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Winners and Losers of Corporate Tournaments

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Abstract

In a corporate tournament, executive directors are motivated by the prospect of promotion to CEO, with winners receiving large increases in remuneration. Tournament losers by contrast face a discrete loss in their valuation of their position, since the prospect of them becoming CEO is substantially reduced. We argue that this offers an opportunity to test the predictions of tournament theory by observing the quit behavior and the wages of the losing directors. We find a sharp increase in the likelihood that directors leave the firm. The directors who remain receive an increase in their remuneration following a rival's promotion.

Keywords: corporate succession, executive remuneration, tournament theory
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1   Introduction

The Chief Executive Officer (CEO) and their executive board are thought to play a pivotal role in the success or failure of modern corporations. This is reflected in their pay, the escalation of which has been the subject of intense debate amongst academics, industry participants and reformers alike (Piketty, 2014; Kaplan and Rauh, 2013; Gabaix and Landier, 2008).

Whilst the upward trend in executive remuneration is noteworthy, the largest single pay rise in a director's career occurs at the moment at which they are promoted to the CEO position (Main *et al.*, 1993). In order to understand why this might be the case, we need to understand the mechanisms by which executive pay is set. Neoclassical theory posits that all workers, including executives, are rewarded according to their marginal productivity, which in turn is determined by their human capital. However many commentators have been sceptical about whether the very large increases observed on promotion actually reflect a step change in productivity. More recently, and especially following the escalation of CEO pay since the mid 1970s (Murphy, 1999), economists have explored the possibility that pay at the top may be determined by other factors. Gabaix and Landier (2008) develop a model in which the best CEOs are competitively matched to the largest, most productive, firms. The growth of CEO pay can then also be explained by the growth in average firm size. An alternative view is provided by 'managerial power' theories which suggest that CEOs inflate their pay via their influence on the pay-setting process (Bebchuk and Fried, 2003, 2004), thus breaking the link to productivity. The advocates of corporate tournament theory (e.g. Lazear and Rosen, 1981) instead argue that the large CEO 'prize' is central to how organisations structure their incentives and motivate their workers. The logic of this is that, within each level of the corporate hierarchy, a tournament develops whereby success at one level leads to both higher earnings and entry into the next level of the promotion competition (Rosen, 1986). At the highest level, the pay of the CEO reflects ultimate victory and serves to incentivise those at lower levels. It is the relevance of this last theory on which this paper primarily focuses.

How then might we seek to distinguish between tournament theory and other theories of wage determination? In this paper, we look at the compensation of all board members, especially those who miss out on a promotion to CEO. We suggest that this provides additional relevant information and the prospect of a cleaner test of the theory. We argue that since the promotion event is a potential cause of dissatisfaction amongst

the remaining directors who had hoped to win the coveted position, if the firm wishes to retain these executives then we would observe wage increases for tournament losers. These are otherwise hard to explain.

Moreover, by drawing on a panel of both winning and losing executives, we are able to adjust for non-random attrition when estimating executive pay equations. Prior discussions of attrition in panel data settings have tended to conclude that attrition, whilst of theoretical concern, is often of secondary practical importance (Fitzgerald *et al.*, 1998). However, in our context, this is potentially important as losing executives may leave the firm and bias the measured impact of the tournament on the executives who remain. Indeed in our panel of winning and losing directors, the correction for attrition is statistically significant and impacts on the values of the estimated coefficients. We argue that future estimates of executive pay equations and tests of tournament theory should therefore adjust for such attrition.

2   Tournament Theory

The starting point for theoretical modelling of tournament theory is the paper of Lazear and Rosen (1981), in which two risk-neutral workers ($i = j, k$) compete for promotion. The likelihood of promotion p depends upon the level of output q_i attributable to the worker, which in turn is a function of the effort e_i of the individual and luck μ_i. The cost of effort $C(e)$ is positive and increasing ($C' > 0$, $C'' > 0$).

On the assumption that the individuals seek to maximise their expected utility, the firm will choose the payoffs for the winner W_1 and loser W_2 in order to maximise effort. In equilibrium, equating the marginal benefit to the marginal cost of effort gives:

$$(W_1 - W_2)\delta p/\delta e_i = \delta C_i/\delta e_i \tag{1}$$

Hence, the marginal benefit of effort is increasing in the prize differential $(W_1 - W_2)$. Extensions to the basic model suggest: The prize should also be increasing in the number of participants, since an increase in the number of players leads to a fall in the probability of winning and hence a fall in the expected return to a marginal increase in effort; A firm hierarchy should exhibit increasing growth in remuneration from one level to the next, as the number of additional promotion opportunities decreases. At

the highest level, the difference between winning and losing must compensate for the fact that there are no further opportunities for advancement (Eriksson, 1999).

The extant empirical evidence on compensation within organisations is broadly support-ive of tournament theory (Main *et al.* (1993); Eriksson (1999) and Bognanno (2001)) in that effort is seen to increase with the value of the prize, particularly when the field of players is of a similar calibre.[1] However, a number of caveats apply to these findings: Firstly, as noted by Prendergast (1999), a prize-effort correlation is evidence that incen-tives matter but not necessarily that the reward structures have been designed to elicit the responses predicted by tournament theory. For instance, Rosen (1981) advances a marginal productivity justification for the convexity of remuneration through job grades, on the reasonable assumption of imperfect substitutability of talent; Secondly, a number of problems exist in attempting a structural test of the theory. Theoreti-cal settings of tournament theory typically model a closed competition in which the players in the tournament are clearly defined. In reality, employees in corporations are free to move between companies and as such the prize of being CEO can be won by an individual who was not internal to the firm.[2] This should properly be considered when considering the reward for winning an executive tournament, yet neither Eriksson (1999) nor Main *et al.* (1993) consider the impact of external hires on the outcome of internal tournaments. Bognanno (2001) identifies the external hires in his dataset but only briefly considers how the presence of external hires might reduce the probability of winning for the tournament player.

In this paper we argue that extra traction may be gained by considering the losers of tournaments. The logic for this is provided by an implication of the model of Lazear and Rosen (1981): participants in the tournament endure pay below market rates because they value the chance of promotion (Main *et al.*, 1993). However, once they have lost the tournament the expectation of their future income has fallen. If their chance of promotion has completely gone, then their pay should return to their external market level. In the context of middle managers, Gibbs (1995) examines a single firm and shows

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[1]Given that corporate wage structures are broadly consistent with the predictions of tournament theory, recent research by Kale *et al.* (2009) has sought to examine whether tournament incentives are successful in delivering increases in profitability. Kale *et al.* (2009) find a strong and robust relationship between the prize differential and firm performance. Of particular significance for this study is their finding that the tournament incentive is strongest when a new CEO appointment is due and weakest when a new CEO has just been appointed, consistent with the view that directors suffer a loss in promotion incentives following a rival's appointment to CEO.

[2]To avoid this problem, prior studies have focused on sporting or other closed-form competitions which preclude the possibility of an external winner.

that when a manager is passed over for promotion their performance declines. This is attributed to a failure by the firm to compensate for the forgone promotion incentive since, in the context of middle managers, the cost of running a more sophisticated pay scheme which updates to counter the loss of promotion incentive may be large. In our setting, where the pay of top executives is reviewed by a remuneration committee with the assistance of pay consultants, any administrative costs should be outweighed by getting the incentives correct.

A potential complication of rewarding tournament losers may exist if firms resist increasing their compensation because they fear that it will dilute the promotion incentive. Firms may instead elect for an 'up or out' employment model (Kahn and Huberman, 1988; Sattinger, 1993; Gibbons and Waldman, 1999) so as to increase the differential between success and failure and elicit maximum effort. Hence the loss of a tournament may precipitate exit from the firm. This may also occur if the 'outrage' of shareholders prevents the compensation of the losers of a promotions competition (Bebchuk and Fried, 2003).[3] Such an approach would be less appropriate if large investments in firm-specific human capital are required, since an employee will be less willing to invest their time and effort into non-transferable skills if exit is a real possibility.

The previous discussion therefore suggests two additional predictions associated with the tournament approach to remuneration. First, the loss of a tournament may lead to wage increase for losers to compensate them for the loss of promotion incentive; Second, those losers that are not sufficiently compensated may separate from the firm.

The combination of pay increases and employment separations of the sort discussed are not predicted by rival models of pay setting. A simple human capital model would not predict any change in pay without an associated change in productivity. Further, to the extent that losing a competition reveals information about the individual which was previously private, the outside options of an individual might decrease following a tournament, leading to a fall in wages. Finally, the match between the company and a director may also deteriorate on the appointment of a new CEO, for example if the director finds it more difficult to work with the new management team, or the board doubts the ability of a losing director to work with the new CEO.

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[3]Firms may be able to 'camouflage' additional payments by referencing changes in remuneration strategy to the change in CEO, and the need to realign pay with this new strategy.

3   Data

The data used in this study contains information on the executive directors[4] of all companies in the FTSE 350 Index.[5] The data spans every financial year end between 31st December 1996 and 31st December 2008, and therefore cover a full economic cycle-with market growth until 2001, decline post 9/11 and the *dot.com* crash, followed by recovery before the financial crisis of 2008. The dataset includes full remuneration details (other than pension benefits) on all board members, who are identified with precise appointment and resignation dates. To avoid survivorship bias, companies that drop out of the index prior to 2008 are included in the coverage until the company is wound up or taken private. Over the period of our data we observe 705 companies and 6228 company years.[6]

We have information on 5467 directors, with each director observed on average for 4.5 years. Certain data items, such as the return index, were obtained from Thomson Datastream.

3.1   The incentive to win

Summary information on the remuneration of executive directors in the sample is provided in Table 1. The incentive to win the executive competition is clear: the mean level of salary and total remuneration is 65% and 86% more for the CEO than for other executive directors. As noted previously, although this large uplift is consistent with tournament theory, it might also be a result of a CEO's greater level of responsibility, status, and higher marginal impact on firm productivity.

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[4]In the UK, executive directors are those directors, including the CEO, that make up the executive management team and participate in salary, bonus and equity-based compensation schemes. Non-executive directors, who only receive a nominal fee for their part time service, are not included in this sample. In the UK, there is no legal distinction between the CEO and the other directors of a public company (Main *et al.*, 1996). Each director has their own service contract and all directors bear an equal fiduciary duty to their shareholders.

[5]The dataset was provided by Manifest Information Services Ltd. The FTSE350 is the 350 largest companies by market capitalisation that trade on the London Stock Exchange.

[6]Investment trusts that contained no executive directors were excluded from the sample, although self-managed investment trusts were retained.

Table 1: Real Remuneration by Position

| Position | Salary | | Total Remuneration | | Frequency |
	Mean	Std. Dev.	Mean	Std. Dev.	NxT
CEO	420,603	318,623	1,279,526	2,365,904	4813
Joint Chair & CEO	384,405	222,183	818,244	951,247	552
Chair	344,548	250,071	786,364	3,030,140	1294
Finance Director	252,120	186,214	654,255	1,043,961	5430
Executive	254,157	179,725	688,114	2,548,257	12048

Notes:
1. Figures are calculated on an annualised basis with the requirement that a director served at least three months of the financial year.
2. Total Remuneration is salary, bonus, perquisites together with a grant-date valuation of equity based incentives (i.e. deferred bonuses, share options and long-term incentive plans (LTIPs)). The grant-date valuation is based on one-third of the face value, adjusted for vesting conditions on LTIPs. This approach provides a very close approximation to the Black-Scholes option valuations which are more common in the US compensation literature. (See Gregory-Smith (2012) for full details.)
3. All figures are in December 2008 prices.

3.2 The frequency and nature of tournaments

In our data 821 tournament events are identified when there is the succession of a new Chief Executive. This amounts to one tournament for every 7.6 company years. The number of tournaments peaked in 2001, although there is no strong indication of cyclicality.

Table 2: The nature of tournament winners

Number of events	821
Internal winner	50.67%
External winner	47.99%
Returning director	1.34%

Notes:
1. Internal winners are identified as those CEOs who served in the same company as an executive director in the prior year.
2. External winners are CEOs appointed from outside the existing board.[7]
3. We classify a small number of winners as 'returning directors' who have a past history with the firm but were external on appointment.

An interesting feature of tournaments is that the prize is frequently given to an outsider (Table 2). Although a small number of these outsiders may have prior (below director-level) history with the firm that we cannot observe, it is clear that the promotions competition for the CEO post is not a closed tournament as in sporting settings, and as is often assumed in theoretical work. One advantage of our empirical approach, which

focuses on tournament losers, is that the hypothesised impact on wages and employment is robust to internal and external appointments.[8]

What determines whether firms recruit internally or externally? Although this in not the focus of the paper, Table 3 indicates that internal recruitment is more prevalent in firms with larger boards, and in firms that are performing better than the industry average. There is anecdotal evidence that shareholders have a preference for an external appointment when performance has not been satisfactory in the hope that a break from the incumbent managers might help turn the company around.

Table 3: The determinants of internal recruitment

ln(Sales)	0.0044
	(0.40)
Number of executive directors	0.074***
	(7.24)
Number of non-executive directors	-0.0079
	(-0.83)
% Insiders	0.079
	(0.77)
Industry adjusted return on assets. Adj. ROA	0.0024**
	(2.16)
Observations	753

Notes:
1. Marginal effects of probit model reported
2. z-statistics in parentheses
3. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

3.3 Tournament Losers

We now turn our attention to the losing directors that the tournament produces. The 'losers' are defined as those directors who have served at least 12 months prior to the succession event. In the case where the prior CEO continues to serve on the board, we distinguish between losing executive directors ('Non-CEO') and the losing CEO. We are also able to separate the Non-CEO losers according to their losing position: the losing Chair, the losing Finance Director (FD) and other losing executive directors.[9]

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[8] We do not have access to the employment history of an external appointment unless they were previously employed within the FTSE350. Hence our focus on the losing directors of the firm in which the tournament occurs.

[9] We checked the titles of the executive directors to ensure that their job description does not preclude them from promotion to CEO. For example, it is unlikely that the Head of Human Resources would

Table 4 shows that each tournament produces approximately 3 Non-CEO losers. We also distinguish between losing executive directors who continue to serve on the board ('Non-CEO stayers') and those losing executive directors who exit the board ('Non-CEO leavers'). Of the 2,311 Non-CEO losers, 734 exit the sample in the subsequent year, with 56 reemployed by other firms in the FTSE350.

Table 4 shows that, prior to the tournament, the mean salary of Non-CEO leavers, is £30,000 higher than those who stay with the firm. This confirms our suspicion that leavers are materially different to stayers. This is reinforced by examining the smaller sample of those who left the firm and were reemployed at the board-level in another FTSE350 firm, where the difference is almost £80,000. A naive comparison of the earnings of losing directors before and after the tournament event would therefore ignore the fact that the directors who remain are different to those who leave. This is also illustrated in the table, where losing directors who stay in the firm receive on average salary increases of almost £25,000 in the year after the tournament, compared with the year before the tournament. Interestingly, the exiting losers who find employment at another FTSE350 company are unable to secure similar pay rises, with their remuneration falling marginally.

Table 4: Pay and Exit of losing executive directors

	Last Year in dataset?		All
	No	Yes	
Non-CEO leaver	56	734	790
Non-CEO stayer	1521	0	1521
Mean Salary year prior to tournament			
Non-CEO leaver	335,104	287,342	290,855
Non-CEO stayer	257,236	-	257,236
Mean Salary year after tournament			
Non-CEO leaver	332,737	-	290,855
Non-CEO stayer	281,027	-	281,027

Notes:
1. 790 directors (34.2%) exit within 12 months of losing the tournament. This compares with a average turnover rate of 24.3%.

ever be in the tournament. In the UK, the Head of Human Resources is typically not an executive director.

4 Tournaments and the probability of executive exit

As discussed above, the occurrence of a succession event is likely to precipitate exits from the board of directors. Most obviously, following a tournament, the old CEO typically leaves the company, although 21% stay on in some capacity (normally as Chair) in the next period.

Also as discussed, many losers leave the company around the time of the succession event. Of those that have not won the tournament to become CEO about one third (34.2%) leave the company in the same year. This compares with a normal turnover rate of just under a quarter (24.3%).

Table 5 looks at this process in more detail by modelling the likelihood of executive exit for individual i using a random effects probit model:

$$P(exit_{it} = 1 | w_{it}, c_i) = \Phi(w_{it}\beta_t + c_i) \qquad t = 2...., T \qquad (2)$$

Where, c_i is the unobserved effect and w_{it} are the variables that explain exit. In w_{it} we include the characteristics of the executive, the structure of the board and the performance of the firm. Additionally, we include variables reflecting the succession event i.e. a tournament event in financial year ending $t-1$.

As would be expected, older individuals have a higher likelihood of exiting at any point in time, as do those in companies with a low return on assets in comparison with the industry mean. A board with a high percentage of insider directors also reduces the likelihood of executive exit.

The impact of the tournament event is also clearly seen, with column (1) showing that the probability of exit from the firm is raised substantially in the year of succession (18%). Column (2) of Table 5 examines how this impact varies according to whether the successor CEO is an internal or external hire. Although both types of appointment raise the probability of exit, an enhanced probability is particularly noticeable if the appointed CEO is from outside of the company.

Table 5 also investigates the impact of the tournament on losing players in the next financial year. It is interesting to note that even those executives who initially stay have an enhanced probability of exit in the next year (10 percentage points, 'Non-CEO stayer' column (1)). In column (3), this effect is broken down by the losing executive's

position. Executive directors and Finance Directors are seen to be more likely to leave in the next year than the Company's Chair. However, column (4) suggests that this is only true when the tournament's winner is an external hire, perhaps to provide some additional continuity to the firm.

Further evidence of succession planning is evidenced by the fact that a number of CEOs who have stepped down and been replaced initially stay on in the firm. We see however that their likelihood of exit in the next period is high (15 percentage points, 'CEO stayer' column (1)).

5 Tournaments and executive pay

Finally we turn to the question of the impact of CEO succession on the remuneration of board members. As we have discussed, CEO tournaments generate winners and losers. Whilst some of the losers remain on the board, some of the losers will leave. If this attrition is non-random, as we suspect it is, then this will generate bias in the estimated coefficients unless it is corrected for.

Suppose that the model to be estimated is a linear, unobserved effects panel data model as follows:

$$y_{it} = x_{it}\beta + c_i + u_{it}, \qquad t = 1, .., T \tag{3}$$

where, y_{it} is the remuneration outcome of interest, x_{it} are its determinants and c_i is the unobserved effect. Wooldridge (2002, p.586) suggests that, because of the sequential nature of the attrition process, it is natural to first difference the data in order to remove the fixed effect:

$$\Delta y_{it} = \Delta x_{it}\beta + \Delta u_{it}, \qquad t = 2, .., T \tag{4}$$

Since, conditional on being in the sample in the previous period, $s_{i,t-1} = 1$, selection into a period $t \geq 2$ may be modelled as the outcome of a binary process,[10] the following

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[10] For simplicity we assume that such attrition is an 'absorbing state' in that once a person drops out of the sample they do not re-enter. This is an approximation in our data since 56 losers reappear as directors in other FTSE 350 companies.

Table 5: The probability of exit after the end of a tournament

	(1)	(2)	(3)	(4)
Tournament between $(t-1)$ and t:				
Event	0.18***		0.18***	
	(27.7)		(23.5)	
Event: Internal successor		0.14***		0.14***
		(18.3)		(16.90)
Event: External successor		0.24***		0.24***
		(23.1)		(21.00)
Lost Tournament between $(t-2)$ and $(t-1)$:				
Non-CEO stayer	0.10***			
	(10.1)			
Chair			0.036	
			(0.89)	
FD			0.096***	
			(6.01)	
Exec			0.12***	
			(5.03)	
Non-CEO stayer: internal successor		0.094***		
		(6.61)		
Chair				0.11**
				(2.04)
FD				0.060**
				(2.50)
Exec				0.11***
				(5.99)
Non-CEO stayer: external successor		0.11***		
		(7.83)		
Chair				(0.07)
				(-1.17)
FD				0.13***
				(6.00)
Exec				0.12***
				(6.67)
CEO stayer	0.15***		0.15***	
	(5.27)		(5.03)	
CEO stayer: Int. successor		0.14***		0.13***
		(3.60)		(3.52)
CEO stayer: Ext. successor		0.17***		0.17***
		(3.81)		(3.70)
Controls:				
Age 50-60	0.045***	0.045***	0.045***	0.045***
	(7.78)	(7.79)	(6.80)	(6.89)
Age 60+	0.14***	0.14***	0.15***	0.15***
	(13.6)	(13.5)	(9.24)	(9.42)
Number of executive directors	0.0028	0.0038*	0.0027	0.0037*
	(1.38)	(1.93)	(1.35)	(1.87)
Number of non-executive directors	0.0013	0.0013	0.0013	0.0013
	(0.64)	(0.65)	(0.61)	(0.63)
% insiders	-0.065***	-0.064***	-0.065***	-0.063***
	(-2.94)	(-2.89)	(-2.94)	(-2.88)
ln(Sales)	0.0035	0.0035	0.0035	0.0036*
	(1.58)	(1.62)	(1.60)	(1.65)
Industry adjusted total shareholder return	0.0048	0.0066	0.0049	0.0071
	(0.75)	(1.04)	(0.77)	(1.11)
Industry adjusted return on assets	-0.0018***	-0.0017***	-0.0018***	-0.0017***
	(-6.21)	(-6.05)	(-6.17)	(-6.01)
Year dummies	Yes	Yes	Yes	Yes
Observations	18,155	18,155	18,155	18,155

Notes:
1. Estimations based on random effects probit model. Marginal effects reported
2. z-statistics clustered at the level of the company in parentheses
3. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

attrition corrected regression can be estimated:

$$\Delta y_{it} = \Delta x_{it}\beta + \rho_2 d2_t \hat{\lambda}_{it} + ... + \rho_T dT_t \hat{\lambda}_{it} + \epsilon_{it}, \qquad t = 2, .., T \tag{5}$$

where $d2_t$ through dT_t are time dummies and the $\hat{\lambda}_{it}$ are the inverse Mills ratios from the following $T - 1$ probit models:

$$P(s_{it} = 1 | w_{it}, s_{i,t-1}) = \Phi(w_{it}\delta_t) \qquad t = 2...., T \tag{6}$$

where in w_{it} we include the same characteristics of the executive, the structure of the board and the performance of the firm as in equation (2). Note that in (5) identification of the tournament effect and of the correction adjustments is achieved by the timing of the executive pay setting process: the tournament event occurs at $t - 1$ and affects the likelihood of executive exit, and hence the probability of survival between at between $t - 1$ and t; the final settlement of executive pay is also determined by the firm's remuneration committee at time t. Hence, when pay is determined the the outcome of the tournament is known, with individuals either having triumphed or lost, and possibly left the firm.

Table 6 reports the results for salary, with Table 7 the impact on total remuneration. The first column of each table reports a fixed effect regression (equation 3), which is standard in the literature, and gives the mean within individual difference in salary for the different job positions. The second column reports the first differenced specification (4) which allows us to focus on the impact of the tournament event and the immediate impact on remuneration of transitions between positions.[11]

The third column controls for the non-random nature of directors that leave a firm's board (5). In columns four through six we allow for a further element of selection, in that we differentiate between those individuals who leave the firm and gain employment in another FTSE350 firm, from those who leave and do not reappear in the sample. Columns four through six therefore represent our preferred specifications.

Turning first to the position variable, this serves to illustrate the extent to which other members of the board earn less than the Chief Executive. Columns two through six indicate that CEOs have a salary 15-17% higher than executive directors and total remuneration that is 24-26% greater. The promotion to CEO therefore represents a

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[11]We would hence expect the first differenced estimates to be smaller as observed.

considerable prize.

Directors of bigger firms also receive greater remuneration,[12] as do those whose firms are performing well compared to the industry average, whether measured by total shareholder return or return on assets.

Turning to the variables relating to the succession event, the winner variable indicates that they will initially be appointed at a point in the remuneration distribution below the mean for CEOs ceteris paribus. However as a result of their change in position the winner of the tournament will receive a large immediate uplift in their pay. Table 7, columns two through six show that newly appointed CEOs have a total remuneration which is 13% greater than other executive directors.

CEOs who step down from their position but remain with the firm will experience a fall in both salary and total remuneration if they move to become a 'normal' executive director. Movements from CEO are however typically, although not always, to Chair, in which case their salary appears to be cushioned.

Turning to losing board members we see that, as implied by tournament theory, these individuals receive an uplift in both their salary (2.5-3.9%) and total remuneration (2.8-3.9%). Since we control for tenure and include year dummies, this uplift is above what would otherwise be expected ceteris paribus. In column five we separate the uplift for the losers by whether the winner of the tournament was an internal or external hire. The uplift is marginally higher in the case of external winners, but the coefficients are not statistically different from each other.

Column 6 separates the impact of the first tournament loss from the second tournament loss. This is because once a director has been passed over for promotion they may no longer be an active participant in future tournaments and if not, they will have received compensation for their expected loss. They will not then receive a pay boost after the second tournament ends. This assumption appears to hold, as it is only the first loss that gives rise to the uplift, with directors who have lost before seeing no change in either their salary or total remuneration (column six). This may help to distinguish the impact of tournament loss from other possible explanations for for an uplift following the appointment of a new CEO such as a compensation for disruption, or payments to smooth transition (which would expect to be repeated).

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[12]The elasticity with respect to company size is lower than often reported in the literature due to controls for individual fixed effects.

It is important to emphasise that the uplift observed is not the result of non-random attrition of executive directors since, as discussed above, in columns three through six we explicitly correct for attrition. Although the measured size of the impact is slightly reduced as we move from column two to column three and four, the effect retains a high level of statistical significance.[13]

6   Conclusions

Tournament theory predicts that directors will be willing to accept a level of remuneration less than their marginal product if there is a prospect that they might become the CEO in the future, with the large increase in pay that this entails. An implication of this is that, should the directors lose a tournament, and hence experience a discrete fall in the likelihood of succeeding to the post of CEO, they will need to be compensated in terms of higher remuneration or they will leave the firm. This paper presents evidence both on the likelihood of executive exit accompanying a change of the CEO, and also evidence on the compensation of surviving directors.

The data suggests that the process by which directors leave the firm is non-random and adjusting for this attrition is important when estimating the impact of tournament loss. We find that losing a tournament increases the probability of firm exit by 14-24%. We also find strong evidence that losing directors that stay with the firm are compensated by a higher remuneration package. This suggests that the opportunity for promotion is materially important to the director, as posited in the tournament model.

Recent reforms in the US and Europe have sought to make the remuneration of all board members transparent and their actions accountable to shareholders. It is therefore important to fully understand the setting of board pay. An implication of our findings is that prior studies of executive remuneration, which have failed to model CEO succession may be missing an important part of the story. Further, since they have ignored attrition and the impact of tournaments on executive exits, such studies will have obtained biased estimates of the determinants of executive pay.

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[13]The importance of correcting for attrition may be noted by the fact that the lambdas are jointly statistically significant (salary: $\chi^2(12) = 409.94$, remuneration: $\chi^2(24) = 777.67$).

Table 6: The salary of directors

	(1) FE	(2) FD	(3) FD Corr 1	(4) FD Corr 2	(5) FD Corr 2	(6) FD Corr 2
Tournament outcome in financial year ending $(t-1)$						
-Loser: Non-CEO stayer	0.064***	0.039***	0.033***	0.025***		
	(7.05)	(4.67)	(5.67)	(4.60)		
–Ext. sucessor					0.028**	
					(2.48)	
–Int. sucessor					0.022**	
					(2.51)	
–1st Loss						0.028***
						(4.49)
–2nd Loss						-0.001
						(-0.029)
-Loser: CEO stayer	0.20***	0.049*	0.030	0.000050	-0.0001	-0.000
	(5.08)	(1.75)	(0.89)	(0.0016)	(-0.0028)	(-0.005)
-Winner	-0.034***	-0.011	-0.000059	0.011	0.011	0.012
	(-2.72)	(-1.06)	(-0.0053)	(0.89)	(0.94)	(0.76)
Controls						
Position (Relative to omitted base position of CEO):						
-Chair	0.041	-0.078**	-0.071*	-0.056	-0.055	-0.055
	(0.83)	(-2.03)	(-1.82)	(-1.62)	(-1.23)	(-1.69)
-Finance Director	-0.48***	-0.17***	-0.15***	-0.11**	-0.11**	-0.11**
	(-15.4)	(-5.99)	(-3.86)	(-2.43)	(-2.12)	(-2.91)
-Executive Director	-0.42***	-0.17***	-0.17***	-0.15***	-0.15***	-0.15**
	(-19.9)	(-8.74)	(-7.65)	(-7.17)	(-6.62)	(-7.00)
ln(sales)	0.021***	0.0050**	0.0045**	0.0039**	0.0061**	0.0062**
	(6.49)	(2.08)	(2.09)	(2.14)	(2.09)	(2.14)
Tenure on board	0.048***	0.0040	0.0019	0.0061*	0.0027*	0.0027*
	(6.47)	(0.94)	(0.53)	(1.89)	(1.82)	(1.84)
Outside equity < 5	0.024***	0.0045***	0.0042***	0.0027	0.0039**	0.0038*
	(9.89)	(4.45)	(3.46)	(1.57)	(2.12)	(2.76)
5 <Outside equity < 25	0.0010	-0.00056	-0.00077*	-0.0011***	-0.0010***	-0.0010***
	(1.20)	(-0.88)	(-1.74)	(-2.70)	(2.91)	(2.76)
Outside equity 25+	-5.59e-07	0.00029	0.00023	0.00041	0.00041**	0.00041*
	(-0.0012)	(0.81)	(0.85)	(1.29)	(2.04)	(1.65)
No. exec directors	-0.0028	-0.0039	-0.0031**	-0.0025*	-0.0026	-0.0025*
	(-0.76)	(-1.63)	(-2.07)	(-1.71)	(-1.64)	(-1.80)
No. non-exec directors	0.030***	0.014***	0.014***	0.014***	0.014***	0.014***
	(6.60)	(3.44)	(4.95)	(5.30)	(5.07)	(5.21)
% insiders	-0.16***	0.030	0.051**	0.045**	0.045*	0.044*
	(-4.15)	(0.89)	(2.14)	(2.31)	(1.73)	(1.93)
Industry adjusted TSR	0.011	0.012**	0.015***	0.019***	0.019***	0.019***
	(1.53)	(2.22)	(3.16)	(4.13)	(3.93)	(4.08)
Industry adjusted ROA	0.00036	0.00079**	0.00097***	0.00086***	0.00086***	0.00086***
	(0.76)	(2.00)	(3.12)	(3.28)	(3.76)	(3.32)
Observations	19,571	14,533	14,533	14,533	14,533	14,533
R-squared	0.309	0.014	0.017	0.023	0.023	0.023
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Attrition correction	No	No	Yes	Yes	Yes	Yes

Notes:
1. t-statistics clustered at the level of the company in parentheses, bootstrapped in respect of columns (3)-(6).
2. *** p<0.01, ** p<0.05, * p<0.1

	(1) FE	(2) FD	(3) FD Corr 1	(4) FD Corr 2	(5) FD Corr 2	(6) DS Corr 2
Tournament outcome in financial year ending $(t-1)$						
-Loser: Non-CEO stayer	0.056***	0.039***	0.034**	0.028**		
	(3.42)	(2.86)	(2.31)	(2.26)		
–Ext. sucessor					0.044**	
					(2.03)	
–Int. sucessor					0.016	
					(1.07)	
–1st Loss						0.035**
						(2.23)
–2nd Loss						-0.029
						(-0.78)
-Loser: CEO stayer	0.27***	0.028	0.014	-0.014	-0.014	-0.013
	(3.38)	(0.40)	(0.13)	(-0.092)	(-0.12)	(-0.12)
-Winner	-0.18***	-0.13***	-0.12***	-0.11**	-0.11***	-0.11***
	(-6.96)	(-4.59)	(-3.18)	(-2.28)	(-2.78)	(-2.62)
Controls						
Position (Relative to omitted base position of CEO):						
-Chair	0.084	-0.0091	-0.0050	0.0090	0.0090	0.0095
	(0.91)	(-0.12)	(-0.034)	(0.060)	(0.070)	(0.080)
-Finance Director	-0.61***	-0.24***	-0.23***	-0.18**	-0.18***	-0.18***
	(-13.0)	(-5.10)	(-2.92)	(-2.20)	(-2.66)	(-2.29)
-Executive Director	-0.56***	-0.26***	-0.25***	-0.24***	-0.24***	-0.24***
	(-16.1)	(-6.78)	(-3.73)	(-3.74)	(-4.01)	(-4.47)
ln(sales)	0.028***	0.0018	0.0014	0.0014	0.004	0.0043
	(4.62)	(0.35)	(0.34)	(0.30)	(0.39)	(0.38)
Tenure on board	0.073***	0.0039	0.0027	0.0044	0.0074*	0.0074*
	(6.34)	(0.48)	(0.28)	(0.39)	(1.78)	(1.72)
Outside equity < 5	0.036***	0.0089***	0.0086**	0.0074*	0.0015	0.0013
	(9.17)	(3.69)	(2.46)	(1.69)	(0.31)	(0.25)
5 <Outside equity < 25	-0.00015	-0.0016	-0.0017	-0.0021**	-0.0021*	-0.0020*
	(-0.10)	(-1.11)	(-1.54)	(-2.08)	(-1.72)	(-1.72)
Outside equity 25+	-0.0010	0.00062	0.00058	0.00076	0.00075	0.00076
	(-1.36)	(0.90)	(0.98)	(1.21)	(1.20)	(1.49)
No. exec directors	0.011	0.022***	0.023***	0.024***	0.024***	
	(1.57)	(3.64)	(4.73)	(4.10)	(5.61)	(4.93)
No. non-exec directors	0.044***	0.0096	0.0088	0.0085	0.0085	0.0083
	(5.18)	(1.25)	(1.16)	(1.20)	(1.03)	(1.33)
% insiders	-0.22***	0.069	0.082	0.068	0.069	0.067
	(-3.25)	(1.15)	(1.14)	(1.22)	(1.29)	(1.07)
Industry adjusted TSR	0.059***	0.029**	0.031***	0.035***	0.035***	0.036***
	(4.13)	(2.43)	(3.24)	(3.44)	(3.13)	(3.32)
Industry adjusted ROA	0.0018**	0.0020**	0.0021**	0.0020**	0.0020**	0.0020**
	(2.12)	(2.37)	(2.41)	(2.32)	(2.16)	(2.54)
Observations	19,642	14,584	14,584	14,584	14,584	14,584
R-squared	0.310	0.019	0.020	0.023	0.023	0.023
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Attrition correction	No	No	Yes	Yes	Yes	Yes

Notes:
1. t-statistics clustered at the level of the company in parentheses, bootstrapped in respect of columns (3)-(6).
2. *** p<0.01, ** p<0.05, * p<0.1

Table 8: Variable Descriptions

Variable	Comment
Pay Variables	All measures of remuneration are expressed in December 2008 prices, pro-rata if served a period other than 12 months, subject to serving at least 3 months of the financial year. Total remuneration includes all forms of cash payment excepting pensions and including salary, bonuses, perquisites and a grant date value of options and equity incentives (one-third of their face value).
Position Variables	We separately identify four types of executive position in our sample: Chief Executive (including combined roles), an Executive Chair, a Finance Director and other Executive Directors. In the UK, non-executive directors receive a nominal fee and so are excluded from the analysis.
Tournament Event	Identifies the year in which the CEO was replaced. The succession is 'internal' if the new CEO was appointed from within the existing board, and 'external' otherwise.
Non-CEO leaver	An Executive Director, Finance Director or Chair is identified as a Non-CEO leaver if they leave the firm in the same financial year as the appointment of the new CEO, subject to having served on the board for at least 12 months.
Non-CEO stayer	A director is identified as a Non-CEO stayer if they are still in the firm in the financial year following the appointment of the new CEO, subject to having served on the board for at least 12 months.
CEO stayer	If the outgoing CEO takes up another position in the company within 12 months of their resignation as CEO. For example, if the CEO assumes the position of Chair.
Loser: non-CEO stayer	A Non-CEO stayer, where the tournament event occurred in the prior period in the panel.
Loser: CEO stayer	A CEO stayer, where the tournament event occurred in the prior period in the panel.
Total Shareholder Return (TSR)	The difference in the log of the return index from Thompson Datastream. The return index captures both the movement in share price and income from dividends.
ln(Sales)	The log of Sales measured in £000s, annualized and in December 2008 prices.
% Insiders	The number of executives directors and non-independent non-executive directors as a percentage of the total number of directors on the board.
Industry Adjusted TSR	TSR minus the TSR of the median firm by Thompson Datastream's industry classifications.
Industry Adjusted ROA	Return on Assets minus the Return on Assets of the median firm by Thompson Datastream's industry classifications.
Age	The age of the CEO at the financial year end.
Number of executive directors	The number of executive directors at the financial year end including the CEO.
Number of non-executive directors	The number of non-executive directors at the financial year end excluding the Chair.
Outside equity	The aggregate number of shares held by outside major shareholders at the year end as a percentage of the issued share capital. Outside major shareholders are those holding in excess of 3 % of the voting stock as disclosed in the annual report and accounts and who do not serve as directors of the company.
Tenure	The number of years of service on the board.

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