry characteristics are included to proxy for differences in the external environment that shapes the objectives and constraints of the CEOs.

4.1 *Main Result: Family CEOs Work Fewer Hours*

We analyze the difference in hours worked between family and professional CEOs in Table 5. We start by looking at unconditional differences in column 1. We first look separately at founder CEOs and 2nd+ generations CEOs. We find that, unconditionally, founder CEOs and 2nd+ generations CEO record 11% and 6.6% fewer hours than professional CEOs, respectively.

One possible explanation for this result is simply ownership-related differences in CEO demographics and skills and other observable firm characteristics (Burkart et al 2003, Perez-Gonzalez 2006). Indeed, Table A2 shows that, in line with earlier findings, family CEOs have lower formal qualifications: the share of CEOs with an MBA degree is 36% among family CEOs and 51% among professional CEOs (p-value=.01). Family CEOs are also slightly younger (50 vs 52), have longer tenure (15 vs 8 years) and are more likely to hold managerial positions in other firms (32% vs 23%). Table 5, column 2, however, shows that the difference between family and professional CEOs is robust to the inclusion of these additional firm and CEO controls. While CEO hours are higher in larger and older firms and in multinational organizations, this does not explain the difference between family CEOs and others. Similarly, CEO hours are strongly correlated with CEO age - although not with CEO skills and tenure - but this does not explain the difference between family CEOs and others. Controlling for firm and CEO characteristics column 2 shows that founder CEOs and 2nd+ generations CEO record 8% and 6.6% fewer hours than professional CEOs, respectively.

That 2nd generations and founder CEOs make similar choices, which differ from those made by professional CEOs, is consistent 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). Given that the difference between founders and 2nd generation CEOs is small and not precisely estimated (p-value=.57), for the sake of parsimony we combine both in a single indicator in what follows.[15]

Column 3 analyses whether the difference between family and professional CEOs is driven by differences in the external environment in which their firms operate. As Indian states exhibit

[15] All results are robust to including Family and Founder CEOs separately. These results are shown in tables A3-A7.

considerable variation in infrastructure and policies that might affect time use, we first analyzed a set of key variables measuring the level of development (log GDP per capita, log average wages, log length of surfaced roads measured in Km), variables related to the rigidity of labor market regulation (as measured by OECD, 2007) and the level of financial development (measured by the log of the number of offices of commercial banks in the state), but found them to be all individually and jointly uncorrelated with the number of hours worked by the CEO, and with the difference between family and professional CEOs. To test the relevance of state level characteristics on CEO hours more generally, in column 3 we include state level fixed effects, which turn out to be jointly insignificant at conventional levels (pvalue=0.72). In line with this, the majority (80%) of the heterogeneity in CEO hours is *within* states, rather than *between* them. Column 3 also includes a full set of 2 SIC digits industry dummies - which are jointly significant at the 10% level - and noise controls (jointly significant at the 1% level). None of these controls (even when included individually) altered the main result.

In summary, we find that family CEOs devote fewer hours to working for their firms relative to professional managers, both unconditionally and conditionally on a host of firm, CEO, industry, state and measurement variables. This difference is statistically significant and large in magnitude: family CEOs work 8.6% fewer hours than professional managers.

Given the results shown in Table 3 and 4 (namely the positive association between hours worked, firm performance and CEO compensation), the differences in hours worked between family and professional CEOs are consistent with differences in the work-leisure trade off governing labor supply between the two types of managers. However, the observed cross-sectional differences might also be generated by measurement error correlated with ownership, or be an optimal response to unobservable differences in business environments or organizational structures. We use two strategies to evaluate the relative importance of these alternative explanations. In the next subsection we exploit the granularity of the data to test the implications of measurement error; in the following section we exploit natural experiments that create exogenous variation in the cost of effort to separate optimal responses from differences in preferences.

4.2 *Measurement Error and Time Allocation*

The effective hours CEO i devotes to managing the firm he is in charge of, h_i^E, is linked to our measure of hours recorded, h_i^R , as follows

$$h_i^E = h_i^R + \nu_i \tag{3}$$

where ν_i is measurement error. The findings in 4.1 indicate that the average difference of hours recorded between family f and professional p CEOs is negative ($h_f^R - h_p^R < 0$); equation 3 makes clear that this might occur even when effective hours are the same or larger ($h_f^E - h_p^E \geqslant 0$) as long as $\nu_f > \nu_p$, that is, when measurement error is larger for family CEOs.

This could be due to the fact that since family CEOs face less external pressure to be physically present in the office and that other executives belong to the same family, they might organize their time differently both in the office and outside. First, as they do not have to be in the office "nine to five" family CEOs might organize their time there more efficiently, for instance by planning more activities in advance or meeting several people at once, so that the number of recorded hours corresponds to more effective hours. Second, family CEOs might work more hours alone from home, or meet other family executives or external non business related events outside the firm. To the extent that these activities are not recorded in their diaries and otherwise not known by the PA (e.g. an extemporaneous meeting with their CFO brother over breakfast), family CEOs might work hours that our survey fails to capture.

Our strategy to tackle these issues has two prongs. Our first test is based on the intuition that measurement error correlated with ownership, if any, has precise implications for the hours we do record, and therefore we can exploit the granularity of the data to test for these. For the first type of measurement error - i.e. differential ability to organize the time in the office more efficiently - we can test directly whether family CEOs plan more activities in advance or meet several people at once. Columns 1-3 in Table 6 suggest the opposite: the share of activities that are planned in advance, that involve several people or several distinct functions is actually *lower* for family CEOs relative to professional managers. For the second type of measurement error - i.e. differential ability to conduct working activities outside the firm - we can test whether the time allocation reveals that the CEO does more of the activities that cannot be done outside the office. For instance, if our concern is that we record fewer hours of those actually worked because the CEO spends unrecorded time working alone from home, we should observe him spending more time meeting people when his time use is observed. Likewise, if we record fewer hours because the CEO spends unrecorded time out of the firm with third parties, we should observe him spending more time with firm employees when his time use is observed. Finally, if we record fewer hours because the CEO spends unrecorded time meeting other top executives in the family home we should observe him spending more time with firm employees at lower rungs of the hierarchy, who do not report directly to him, when his time use is observed. Columns 4-6 in Table 6 do not support these predictions either. We find that family CEOs devote the same share of time to meetings, the same share to direct reports and a *smaller* share to firm employees.

Our second strategy is to test whether the difference between family and professional CEOs is sensitive to factors that affect managerial incentives to exert effort, but that are uncorrelated with measurement error. In particular, we exploit cross industry differences in the exposure to competition as a factor affecting the marginal benefit of work. Intuitively, inefficient firms are more likely to survive if they are shielded by competition, thus CEOs incentives to work are reduced in these settings. Differences in competition, however, should not affect the difference in measurement error between the time use of family and of professional CEOs. Thus, if the observed differences in Table 5 are driven entirely by differences in measurement error, they should not be affected by factors that affect incentives.

In contrast, we find that the difference between family and professional CEOs is larger in firms that are not exposed to competition. This is shown in Table 5, columns 4 and 5, in which we use as a proxy for competition a dummy denoting industries which are characterized by high levels of the inverse of the Lerner Index.[16] Higher competition is associated with a 6% increase in CEO hours worked (column 4), and the variable is significant at the 5% level, which is consistent with the idea that exposure to competition increases managerial effort (Bertrand and Mullainathan, 2003). However, the effect of competition is particularly strong for family CEOs: column 5 shows that the interaction between the high competition dummy and the dummy denoting family CEOs is positive and significant (coefficient 0.106, standard error 0.056). This result is at odds with the hypothesis that the difference between family and professional CEOs is solely due to differences in measurement error, unless these differences decrease with competition.

Taken together, the findings in Table 6 and Table 5, columns 4 and 5, cast doubt on the hypothesis that the observed differences between family and professional CEOs are solely driven by measurement error and are supportive, instead, of the existence of a real difference in terms of hours worked. The next section attempts to establish whether this is due to different preferences, or to optimal responses to unobservable organizational/ technological differences.

5 Family vs. Professional CEOs: Difference in Differences Estimates

To provide evidence on whether observed differences between family and professional CEOs are optimal responses to unobservable organizational or technological differences or symptomatic of a different preference for leisure, we employ a difference in differences estimator that exploits variation in the cost of effort. Our empirical strategy is best illustrated by a simple model where the work time of the CEO is endogenously determined.

5.1 *A Simple Model of CEO Time Use*

The goal of the model is not to do justice to the literature on managerial incentives in corporate governance (Tirole 2006), but to supply a parsimonious set-up to discuss the identification problem we face when interpreting the difference in hours worked by family and professional CEOs.

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

[16] The Lerner Index is the industry level average of the ratio between profits and sales, and its inverse is frequently used as a proxy for industry level exposure to competition (Bloom and Van Reenen, 2007, Bloom et al, 2012). In this setting we use as a proxy for competition a dummy denoting industries which are in the upper third of the distribution. See the Data Appendix for additional details on the construction of this variable and summary statistics.

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

where $g \in \{F, N\}$ indicate the governance structure – family or non-family – 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 spends on business activities, h_{gs}. The marginal productivity of a CEO hour depends on governance and the state through a_g and b_s. 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 governance and on the state through $\overline{y}_{gs}$. 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 marginal effect of CEO time on performance given external and transitory shocks, such as rain or cricket.[17] Instead, we do not take a stand on whether family firms are intrinsically more or less productive than non-family firms: $\overline{y}_{Fs}$ can be greater or smaller than $\overline{y}_{Ns}$. We also remain agnostic as to whether CEO time is more useful in family or non-family firms, or alternatively whether family CEOs are more productive: a_F can be greater or smaller than a_N.

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 labor time in the preference of a CEO in governance g and d_s captures the possibility that the cost of work depends on the state of the world.

Do family CEOs put more or less weight on performance or time, namely is c_F greater than c_N? A priori, the answer is ambiguous. On one hand, family CEOs have more direct interest in the performance of the firm and they may also care about its success for non-monetary reasons. On the other hand, wealth effects may make the marginal utility of leisure higher for family CEOs than for professional CEOs. Also, lazy professional CEOs are more likely to lose their job. The goal of this short theoretical section is to describe a set of conditions under which time use data identifies the sign of the difference between c_F and c_N.

Given his technology and preferences, the CEO maximizes his payoff by selecting the following number of hours:

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

This illustrates that the cross-sectional difference between the hours worked by family and professional CEOs does not identify the difference between c_F and c_N. For example, the marginal productivity of a professional CEO is different from that of a family CEO, perhaps because a

[17] In the empirical analysis we include a battery of robustness checks to test directly whether the elasticity to external shocks displayed by family CEOs is driven by differences in firm characteristics (e.g. industry, state, size etc.) or CEO demographical differences, and find no evidence to support this hypothesis. We also include a triple differences specification that exploits differences in the elasticity to the shocks *within* family CEOs.

family CEO can delegate more to other family members.

However, things change if we have labor supply shock. Suppose that the cost of labor in one state of the world is higher than in the other: $d_H > d_L$. Note that a change in the state of the world may affect the marginal productivity of CEO work, though b_s. On average, CEOs may work more or less in state H. For instance, bad weather may make it more important that the CEO comes to work to deal with emergencies. However, we can show that the sign of the difference-in-differences coefficient depends on the preference parameter c_g only:

Proposition 1. *The difference in differences in hours worked over governance and state has the same sign as the difference in the relative preference of family CEOs and professional CEOs. Formally,* $h^*_{FL} - h^*_{FH} > h^*_{NL} - h^*_{NH}$ *if and only if* $c_N > c_F$.[18]

Empirically, we exploit two natural experiments that affect the cost of effort: monsoon rain and popular cricket matches. The underlying assumption is that the cost of working during severe monsoon rain (state H) is larger than on other days (state L) and that the value of leisure is larger (and hence the cost of effort larger) when there are important televised cricket matches (state H) rather than not (state L). In all cases, Proposition 1 predicts that the difference-in-differences over governance and state will have the same sign as the difference in preference weights between family and professional CEOs.

5.2 *Monsoons*

Informed by Proposition 1, we collect information on shocks to the cost of effort *during* our sample week. To do so we take advantage of the fact that approximately 70% of the time use data was collected during the monsoon season, measured as the official date in which the monsoon rainfall started in the state where the headquarters of the firm are located.[19] Extreme monsoon rainfall is notoriously unpredictable and it disrupts local transportation in urban areas (where most of the CEOs in our sample are located), adding delays and inconveniences. Assuming that all CEOs would commute from home to the office on a normal working day, we see rainfall as a factor that exogenously affects their cost of effort by making travel uncomfortable and creating delays on the way to and from work.

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

[18]Proof. Given the optimal h and the assumption that $d_H > d_L$,

$$sign\left[h^*_{FL} - h^*_{FH} - (h^*_{NL} - h^*_{NH})\right] = sign\left[\frac{d_H}{c_F} - \frac{d_L}{c_F} - \frac{d_H}{c_N} + \frac{d_L}{c_N}\right]$$
$$= sign\left[-\left(\frac{1}{c_N} - \frac{1}{c_F}\right)(d_H - d_L)\right] = sign\left[c_N - c_F\right]$$

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

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 constructions of these variable is provided in the Data Appendix.

As expected, the stations included in our dataset experienced a significant increase in rainfall in the weeks following the onset of the monsoon in their respective state. Average weekly rainfall increased on average by 15% in the two weeks following the onset of the monsoon, and this trend tapered down in subsequent weeks. Most importantly, we observe variation in extreme rainfall within the week of observation. Although weeks closer to the onset of the monsoon experienced a higher fraction of extreme rainfall days during the week, this fraction is close to only 40% at peak monsoon levels, so that in a given week extreme rain only occurred on some days.

Table 7 uses the total hours of work at the daily level to estimate the following difference in differences specification:

$$h_{id} = \alpha Fam_i + \beta Fam_i * Rain_d + \gamma Rain_d + C_i\rho + F_i\varphi + S_i\delta + I_i\eta + \varepsilon_{id} \tag{4}$$

where h_{id} is log hours worked by CEO i on day d, $Fam_i = 1$ if CEO i belongs to the owning family as defined above, $Rain_d = 1$ if rainfall is extreme on day d and C, F, S, I are vectors of CEO, firm, state and industry characteristics as defined in equation 2; the standard errors are clustered at the CEO and state level to take into account the fact that rain shock will be highly correlated within the same broad geographical area.. The coefficient of interest is β, the difference in differences estimator that measures how different CEOs react to higher marginal cost of effort.

We start in column 1 with a simple specification where we include the same set of CEO and firm controls included in Table 5, columns 3. The estimate in column 1, Table 7 indicate that on a day of extreme rain CEOs tend on average to work 2.4% fewer hours. In column 2 we study whether the reaction to extreme rains varies between family CEOs and professional managers. The difference in differences coefficient is $-.092$ 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 $c_N > c_F$. Family CEOs reduce their hours worked by 5.4% (0.038-0.092) on days with extreme rainfall, while professional managers show a positive 3.8% *increase* in hours worked. 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.[20]

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

[20]Table A7 tests for inter temporal spillovers directly and finds no evidence of catching up the day after an extreme rain day.

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 be more prevalent in industries or states that are more susceptible to the disruption caused by the monsoons, or they 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), or the CEOs themselves might have characteristics that might disproportionately increase their cost of effort with extreme rain.

To test robustness to these factors, columns 3 to 6 augment the specification with additional CEO and firms controls and interactions between rain and state, industry CEO and firm characteristics, respectively. We find that the effect of rain shocks does vary by state and industry - in columns 3 and 4, the industryXrain and stateXrain interactions are jointly significant, p=.00), but this does not alter the magnitude and the significance of the Family CEOXrain interaction. Furthermore, we find no evidence that rains interacts with firm and CEO characteristics (column 5) or firm characteristics (column 6), with the exception of the dummy denoting exporting firms, which is positive and significant when interacted with the rain dummy. Reassuringly, the inclusion of these interactions does not affect the magnitude and precision of the difference in difference estimate allaying the concern that this captured unobservables at the *id* level.

Finally, to account for unobservables correlated with ownership, we once more exploit the heterogeneity observed within family CEOs according to the exposure to competition in their industry. The triple difference specification allows us to evaluate the effect of the rain shock within family CEO firms (high or low competition). The result of this analysis is shown in columns 7 and 8. Column 7 shows that the rain shock is reaction to the rain shock is much lower for CEOs working in more competitive industries (measured with the high competition dummy used in Table 5, columns 4 and 5). Column 8 shows that - while on average family CEOs are still much more reactive to rain shocks - this effect is much weaker for family CEOs exposed to competition.

5.3 *Cricket Matches*

The second natural experiment we exploit to implement the test in Proposition 1 is daily variation in the broadcasting of cricket games. Cricket is the most popular sport in India, drawing large audiences across the country. 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). Table 8 reports the estimates of

$$h_{id} = \alpha Fam_i + \beta Fam_i * Cricket_d + \gamma Cricket_d + C_i\rho + F_i\varphi + S_i\delta + I_i\eta + \varepsilon_{id}$$

where $Cricket_d = 1$ if a match is played on day d and all other variables are as defined in equation 4. Given the importance of rain shocks, we also include as an addtional control the dummy capturing days of intense rain. Furthermore, we cluster standard errors at the CEO, day level.

Column 1 shows that the presence of a cricket match is associated with a 7% decline in hours worked by the CEOs. In line with the earlier estimates, the difference in differences β in column 2 is negative ($-.088$) and significant at the 10% level. In light of Proposition 1, this indicates

that family CEOs put lower weight on firm performance, that is, $c_N > c_F$. Family CEOs reduce their hours worked by 10% (-0.015-.088) on days with cricket matches, while professional CEOs are unaffected by these. The results in column 1 also indicate that family CEOs do not make up lost time by working more on days without cricket matches, indeed the difference between family and professional CEOs on days with no matches is negative and precisely estimated. Table A8 tests for inter temporal spillovers directly and finds no evidence of catching up the day after a cricket match.

Since IPL games are generally held in the evenings, we can use the exact timings of activities to investigate the adjustment in hours worked and the differentials between family and professional CEOs in response to the game. To do so, we divide the work day in two intervals, before and after 3PM. This analysis (shown in columns 3 and 4) 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. So while all CEOs reduce hours to watch the match in the afternoon, professional CEOs compensate by working harder before, while family CEOs do not. Finally, in line with the robustness checks of Table 7, Table 9 allows for a rich set of interactions between cricket matches and CEO, firm, industry and state characteristics. The conclusions are robust to these more flexible specifications - in all cases the interaction between the dummy denoting important cricket games and family CEOs is negative and significant.

Taken together, the results in this section cast doubt on the explanation that differences in hours worked are optimal responses to differences in technology, and rather point to the fact that the leisure-performance tradeoff differs between family and professional CEOs. While family CEOs generally have a larger stake in the firms they manage, compared to their professional counterparts, they also have on average more wealth and job security, and therefore place higher weight on personal leisure than firm performance.

6 Cross-country Comparisons

The results in sections 4 and 5 naturally beg the question why family CEOs do not delegate to professionals who are willing to work longer hours and generate higher profits for the firm owners, including the CEO. 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 richer countries. 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 investigate this issue and to provide evidence on the external validity of our results, we analyze the differences in time use data between family and professional CEOs for a large sample of manufacturing firms in Brazil, Britain, France, Germany, Italy, and the

United States.

The total number of CEOs is 759, of which 281 are in Brazil and the remaining 478 are evenly distributed between the other four countries. The sampling methodology and the data collection protocol are identical to the one used in India and were collected in the Spring of 2013. The Indian analysis cannot be fully replicated because most of those firms are not listed and there are no obvious labor-supply related natural experiments. However, the data allows us to report the raw difference in hours worked between family and professional CEOs, which we report in Table 10, both pooled and divided by country level income.

In line with the idea that family management helps overcome weak legal institutions (Burkart et al 2003) we find that the prevalence of family firms in our sample drops with the level of development: from 67% in India to 41% in Brazil and 21% in the high-income countries. The difference between family and professional CEOs in terms of hours worked during the sample week, however, remains stable: .086 in India, .118 in Brazil and .087 in the high-income countries, precisely estimated in all cases.

This reassures us that the pattern in hours worked and the differentials between family and professional CEOs documented in this paper are generalizable to a larger sample of firms in both high and low-income economies. Moreover, the fact that some CEOs prefer to lead their firms even when delegation to hard working professionals would be feasible suggests that they must enjoy non-monetary benefits of control (Demsetz and Lehn 1985, Bandiera et al 2013).

7 Discussion

This paper investigates differences in hours worked by family CEOs and professional (i.e. non family affiliated) CEOs. The main finding is that family CEOs work fewer hours. The difference is unlikely to be due to measurement error, because recorded hours of family CEOs include a greater shares of the activities that would be more likely to be underreported (unplanned meetings, one-on-one meetings, activities with outsiders) and because the difference in hours worked decreases when the firm is subject to competitive pressure. Natural experiments - exposure to monsoon rain and cricket games - indicate that family CEOs are more responsive to shocks that increase the cost of providing effort. All 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, which could be due to either a wealth effect or job security.

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 effect of ownership on hours translates into a 5.8% productivity difference between family and professional CEOs. The behavioral difference is hence a potential candidate to account for 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 2009).

More generally, the evidence presented here highlights the importance of how corporate leaders allocate their limited managerial attention (Milgrom and Geanakoplos 1991, Garicano and Prat 2013). Attention is a scarce resource and 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." The present paper provides evidence on the causes, features, and correlates of CEO attention allocation.

We see this paper as a first step in a growing research agenda based on detailed information on the activities of CEOs. More research is necessary to understand the determinants and effects of the behavior of corporate leaders across low- and high-income economies.

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Figure 1: Geographical Coverage

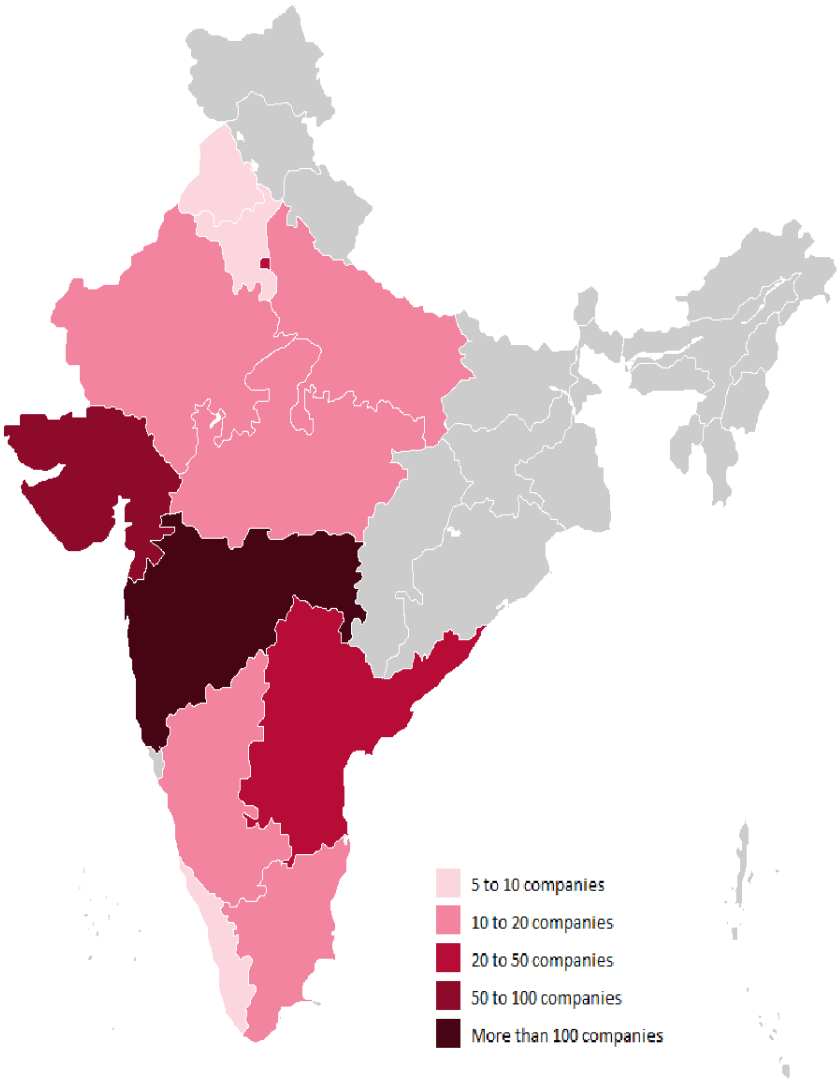

Figure 2: Average daily hours at work

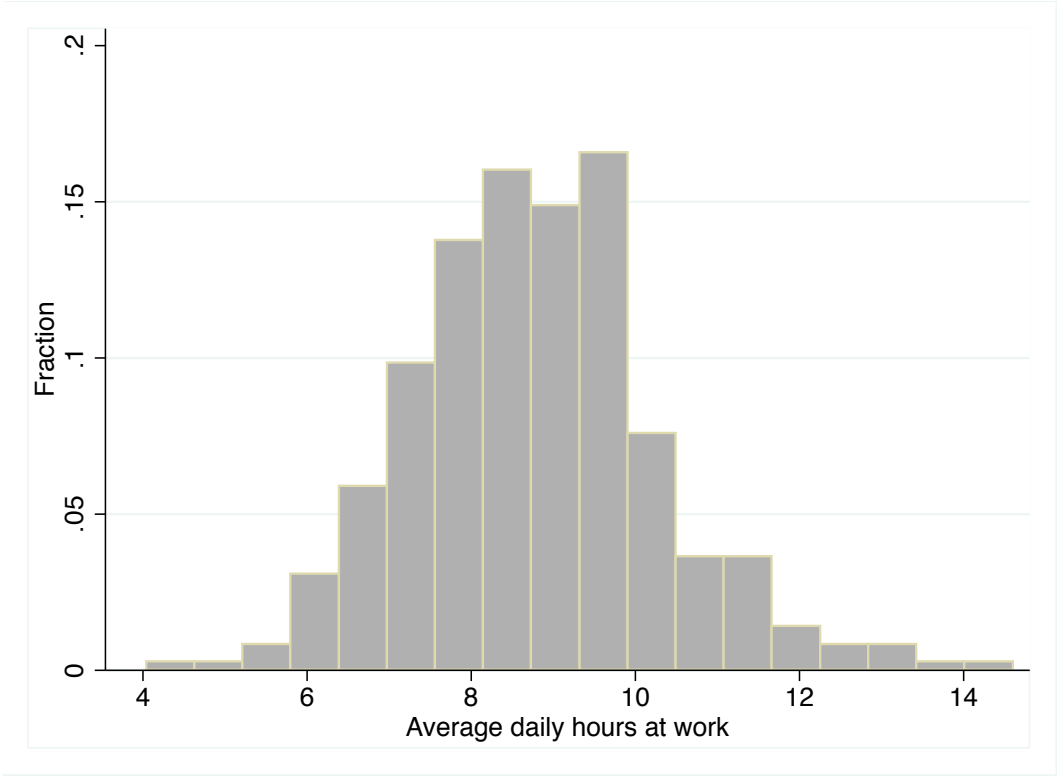

Table 1: Firm and CEO characteristics

	Mean	Median	Standard deviation	P25	P75	Number of firms with available information
Panel A: Ownership						
Founder's Successor CEO	0.51	1	0.50	0	1	356
Founder CEO	0.16	0	0.37	0	0	356
Panel B: Firm Characteristics						
Export	0.81	1	0.39	1	1	356
Domestic or Foreign Multinational	0.17	0	0.37	0	0	356
Number of employees	1225.57	450	4231.13	200	1000	355
Sales per Employee	118.94	47.78	306.20	17.41	123.84	319
Capital per Employee	43.91	12.34	114.44	5.07	40.10	295
Materials per Employee	63.10	26.29	90.63	10.22	71.56	282
Sales Growth (5 years)	0.13	0.12	0.21	0.05	0.22	291
ROCE	0.14	0.13	0.17	0.06	0.21	302
Tobin's q	0.99	0.64	1.02	0.49	0.95	259
Panel C: CEO						
Age	50.61	52	9.64	42	57	356
Male	0.99	1	0.12	1	1	356
College degree	0.96	1	0.19	1	1	356
MBA	0.41	0	0.49	0	1	356
Tenure as CEO	12.76	11	9.72	4	20	356
Tenure in firm	19.05	19	10.59	11	26	356
Experience abroad	0.33	0	0.47	0	1	356
Holds position in other firms	0.29	0	0.45	0	1	355
Sits on other boards	0.42	0	0.50	0	1	353

Table 2: Time Use Descriptives

A. Hours at work

	Mean	Median	Standard Deviation	P25	P75
Number of days at work	5.26	5.00	0.51	5.00	5.00
Mean daily hours at work	8.79	8.73	1.51	7.75	9.67
Mean daily hours at work minus activities < 15 mins	8.27	8.17	1.47	7.27	9.25
Mean daily hours at work minus activities < 15 mins, personal & travel	6.85	6.82	1.44	5.85	7.75

B. Time Allocation

	Mean	Median	Standard Deviation	P25	P75
Share of time spent in business interactions	0.67	0.68	0.15	0.58	0.78
Share of time spent in planned activities	0.73	0.76	0.19	0.62	0.88
Share of time spent with multiple functions	0.27	0.25	0.18	0.13	0.38
Share of time spent with many participants	0.35	0.34	0.19	0.21	0.48
Share of time spent with firm employees	0.58	0.57	0.18	0.47	0.72
Share of time spent with production	0.19	0.17	0.13	0.09	0.27
Share of time spent with direct reports	0.34	0.33	0.18	0.20	0.46

Table 3: CEO Hours Worked and Firm Performance

Dependent Variable	(1)	(2) ln(Sales)	(3)	(4) Growth (Sales, 5 years, %)	(5) Profitability (ROCE, %)	(6) Tobin's q
ln(CEO Hours Worked)	1.043**	0.747**		0.105*	0.121**	0.596**
	(0.472)	(0.359)		(0.055)	(0.047)	(0.299)
ln(1+CEO Hours Travel)			-0.004			
			(0.072)			
Ln(Employment)	0.898***	0.367***	0.379***	0.002	-0.015*	0.266***
	(0.089)	(0.092)	(0.093)	(0.012)	(0.008)	(0.070)
Ln(Capital)		0.303***	0.306***	-0.009	-0.021**	-0.103*
		(0.048)	(0.049)	(0.012)	(0.010)	(0.055)
ln(Materials)		0.448***	0.452***	0.041***	0.033***	-0.054
		(0.054)	(0.055)	(0.011)	(0.008)	(0.051)
Ln(Firm age)		-0.031	-0.059	-0.033	0.014	0.319**
		(0.144)	(0.142)	(0.025)	(0.018)	(0.140)
MNE		-0.104	-0.028	0.023	-0.019	0.348*
		(0.197)	(0.198)	(0.031)	(0.026)	(0.186)
Export		0.047	0.075	-0.025	0.063***	-0.084
		(0.206)	(0.214)	(0.036)	(0.024)	(0.186)
CEO works for other firms		-0.245*	-0.264*	-0.046**	-0.017	0.022
		(0.132)	(0.136)	(0.023)	(0.018)	(0.111)
Ln(CEO age)		0.099	0.008	-0.106	-0.032	0.771**
		(0.477)	(0.466)	(0.072)	(0.049)	(0.372)
Ln(1+CEO tenure in firm)		-0.040	-0.058	0.039*	0.020	-0.291*
		(0.115)	(0.113)	(0.023)	(0.021)	(0.151)
Dummy CEO MBA		0.052	0.079	-0.042	0.030	0.133
		(0.145)	(0.145)	(0.028)	(0.019)	(0.115)
Constant	0.223	-2.438	0.579	-0.010	-2.579**	-5.159***
	(1.683)	(2.217)	(1.688)	(0.348)	(1.127)	(1.605)
R-squared	0.445	0.786	0.783	0.239	0.159	0.498
Observations	1287	1287	1287	807	790	685
Number of firms	317	317	317	291	300	259
Noise controls	y	y	y	y	y	y
Year dummies	y	y	y	y	y	y
Industry dummies		y	y	y	y	y
State dummies		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 firm. The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities during the survey week. The dependent variable in columns 1 and 2 is the log of sales; in column 3, growth of sales over the past 5 year; in column 4, Return on Capital Employed (ROCE); in column 5, Tobin's qs. Accounting data run between 2007 and 2011. Eeach column includes a full set of year dummies. We include only years in which the CEO was in office, and allow for a maximum of three years of accounts for each firm (3 most recent years with non missing data in ORBIS). Noise controls include: a dummy for consolidated accounts, a dummy to denote if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week. CEO controls include: a dummy denoting CEOs who report being employed as managers also in other firms, log of CEO age, log of CEO tenure in the company, a dummy denoting that the CEO holds an MBA. Firm controls include: a dummy to denote multinational and/or exporting firms and the log of firm age. Industry dummies are 71 three digits SIC codes. State dummies are 15 indicators denoting the state in which the firm is headquartered.

Table 4: CEO Hours Worked and Remuneration

	(1)	(2)	(3)	(4)
Dependent Variable	**ln(Total CEO Remuneration)**		**ln(1+Total CEO Salary)**	**ln(1+Total CEO Bonus)**
ln(CEO Hours Worked)	1.026**	0.961***	0.850***	1.763
	(0.403)	(0.365)	(0.324)	(2.024)
Ln(Employment)		0.123	0.039	0.935
		(0.216)	(0.202)	(0.994)
Ln(Firm age)		2.145***	1.309***	5.673**
		(0.482)	(0.487)	(2.278)
MNE		-0.223	-0.136	-1.220
		(0.175)	(0.169)	(0.820)
Export		-0.190	-0.144	0.112
		(0.190)	(0.184)	(0.832)
CEO works for other firms		0.344***	0.365***	0.252
		(0.091)	(0.082)	(0.455)
Ln(CEO age)		0.168	0.024	1.285
		(0.175)	(0.160)	(0.947)
Ln(1+CEO tenure in firm)		0.495*	0.518**	0.729
		(0.272)	(0.246)	(1.330)
Dummy CEO MBA		0.364*	0.258	0.469
		(0.203)	(0.187)	(0.997)
Constant	8.361***	-1.550	0.388	-31.626***
	(1.696)	(2.241)	(2.198)	(11.675)
R-squared	0.442	0.577	0.499	0.393
Observations	809	809	809	809
Number of firms	215	215	215	215
Noise controls	y	y	y	y
Year dummies	y	y	y	y
Industry dummies	y	y	y	y
State dummies	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 firm. The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities during the survey week. The dependent variable in columns 1 and 2 is the log of total CEO yearly remunerations; in column 3, the log of 1 plus CEO yearly salary; in column 4, the log of 1 plus CEO yearly bonus; in column 5. a dummy equal to 1 if CEO bonus if greater than 50% of the total remuneration. Remuneration data run between 2007 and 2011. All columns include a full set of year dummies. We include only years in which the CEO was in office, and allow for a maximum of three years of remuneration data for each firm (3 most recent years with non missing data in Prowess). Industry dummies are 64 three digits SIC codes. State dummies are 15 indicators denoting the state in which the firm is headquartered. Noise controls include: a dummy for consolidated accounts, a dummy to denote if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week.

Table 5: Family vs. Professional CEOs - Cross sectional differences in Hours Worked

	(1)	(2)	(3)	(4)	(5)
Dependent Variable			**ln(CEO Hours Worked) - Week Level**		
Founder's Successor CEO	-0.066**	-0.066**			
	(0.026)	(0.031)			
Founder CEO	-0.111***	-0.082*			
	(0.038)	(0.043)			
Family CEO (Founder & Founder's Successor CEO)			-0.086***	-0.088***	-0.164***
			(0.030)	(0.028)	(0.055)
Ln(Employment)		0.033***	0.031***	0.022**	0.021**
		(0.011)	(0.011)	(0.010)	(0.010)
Ln(Firm age)		-0.038*	-0.022	-0.027	-0.030
		(0.022)	(0.024)	(0.027)	(0.026)
MNE		0.070**	0.096***	0.120***	0.126***
		(0.032)	(0.037)	(0.034)	(0.034)
Export		0.041	0.040	0.040	0.045
		(0.031)	(0.032)	(0.036)	(0.036)
CEO works for other firms		0.005	-0.000	0.012	0.018
		(0.028)	(0.028)	(0.034)	(0.033)
Ln(CEO age)		-0.167**	-0.206***	-0.201***	-0.205***
		(0.066)	(0.065)	(0.069)	(0.069)
Ln(1+CEO tenure in firm)		-0.012	-0.003	-0.007	-0.007
		(0.020)	(0.020)	(0.022)	(0.023)
Dummy CEO MBA		0.013	0.012	0.016	0.014
		(0.024)	(0.026)	(0.024)	(0.023)
Dummy High Competition				0.059**	-0.010
				(0.029)	(0.047)
Family CEO * High Competition					0.106*
					(0.056)
Constant	3.608***	4.158***	4.359***	4.210***	4.257***
	(0.020)	(0.247)	(0.274)	(0.273)	(0.268)
R-squared	0.023	0.084	0.183	0.354	0.362
Number of firms	356	356	356	322	322
Noise controls			y	y	y
Industry dummies			y	y	y
State dummies			y	y	y
Test Family CEO=Founder CEO (p-value)	0.22	0.67			
Test Family CEO+Family CEO*High Competition=0 (p-value)					0.04

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 in all columns except columns 5 and 6 (clustered by firm and three digits sic codes). The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities during the survey week. Founder CEO and Founder's successor CEO are dummies denoting, respectively, firms owned and led by the founder or a founder's successor (2nd generation onwards). Family CEO is a dummy combining Founders and Founder's successors in a single category. Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given

Table 6: Allocation of Time and Ownership

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	**Share Planned**	**Share Many Functions**	**Share Many Participants**	**Share Meeting**	**Share Insiders**	**Share Direct Reports**
Family CEO	-0.025	-0.016	-0.052**	0.005	-0.042*	0.027
	(0.023)	(0.026)	(0.026)	(0.020)	(0.024)	(0.024)
Ln(Employment)	-0.009	0.007	0.016*	0.011	0.010	-0.008
	(0.007)	(0.009)	(0.010)	(0.008)	(0.009)	(0.009)
Ln(Firm age)	-0.032*	0.014	-0.001	-0.004	0.011	-0.001
	(0.018)	(0.022)	(0.021)	(0.016)	(0.018)	(0.019)
MNE	0.039	0.035	0.055*	0.048**	0.009	-0.018
	(0.026)	(0.033)	(0.033)	(0.024)	(0.030)	(0.030)
Export	-0.000	0.000	0.015	-0.006	0.030	-0.013
	(0.029)	(0.027)	(0.027)	(0.023)	(0.027)	(0.028)
CEO works for other firms	0.048**	-0.003	-0.004	-0.014	-0.031	-0.052**
	(0.020)	(0.023)	(0.024)	(0.020)	(0.023)	(0.023)
Ln(CEO age)	0.099*	-0.015	-0.063	0.024	0.044	0.097*
	(0.052)	(0.052)	(0.059)	(0.048)	(0.050)	(0.056)
Ln(1+CEO tenure in firm)	0.002	0.007	0.030*	-0.013	0.003	-0.016
	(0.017)	(0.016)	(0.018)	(0.014)	(0.016)	(0.015)
CEO MBA	-0.025	-0.011	-0.003	0.013	-0.001	-0.009
	(0.019)	(0.020)	(0.021)	(0.016)	(0.019)	(0.021)
Constant	0.522**	0.215	0.554**	0.651***	0.467**	-0.030
	(0.220)	(0.224)	(0.259)	(0.186)	(0.229)	(0.247)
R-squared	0.251	0.120	0.149	0.181	0.184	0.141
Number of firms	356	356	356	356	356	356
Noise controls	y	y	y	y	y	y
Industry dummies	y	y	y	y	y	y
State dummies	y	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 firm. Family CEO is a dummy denoting firms owned by a family (founder or 2nd generation onwards) and where the CEO is also a member of the family. Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week.

Table 7: Response to Rain Shocks by Ownership

Dependent Variable	ln(1+CEO Hours Worked) - Day Level							
Experiment	(1) Baseline	(2) Add interaction	(3) Include industry*rain interactions	(4) Include state*rain interactions	(5) Include CEO*rain interactions	(6) Include firm*rain interactions	(7) Include competition interactions	(8) Include competition interactions
Family CEO	-0.083***	-0.040	-0.038	-0.041	-0.035	-0.040	-0.046	-0.072*
	(0.019)	(0.035)	(0.039)	(0.036)	(0.029)	(0.036)	(0.044)	(0.039)
Dummy=1 if extreme rain	-0.024*	0.038*	0.130	0.012	0.106	0.092	-0.024	0.024
	(0.014)	(0.020)	(0.141)	(0.030)	(0.376)	(0.100)	(0.045)	(0.039)
Dummy=1 if extreme rain * Family CEO		-0.092**	-0.085**	-0.088**	-0.103***	-0.091**	-0.089*	-0.163***
		(0.038)	(0.037)	(0.042)	(0.030)	(0.040)	(0.050)	(0.053)
Dummy=1 if extreme rain * CEO works for other firms					-0.047			
					(0.033)			
Dummy=1 if extreme rain * Ln(CEO age)					-0.028			
					(0.095)			
Dummy=1 if extreme rain * Ln(1+CEO tenure in firm)					0.022			
					(0.018)			
Dummy=1 if extreme rain * CEO MBA					-0.002			
					(0.055)			
Dummy=1 if extreme rain * Ln(Employment)						-0.011		
						(0.018)		
Dummy=1 if extreme rain * Ln(Firm age)						-0.013		
						(0.025)		
Dummy=1 if extreme rain * MNE						0.010		
						(0.035)		
Dummy=1 if extreme rain * Export						0.071***		
						(0.020)		
Dummy=1 if extreme rain * High Competition							0.078**	0.006
							(0.036)	(0.032)
Dummy=1 if extreme rain * Family CEO * High Competition								0.111**
								(0.051)
Family CEO * High Competition								0.034
								(0.044)
Ln(Employment)	0.032***	0.033***	0.033***	0.033***	0.033***	0.039***	0.029***	0.028***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.010)	(0.008)	(0.008)
Ln(Firm age)	-0.038*	-0.040*	-0.042*	-0.039*	-0.040*	-0.035	-0.046*	-0.046*
	(0.022)	(0.022)	(0.021)	(0.022)	(0.024)	(0.026)	(0.027)	(0.026)
MNE	0.073***	0.078***	0.081***	0.079***	0.078***	0.074**	0.104***	0.110***
	(0.026)	(0.025)	(0.027)	(0.025)	(0.026)	(0.033)	(0.027)	(0.026)
Export	0.062***	0.063***	0.067***	0.062***	0.062***	0.030	0.055**	0.059**
	(0.020)	(0.020)	(0.019)	(0.020)	(0.020)	(0.023)	(0.028)	(0.026)
CEO works for other firms	-0.012	-0.016	-0.020	-0.018	0.003	-0.014	-0.019	-0.015
	(0.027)	(0.027)	(0.025)	(0.027)	(0.034)	(0.026)	(0.030)	(0.029)
Ln(CEO age)	-0.184***	-0.180***	-0.177***	-0.178***	-0.167***	-0.182***	-0.184***	-0.189***
	(0.045)	(0.042)	(0.037)	(0.041)	(0.055)	(0.040)	(0.034)	(0.034)
Ln(1+CEO tenure in firm)	0.004	0.004	0.003	0.004	-0.006	0.004	0.005	0.006
	(0.012)	(0.012)	(0.010)	(0.012)	(0.019)	(0.012)	(0.015)	(0.016)
Dummy CEO MBA	0.020*	0.022**	0.025**	0.022**	0.023	0.020**	0.028	0.025
	(0.011)	(0.010)	(0.012)	(0.010)	(0.030)	(0.010)	(0.018)	(0.020)
High Competition							-0.000	-0.022
							(0.027)	(0.031)
Constant	2.031***	2.796***	2.795***	2.799***	2.756***	2.768***	2.812***	2.846***
	(0.078)	(0.112)	(0.103)	(0.105)	(0.186)	(0.092)	(0.109)	(0.106)
R-squared	0.056	0.185	0.199	0.189	0.186	0.187	0.196	0.200
Observations	1603	1603	1603	1603	1603	1603	1442	1442
Number of firms	349	349	349	349	349	349	349	349
State dummies		y	y	y	y	y	y	y
Industry dummies		y	y	y	y	y	y	y
Noise controls		y	y	y	y	y	y	y
Test Rain+Family CEO*Rain=0 (p-value)		0.02	0.78	0.00	0.97	0.99	0.00	0.00
Test Rain+Family CEO*Rain+Family CEO*Rain*High Competition=0 (p-value)								0.55
Test joint significance of Rain*Industry interactions (p-value)			0.00					
Test joint significance of Rain*State interactions (p-value)				0.00				
Test joint significance of Rain*CEO characteristics (p-value)					0.48			
Test joint significance of Rain*other firm characteristics (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 state, except for columns 8 and 9 (clustered by firm, state and three digits sic code). The variable "CEO Hours" is the log of 1 plus the number of hours worked by the CEO during the day. Family CEO is a dummy denoting firms owned by a family (founder or 2nd generation onwards) and where the CEO is also a member of the family. "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 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week, and a control for the day of the week.

Table 8: Response to Cricket Games

Dependent Variable	(1) ln(1+CEO Hours Worked) - Day Level	(2)	(3) ln(1+CEO Hours Until 3PM)	-4 ln(1+CEO Hours After 3PM)
Family CEO	-0.067**	-0.063**	-0.074**	-0.017
	(0.028)	(0.029)	(0.032)	(0.038)
Cricket game	-0.071***	-0.015	0.155**	-0.130***
	(0.019)	(0.032)	(0.076)	(0.048)
Cricket game *Family CEO		-0.088*	-0.247***	0.008
		(0.053)	(0.071)	(0.103)
Ln(Employment)	0.014*	0.014*	-0.003	0.023*
	(0.008)	(0.008)	(0.009)	(0.014)
Ln(Firm age)	0.015	0.017	0.048**	-0.000
	(0.023)	(0.023)	(0.023)	(0.026)
MNE	0.071**	0.068**	0.046	0.040
	(0.029)	(0.028)	(0.035)	(0.035)
Export	0.051*	0.051*	0.019	0.042
	(0.029)	(0.030)	(0.031)	(0.040)
CEO works for other firms	-0.033	-0.032	-0.018	-0.041
	(0.024)	(0.024)	(0.026)	(0.029)
Ln(CEO age)	-0.079	-0.079	-0.088	-0.029
	(0.065)	(0.065)	(0.069)	(0.078)
Ln(1+CEO tenure in firm)	-0.003	-0.003	0.002	-0.017
	(0.017)	(0.017)	(0.019)	(0.022)
Dummy CEO MBA	0.010	0.009	0.014	-0.001
	(0.019)	(0.019)	(0.028)	(0.029)
Constant	2.371***	2.371***	1.743***	1.479***
	(0.256)	(0.255)	(0.280)	(0.332)
R-squared	0.133	0.133	0.103	0.089
Observations	1832	1832	1832	1832
Number of firms	353	353	353	353
State dummies	y	y	y	y
Industry dummies	y	y	y	y
Noise controls	y	y	y	y
Test Cricket+Family CEO*Cricket=0 (p-value)		0.00	0.00	0.13

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" is the log of 1 plus the number of hours worked by the CEO during the day. Family CEO is a dummy denoting firms owned by a family (founder or 2nd generation onwards) and where the CEO is also a member of the family. "Cricket game" is a dummy denoting that an IPL playoff, semifinal or final game was played and broadcasted on television on the day. Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week, and a control for the day of the week.

Table 9: Response to Cricket Shocks by Ownership - Robustness

Dependent Variable	ln(1+CEO Hours until 3PM)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Experiment	Baseline	Include industry*Cricket interactions	Include state*Cricket interactions	Include CEO*Cricket interactions	Include firm*Cricket interactions	Include competition *Cricket interactions	Include competition *Cricket interactions
Family CEO	-0.074**	-0.074**	-0.077**	-0.077**	-0.077**	-0.078*	-0.152**
	(0.032)	(0.033)	(0.032)	(0.032)	(0.031)	(0.041)	(0.073)
Cricket game	0.155**	0.038	0.163	-0.769	0.339*	0.344***	0.214**
	(0.076)	(0.167)	(0.132)	(0.572)	(0.182)	(0.104)	(0.089)
Cricket game * Family CEO	-0.247***	-0.288***	-0.336***	-0.182***	-0.144**	-0.323***	-0.154
	(0.071)	(0.088)	(0.081)	(0.070)	(0.063)	(0.086)	(0.112)
Cricket game * CEO works for other firms				0.003			
				(0.003)			
Cricket game * Ln(CEO age)				0.263**			
				(0.122)			
Cricket game * Ln(1+CEO tenure in firm)				-0.063			
				(0.057)			
Cricket game * CEO MBA				-0.002			
				(0.075)			
Cricket game * Ln(Employment)					-0.012		
					(0.052)		
Cricket game * Ln(Firm age)					-0.090		
					(0.084)		
Cricket game * MNE					0.234**		
					(0.107)		
Cricket game * Export					0.021		
					(0.080)		
Cricket game * High Competition						-0.233**	-0.070
						(0.108)	(0.121)
Family CEO * High Competition							0.101
							(0.075)
Cricket game * Family CEO * High Competition							-0.236
							(0.152)
Ln(Employment)	-0.003	-0.003	-0.003	-0.002	-0.003	-0.006	-0.007
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.012)	(0.012)
Ln(Firm age)	0.048**	0.053**	0.051**	0.050**	0.063***	0.045	0.044
	(0.023)	(0.023)	(0.023)	(0.023)	(0.022)	(0.029)	(0.028)
MNE	0.046	0.043	0.041	0.043	0.027	0.051	0.055
	(0.035)	(0.037)	(0.035)	(0.035)	(0.036)	(0.038)	(0.040)
Export	0.019	0.021	0.019	0.019	0.021	0.033	0.037
	(0.031)	(0.032)	(0.033)	(0.031)	(0.032)	(0.042)	(0.043)
CEO works for other firms	-0.018	-0.022	-0.018	-0.020	-0.013	-0.017	-0.013
	(0.026)	(0.027)	(0.028)	(0.027)	(0.027)	(0.032)	(0.033)
Ln(CEO age)	-0.088	-0.090	-0.093	-0.104	-0.096	-0.102	-0.112
	(0.069)	(0.071)	(0.071)	(0.070)	(0.068)	(0.075)	(0.079)
Ln(1+CEO tenure in firm)	0.002	0.001	0.003	0.007	0.006	-0.005	-0.004
	(0.019)	(0.022)	(0.020)	(0.020)	(0.019)	(0.020)	(0.021)
Dummy CEO MBA	0.014	0.015	0.014	0.012	0.009	0.017	0.015
	(0.028)	(0.029)	(0.028)	(0.029)	(0.029)	(0.035)	(0.035)
High Competition						-0.004	-0.070
						(0.033)	(0.059)
Constant	1.743***	1.741***	1.763***	1.784***	1.739***	1.843***	1.925***
	(0.280)	(0.274)	(0.275)	(0.274)	(0.269)	(0.323)	(0.344)
R-squared	0.103	0.108	0.108	0.103	0.106	0.115	0.117
Observations	1832	1832	1832	1832	1832	1652	1652
Number of firms	353	353	353	353	353	353	353
State dummies	y	y	y	y	y	y	y
Industry dummies	y	y	y	y	y	y	y
Noise controls	y	y	y	y	y	y	y
Test Cricket+Family CEO*Cricket=0 (p-value)	0.01	0.10	0.05	0.08	0.21	0.76	0.45
Test joint significance of Cricket*CEO characteristics (p-value)				0.00			
Test joint significance of Cricket*other firm 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, excpet for columns 6 and 7 (clustered by firm, date a three digits industry). The variable "CEO Hours" is the log of 1 plus the number of hours worked by the CEO during the day. Family CEO is a dummy denoting firms owned by a family (founder or 2nd generation onwards) and where the CEO is also a member of the family. "Cricket game" is a dummy denoting the broadcasting of an IPL playoff, semifinal or final. Column 2 includes a full set of industry dummiesXCricket interactions. Column 3 includes a full set of state dummiesXCricket interactions. Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week, and a control for the day of the week.

Table 10: Family vs. Professional CEOs - Cross sectional differences in Hours Worked Across Countries

	(1)	(2)	(3)	(4)
Dependent Variable	**ln(CEO Hours Worked) - Week Level**			
Sample	**India**	**Brazil, France, Germany, UK, US**	**Brazil**	**France, Germany, UK, US**
Family CEO	-0.086***	-0.110***	-0.118***	-0.087**
	(0.030)	(0.025)	(0.036)	(0.035)
Ln(Employment)	0.031***	0.029***	0.046***	0.016
	(0.011)	(0.009)	(0.016)	(0.010)
Ln(Firm age)	-0.022	0.010	0.040*	0.001
	(0.024)	(0.011)	(0.023)	(0.012)
MNE	0.096***	0.007	0.020	0.031
	(0.037)	(0.022)	(0.037)	(0.027)
Export	0.040	0.011	0.013	0.032
	(0.032)	(0.026)	(0.041)	(0.037)
CEO works for other firms	-0.000	-0.006	-0.017	0.007
	(0.028)	(0.025)	(0.036)	(0.031)
Ln(CEO age)	-0.206***	-0.166***	-0.207**	-0.166**
	(0.065)	(0.054)	(0.093)	(0.070)
Ln(1+CEO tenure in firm)	-0.003	-0.009	0.002	-0.018
	(0.020)	(0.012)	(0.018)	(0.015)
Dummy CEO MBA	0.012	0.036*	-0.013	0.033
	(0.026)	(0.021)	(0.036)	(0.025)
Constant	4.245***	4.349***	4.140***	4.028***
	(0.298)	(0.281)	(0.326)	(0.284)
R-squared	0.183	0.183	0.303	0.118
Number of firms	356	759	281	478
Noise controls	y	y	y	y
Industry dummies	y	y	y	y
State or Country dummies	y	y	y	y
% Family CEOs	0.67	0.28	0.41	0.21

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 the total hours the CEO devoted to work activities during the survey week. Family CEO is a dummy denoting firms owned by a family (founder or 2nd generation onwards) and where the CEO is also a member of the family. **India:** Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week. Other countries: Industry dummies are 21 two digits SIC codes. Country dummies included in all regressions. Noise controls include: a dummy to denote if the time use data was recorded through the PA or by the CEO himself; 56 interviewer dummies; 22 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week.

A Data Appendix

A.1 The Time Use Survey

A.1.1 Survey Management

The data was collected by a team of fifteen MBA students recruited specifically for this project from leading business schools in Mumbai. To ensure comparability across analysts, all interviews were conducted from a single location (an office in the Mumbai suburb of Andheri), and all analysts 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 analysts had codified all the activities according to the survey protocol. Each analyst ran on average 24 interviews across 9 states, which allows us to include analysts fixed effects to control for potential unobserved differences in the compilation of the time diaries across interviewers together with state dummies.

Each analyst was allocated a random list of about 70 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, two full time supervisors (one hired from a local consultancy, IPSOS) and one additional manager working on a part time basis led the survey team.

We actively monitored and coached the interviewers 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 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 the population of listed Indian firms. The construction of the sampling frame followed several criteria. First, we 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. Second, we kept firms active in 2010 and reported accounting data up until at least 2006. These conditions restricted our sample from 8,000 to 3,500 firms. Third, we kept companies for which we could find CEOs contact details. To gather contact information we hired a team of research assistants based in Mumbai who verified the CEOs names, found their phone numbers and emails, and established a first contact with their PAs. This restricted the sample to 1,955 firms. Of these, 368 later resulted not to be eligible

for the interviews upon the first telephonic contact (the reasons for non eligibility included recent bankruptcy, the company not being in manufacturing or being listed anymore), and 158 were never contacted because the project ended before this was possible.

The final number of eligible companies was thus 1,429, with median yearly sales of 24,000,000 Rupees.[21] Of these, we were able to secure an interview with 364 CEOs, although 8 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 (a difference of 1.8%, significant at the 1% level). However, we do not find any significant selection effect on performance variables, such as return on capital employed (ROCE) return on assets (ROA) and profits over sales.

A.2 Firm Data

A.2.1 Accounts

The data on sales, capital, materials, profits, return on capital employed, market values came from ORBIS. Employment figures are typically not published in the Indian accounts, so this information was part of the survey questionnaire. For each company, we restrict the sample to the three most recent years in the interval running from 2007 to 2011, and we only keep years in which the CEO was in office.

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), 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, and show in Appendix results that all the results hold when we consider these two categories separately. The omitted category in all regressions includes family or founder owned firms with professional CEOs (10%), dispersed shareholders (14%), government

[21] As a comparison, median sales for the entire population of manufacturing firms in Orbis between 2008 and 2011 was 13,000,000 Rupees)

(2.2%), private equity/venture capital (1.4%) and private individuals who are not founders or heirs to the founders of the company (4.4%).

A.2.3 CEO Pay

We collected data on CEO pay from PROWESS, an extensive commercial dataset focused on Indian public firms. Similar to the accounts, we restrict the sample to the three most recent years in the interval running from 2007 to 2011, and we only keep years in which the CEO was in office.

A.3 Industry Data

Our industry classification is the US SIC (1987). Each firm is allocated to each main two digits sector based on sales. We have 19 distinct two digits industries, and at least two companies for each of these industries. 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 (73 distinct industries in total with at least 5 firms in the cell, data averaged between 2006 and 2010). In the regressions we use as a proxy for competition a dummy indicating the upper third of the distribution of the Lerner Index. The measure can be constructed for 322 firms (mean 0.66, standard deviation 0.47).

We obtain similar results as the one shon in th emain Tables when we use the continuous version of the Lerner index. The coefficient (standard error) of the Lerner index in Table 5, column 4 is -0.0003 (0.002). The coefficient (standard error) of the Lerner index in Table 5, column 5 is -0.005 (0.003). The coefficient (standard error) of the Lerner index interacted with the Family CEO dummy in Table 5, column 5 is 0.008 (0.003).

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 contrsucted 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 Additional Results

Table A1 shows the results of the selection analysis.

Table A2 to Table A5, and Table A7 report the main results of the paper keeping the distinction between Founder CEOs and second generation Family CEOs.

Table A6 analyses inter temporal spillovers in the reaction to rain and cricket shocks.

Figure A1: Survey screenshot

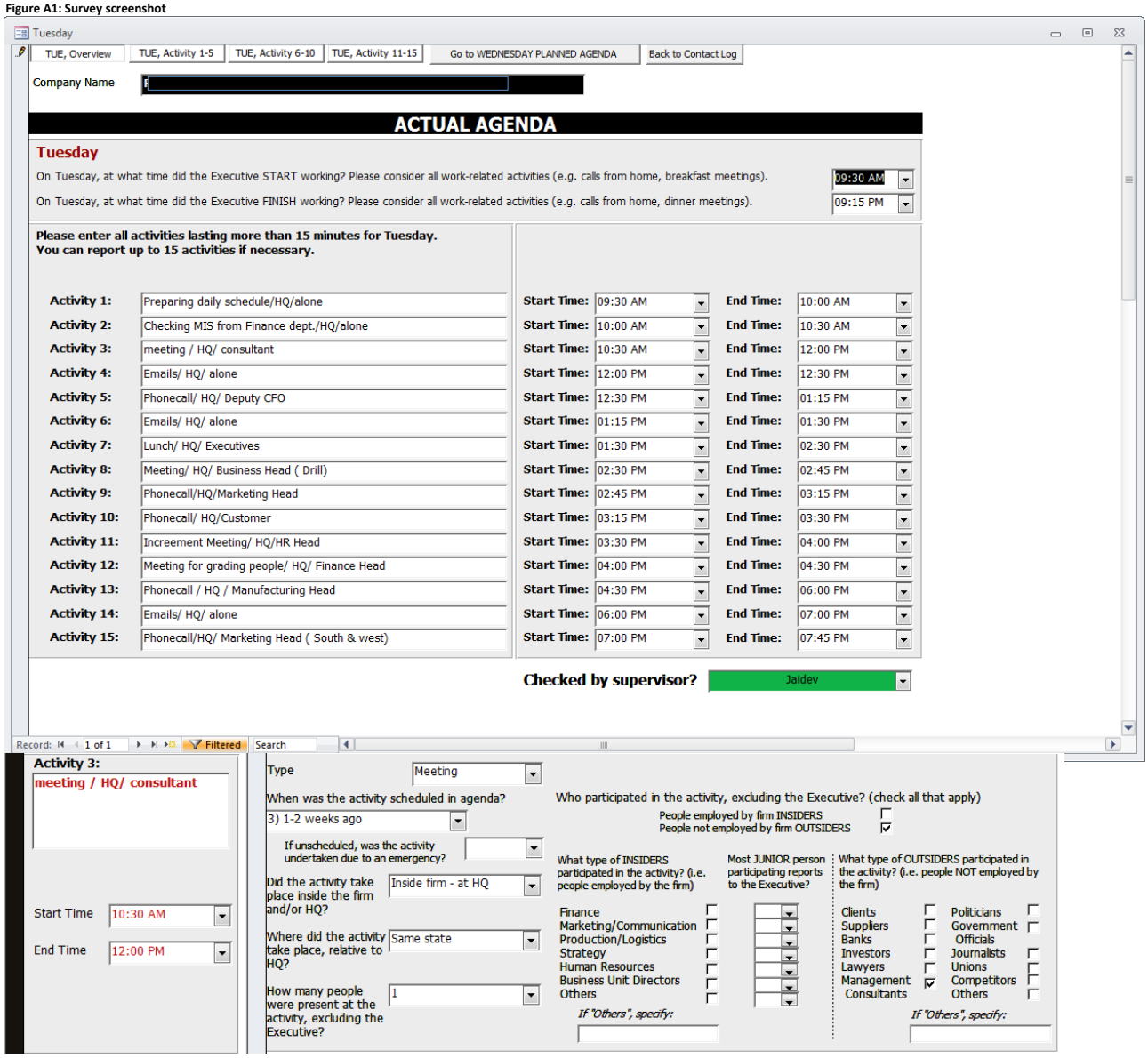

Figure A2: Share of time by type of activity

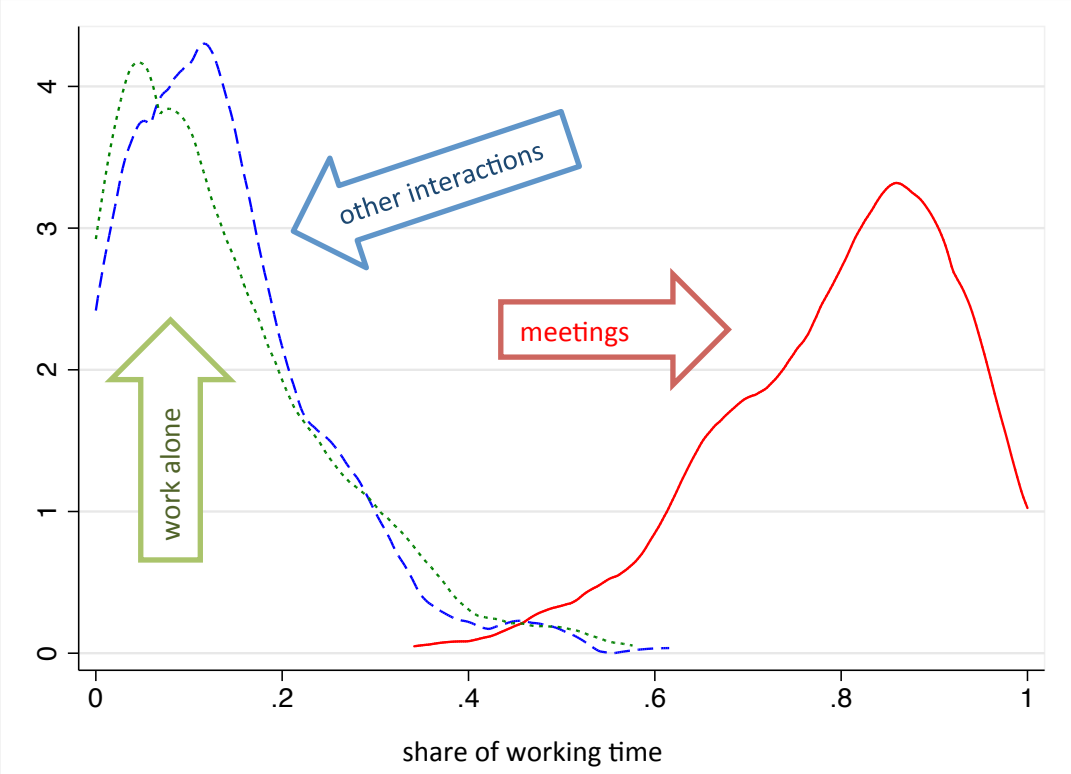

Figure A3: Share of time by type of activity

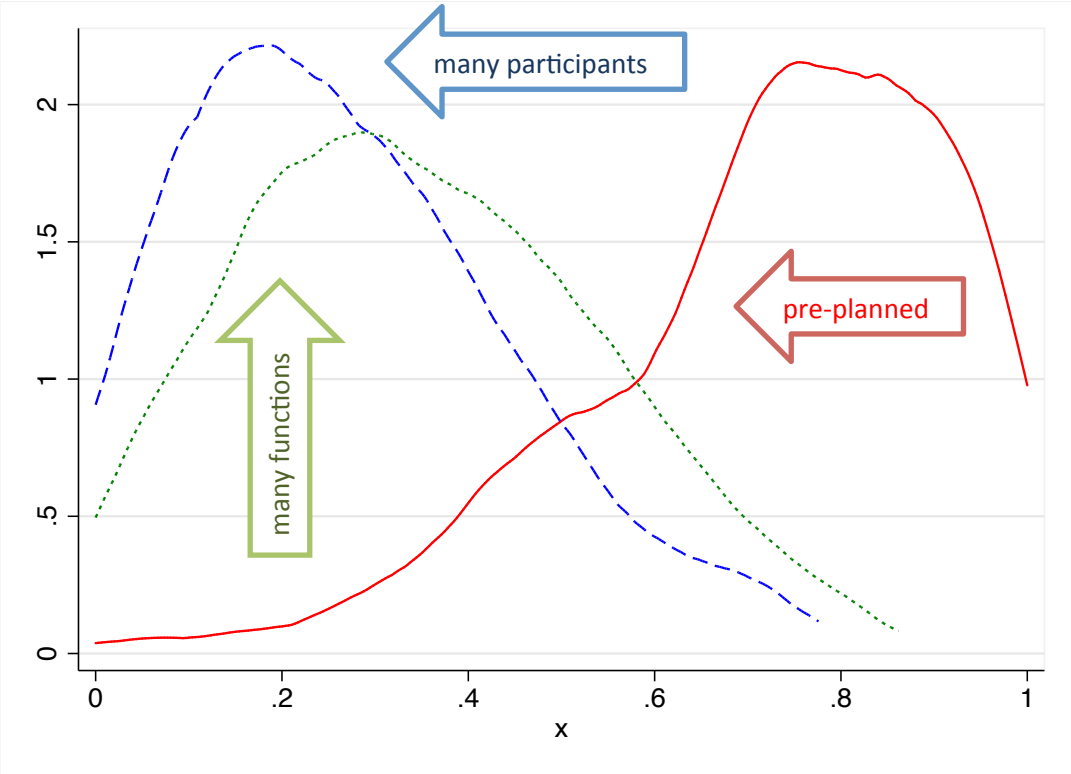

Figure A4: Share of time across insiders and direct reports

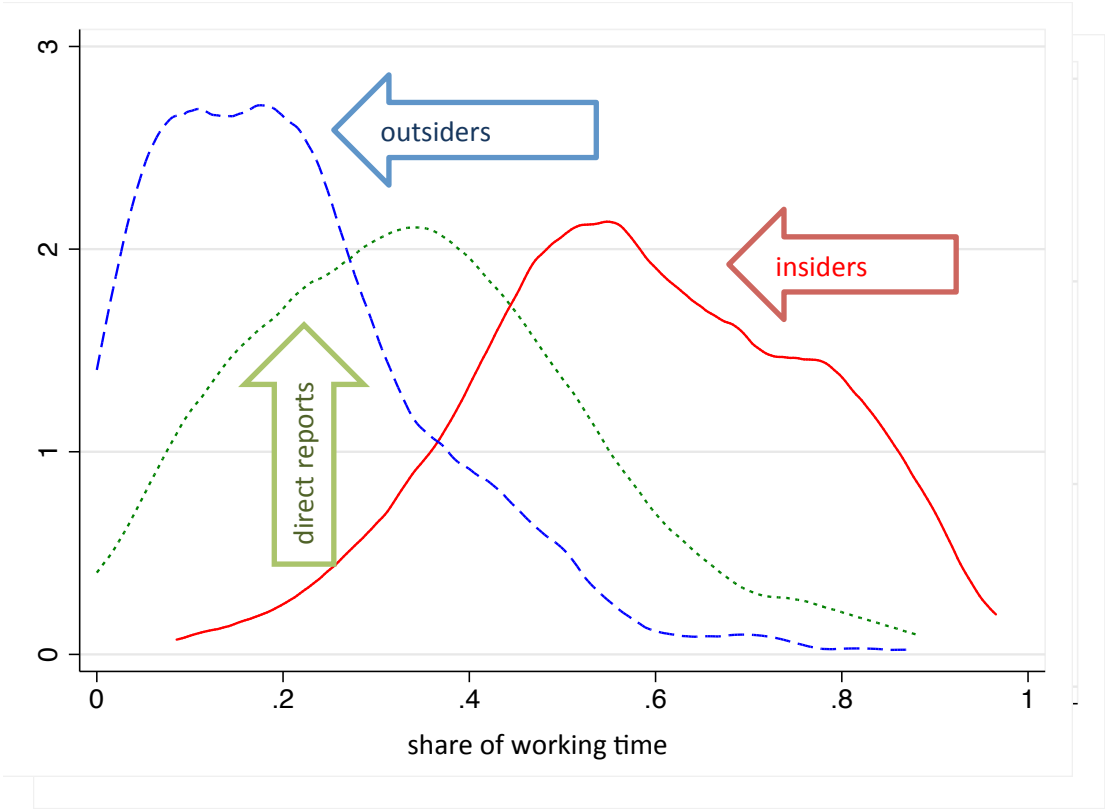

Figure A5: Share of time across functions

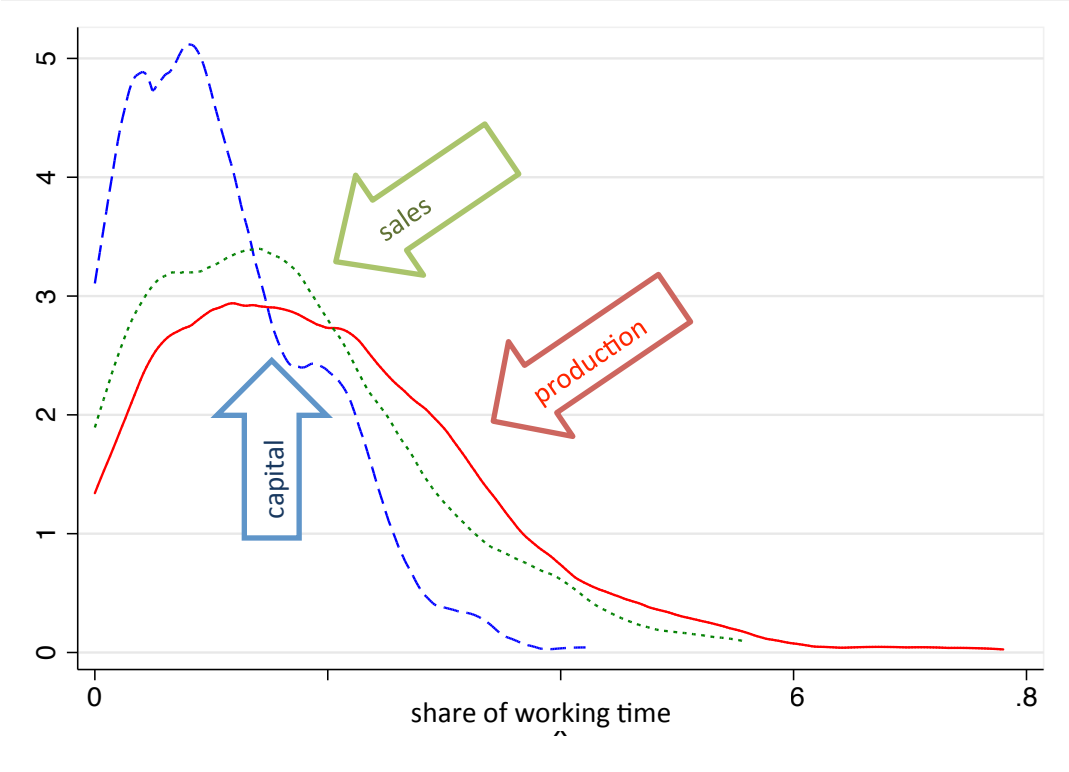

Table A1: Selection

	(1)	(2)	(3)	(4)
Dependent Variable		**Dummy=1 if CEO participated**		
Ln(Sales)	-0.019***			
	(0.005)			
ROCE		0.000		
		(0.000)		
ROA			-0.000	
			(0.001)	
Profits/Sales				-0.022
				(0.076)
state_AndhraPradesh	-0.056	-0.067	-0.048	-0.026
	(0.047)	(0.049)	(0.049)	(0.051)
state_Gujarat	0.081*	0.069	0.084*	0.125**
	(0.043)	(0.047)	(0.045)	(0.051)
state_Haryana	-0.054	-0.033	-0.030	-0.013
	(0.081)	(0.090)	(0.090)	(0.095)
state_Karnataka	0.075	0.072	0.067	0.100
	(0.060)	(0.067)	(0.063)	(0.072)
state_Kerala	0.069	0.042	0.045	0.159
	(0.099)	(0.104)	(0.100)	(0.120)
state_MadhyaPradesh	0.092	0.103	0.120	0.155
	(0.089)	(0.098)	(0.089)	(0.112)
state_Delhi	0.027	-0.022	0.030	0.006
	(0.048)	(0.051)	(0.049)	(0.052)
state_Puducherry	-0.109**	-0.111**	-0.107**	-0.081
	(0.047)	(0.051)	(0.048)	(0.052)
state_Punjab	-0.070	-0.042	-0.046	-0.009
	(0.075)	(0.084)	(0.079)	(0.088)
state_Rajasthan	0.101	0.090	0.099	0.081
	(0.084)	(0.089)	(0.086)	(0.091)
state_TamilNadu	-0.087	-0.051	-0.073	-0.070
	(0.057)	(0.067)	(0.059)	(0.072)
state_UttarPradesh	0.146*	0.142	0.166**	0.224**
	(0.082)	(0.088)	(0.083)	(0.095)
state_WestBengal	-0.032	-0.024	-0.037	0.013
	(0.046)	(0.050)	(0.047)	(0.054)
Constant	0.422***	0.204	0.197	0.206
	(0.153)	(0.149)	(0.146)	(0.167)
R-squared	0.011	-0.006	-0.001	0.000
Number of firms	1425	1231	1361	1109

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 dependent variable in all columns is a dummy=1 if the CEO participated in the survey. The selection regression is run on the latest availabe year of accounting data. All columns include 102 three digits SIC industry dummies.

Table A2: Firm and CEO characteristics: Differences between Family and Professional CEOs

	Professional CEOs	Family CEOs	P-value
Export	0.85	0.79	0.21
Domestic or Foreign Multinational	0.18	0.16	0.63
Number of Employees	1352.46	1163.19	0.69
CEO Age	52.26	49.80	0.02
CEO Gender (male=1)	0.97	0.99	0.19
CEO holds a College degree	0.98	0.95	0.17
CEO holds an MBA	0.51	0.36	0.01
Tenure as CEO (years)	7.79	15.19	0.00
Tenure in firm (years)	14.46	21.29	0.00
Experience abroad	0.34	0.33	0.83
Holds position in other firms	0.23	0.32	0.10
Sits on other boards	0.42	0.43	0.95

Table A3: Family vs. Professional CEOs - Cross sectional differences in Hours Worked

	(1)	(2)	(3)	(4)	(5)
Dependent Variable			**ln(CEO Hours Worked) - Week Level**		
Founder's Successor CEO	-0.066**	-0.066**	-0.082***	-0.086***	-0.161**
	(0.026)	(0.031)	(0.031)	(0.030)	(0.065)
Founder CEO	-0.111***	-0.082*	-0.102**	-0.095**	-0.171***
	(0.038)	(0.043)	(0.041)	(0.037)	(0.059)
Ln(Employment)		0.033***	0.031***	0.022**	0.021**
		(0.011)	(0.011)	(0.010)	(0.010)
Ln(Firm age)		-0.038*	-0.024	-0.028	-0.031
		(0.022)	(0.024)	(0.027)	(0.026)
MNE		0.070**	0.095**	0.120***	0.126***
		(0.032)	(0.037)	(0.034)	(0.034)
Export		0.041	0.039	0.039	0.044
		(0.031)	(0.032)	(0.037)	(0.037)
CEO works for other firms		0.005	-0.000	0.012	0.018
		(0.028)	(0.028)	(0.034)	(0.034)
Ln(CEO age)		-0.167**	-0.197***	-0.197***	-0.202***
		(0.066)	(0.069)	(0.074)	(0.075)
Ln(1+CEO tenure in firm)		-0.012	-0.003	-0.007	-0.007
		(0.020)	(0.020)	(0.022)	(0.023)
Dummy CEO MBA		0.013	0.011	0.015	0.013
		(0.024)	(0.027)	(0.024)	(0.023)
Dummy High Competition				0.059**	-0.010
				(0.029)	(0.048)
Founder's Successor CEO * High Competition					0.104
					(0.065)
Founder CEO * High Competition					0.108
					(0.068)
Constant	3.608***	4.158***	4.331***	4.201***	4.251***
	(0.020)	(0.247)	(0.281)	(0.280)	(0.281)
R-squared	0.023	0.084	0.181	0.355	0.362
Number of firms	356	356	356	322	322
Noise controls			y	y	y
Industry dummies			y	y	y
State dummies			y	y	y
Test Family CEO=Founder CEO (p-value)	0.22	0.67	0.58	0.79	0.89
Test Founder's Successor CEO*High Competition=Founder CEO*High Competition (p-value)					0.87

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 in all columns except column 4 (clustered by state) and columns 5 and 6 (clustered by three digits sic codes). The variable "CEO Hours Worked" is the log of the total hours the CEO devoted to work activities during the survey week. Founder CEO and Founder's successor CEO are dummies denoting, respectively, firms owned and led by the founder or a founder's successor (2nd generation onwards).Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week.

Table A4: Allocation of Time and Ownership - detail

Dependent variable	Share Planned	Share Many Functions	Share Many Participants	Share Meeting	Share Insiders	Share Direct Reports
	(1)	(2)	(3)	(4)	(5)	(6)
Founder's Successor CEO	-0.018	-0.022	-0.056**	0.000	-0.044*	0.024
	(0.023)	(0.026)	(0.027)	(0.021)	(0.025)	(0.025)
Founder CEO	-0.050	0.006	-0.036	0.024	-0.034	0.035
	(0.034)	(0.037)	(0.034)	(0.030)	(0.033)	(0.035)
Ln(Employment)	-0.009	0.008	0.016*	0.011	0.010	-0.007
	(0.007)	(0.009)	(0.010)	(0.008)	(0.009)	(0.009)
Ln(Firm age)	-0.035*	0.017	0.001	-0.001	0.012	-0.000
	(0.018)	(0.022)	(0.022)	(0.016)	(0.018)	(0.019)
MNE	0.038	0.036	0.056*	0.049**	0.009	-0.017
	(0.026)	(0.033)	(0.033)	(0.024)	(0.030)	(0.030)
Export	-0.002	0.001	0.016	-0.005	0.031	-0.013
	(0.029)	(0.027)	(0.027)	(0.023)	(0.027)	(0.028)
CEO works for other firms	0.048**	-0.004	-0.004	-0.014	-0.031	-0.052**
	(0.020)	(0.022)	(0.024)	(0.020)	(0.023)	(0.023)
Ln(CEO age)	0.114**	-0.028	-0.073	0.013	0.039	0.092
	(0.052)	(0.054)	(0.060)	(0.049)	(0.052)	(0.058)
Ln(1+CEO tenure in firm)	0.001	0.007	0.030*	-0.013	0.003	-0.016
	(0.017)	(0.016)	(0.018)	(0.014)	(0.016)	(0.015)
Dummy CEO MBA	-0.027	-0.010	-0.002	0.014	-0.001	-0.009
	(0.019)	(0.020)	(0.021)	(0.016)	(0.020)	(0.021)
Constant	0.150	0.011	0.104	0.793***	0.544**	0.501**
	(0.264)	(0.249)	(0.263)	(0.201)	(0.223)	(0.248)
R-squared	0.252	0.119	0.147	0.181	0.182	0.139
Number of firms	356	356	356	356	356	356
Test Family CEO=Founder CEO (p-value)	0.3	0.38	0.5	0.38	0.74	0.74
Noise controls	y	y	y	y	y	y
Industry dummies	y	y	y	y	y	y
State dummies	y	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 firm. Founder CEO and Founder's successor CEO are dummies denoting, respectively, firms owned and led by the founder or a founder's successor (2nd generation onwards). Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week.

Table A5: Reaction to shocks - detail

Dependent Variable	(1)	(2)	(3)	(4)
	ln(1+CEO Hours) - Day Level		ln(1+CEO Hours until 3PM)	
Founder's Successor CEO	-0.076***	-0.030	-0.084**	-0.071**
	(0.025)	(0.030)	(0.034)	(0.034)
Founder CEO	-0.092***	-0.056	-0.054	-0.043
	(0.031)	(0.036)	(0.041)	(0.041)
Dummy=1 if extreme rain	-0.024	0.037		
	(0.020)	(0.027)		
Dummy=1 if extreme rain * Founder's Successor CEO		-0.095**		
		(0.037)		
Dummy=1 if extreme rain * Founder CEO		-0.076		
		(0.054)		
Cricket game			-0.005	0.159**
			(0.027)	(0.071)
Cricket game *Founder's Successor CEO				-0.257***
				(0.066)
Cricket game *Founder CEO				-0.274***
				(0.079)
Ln(Employment)	0.032***	0.032***	-0.002	-0.002
	(0.008)	(0.008)	(0.010)	(0.010)
Ln(Firm age)	-0.045***	-0.047***	0.044*	0.048**
	(0.017)	(0.017)	(0.025)	(0.024)
MNE	0.073**	0.078***	0.030	0.022
	(0.028)	(0.028)	(0.036)	(0.037)
Export	0.057**	0.059**	0.018	0.018
	(0.024)	(0.024)	(0.031)	(0.031)
CEO works for other firms	-0.013	-0.016	-0.020	-0.019
	(0.023)	(0.023)	(0.027)	(0.027)
Ln(CEO age)	-0.186***	-0.181***	-0.106	-0.108
	(0.055)	(0.055)	(0.069)	(0.069)
Ln(1+CEO tenure in firm)	0.005	0.005	0.004	0.004
	(0.014)	(0.014)	(0.020)	(0.020)
Dummy CEO MBA	0.025	0.026	0.023	0.021
	(0.021)	(0.021)	(0.028)	(0.028)
Constant	2.723***	2.672***	1.737***	1.736***
	(0.213)	(0.215)	(0.304)	(0.302)
R-squared	0.144	0.147	0.098	0.102
Observations	1603	1603	1832	1832
Number of firms	349	349	353	353
Test Family CEO=Founder CEO (p-value)	0.58	0.41	0.44	0.47
Test shock*Family CEO=shock*Founder CEO (p-value)		0.73		0.82
State dummies	y	y	y	y
Industry dummies	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 columns 1 and 2 standard errors under coefficient are clustered by firm and state. In columns 3 and 4 standard errors under coefficient are clustered by firm and date. The variable "CEO Hours" is the log of 1 plus the number of hours worked by the CEO during the day. Family CEO is a dummy denoting firms owned by a family (founder or 2nd generation onwards) and where the CEO is also a member of the family. "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 IPL playoff, semifinal or final game was played and broadcasted on television on the day. Noise controls include: a dummy to denote if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week, and a control for the day of the week.

Table A6: Intertemporal Spillovers

Dependent Variable	(1)	(2)	(3)	(4)
	ln(1+CEO Hours) - Day Level		ln(1+CEO Hours until 3PM)	
Family CEO	-0.072***	-0.012	-0.068*	-0.051
	(0.027)	(0.039)	(0.037)	(0.039)
Dummy=1 if extreme rain (T)	-0.043*	0.007		
	(0.026)	(0.030)		
Dummy=1 if extreme rain (T-1)	0.022	0.059*		
	(0.022)	(0.034)		
Dummy=1 if extreme rain * Family CEO		-0.072*		
		(0.038)		
Dummy=1 if extreme rain (T-1)* Family CEO		-0.050		
		(0.041)		
Cricket game (T)			-0.001	0.190**
			(0.046)	(0.090)
Cricket game (T-1)			-0.010	-0.052
			(0.042)	(0.083)
Cricket game (T) * Family CEO				-0.307***
				(0.081)
Cricket game (T-1) * Family CEO				0.056
				(0.076)
Constant	2.328***	2.275***	1.392***	1.396***
	(0.295)	(0.295)	(0.358)	(0.356)
R-squared	0.147	0.151	0.099	0.104
Observations	1190	1190	1461	1461
Number of firms	340	340	353	353
Firm controls	y	y	y	y
CEO controls	y	y	y	y
State dummies	y	y	y	y
Industry dummies	y	y	y	y
Noise controls	y	y	y	y
Test Rain+Family CEO*Rain=0 (p-value)		0.04		
Test Lagged Rain+Family CEO*Lagged Rain=0 (p-value)		0.74		
Test Cricket+Family CEO*Cricket=0 (p-value)				0.02
Test Lagged Cricket+Family CEO*Lagged Cricket=0 (p-value)				0.94

Notes: *significant at 10%; ** significant at 5%; *** significant at 1%. All columns estimated by OLS. In columns 1-3 standard errors under coefficient are clustered by firm. In columns 4-6 standard errors under coefficient are clustered by firm and date. The variable "CEO Hours" is the log of 1 plus the number of hours worked by the CEO during the day. Family CEO is a dummy denoting firms owned and led by the founder or a founder's successor (founder or 2nd generation onwards). "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 IPL playoff, semifinal or final game was played and broadcasted on television on the day. Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week, and a control for the day of the week.

Table A7: Family vs. Professional CEOs - Cross sectional differences in Hours Worked Across Countries

	(1)	(2)	(3)	(4)
Dependent Variable	**ln(CEO Hours Worked) - Week Level**			
Sample	**India**	**Brazil, France, Germany, UK, US**	**Brazil**	**France, Germany, UK, US**
Founder's Successor CEO	-0.078**	-0.107***	-0.101**	-0.100**
	(0.032)	(0.029)	(0.042)	(0.039)
Founder CEO	-0.101**	-0.115***	-0.146***	-0.045
	(0.042)	(0.039)	(0.051)	(0.070)
Ln(Employment)	0.036***	0.016	0.011	0.054
	(0.011)	(0.027)	(0.040)	(0.034)
Ln(Firm age)	-0.026	0.030***	0.046***	0.019*
	(0.024)	(0.009)	(0.015)	(0.010)
MNE/Export	0.057*	0.010	0.036	0.003
	(0.034)	(0.011)	(0.025)	(0.012)
CEO works for other firms	0.005	-0.006	-0.014	0.006
	(0.029)	(0.025)	(0.035)	(0.031)
Ln(CEO age)	-0.186***	-0.164***	-0.194**	-0.174**
	(0.068)	(0.055)	(0.094)	(0.072)
Ln(1+CEO tenure in firm)	-0.000	-0.009	0.001	-0.018
	(0.020)	(0.012)	(0.018)	(0.015)
Dummy CEO MBA	0.003	0.035*	-0.017	0.034
	(0.027)	(0.021)	(0.037)	(0.025)
Constant	4.351***	4.333***	4.107***	4.027***
	(0.296)	(0.279)	(0.328)	(0.286)
R-squared	0.163	0.184	0.304	0.120
Number of firms	356	759	281	478
Noise controls	y	y	y	y
Industry dummies	y	y	y	y
State or Country dummies	y	y	y	y
Test Family CEO=Founder CEO (p-value)	0.54	0.87	0.44	0.47
% Family CEOs	0.51	0.19	0.24	0.17
% Founder CEOs	0.16	0.09	0.17	0.04

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 the total hours the CEO devoted to work activities during the survey week. Founder CEO and Founder's successor CEO are dummies denoting, respectively, firms owned and led by the founder or a founder's successor (2nd generation onwards). **India:** Industry dummies are 21 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 if the time use data was recorded through the PA or by the CEO himself; 15 interviewer dummies; a dummy to denote CEOs who formally report to an executive Chairman; 7 dummies to control for the week in which the data was collected; a self reported score given by the CEO to rank the representativeness of the week. Other countries: Industry dummies are 21 two digits SIC codes. Country dummies included in all regressions. Noise controls include: a dummy to denote if the time use data was recorded through the PA or by the CEO himself; 22 dummies to control for the week in which the data was collected interacted with country dummies; a self reported score given by the CEO to rank the representativeness of the week.