



Organization capital, tournament incentives and firm performance

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ABSTRACT

This paper examines the relationship between organization capital and promotion-based tournament incentives. Using a sample of 33,618 publicly listed U.S. firm-year observations covering 1992–2020, the results show that firms with high levels of organization capital have relatively more promotion-based tournament incentives, and that tournament incentives in high organization capital firms improve firm value and operating performance.

JEL Classification Codes: E22; M12

1. Introduction

In this study, we examine the relationship between organization capital and promotion-based tournament incentives, and ask whether such a relationship, if any, improves corporate performance. Organization capital is defined as the agglomeration of technologies—business practices, processes and designs—that enables firms to achieve efficient production and stable business operations and, thereby, increase productivity and firm performance (Hasan and Cheung, 2018; Lev et al., 2009; Li et al., 2018). Organization capital is embodied in the firm's key talents. However, its efficiency is firm-specific and, therefore, shareholders and key talents have a claim on the cash flows accruing from organization capital. Accordingly, organization capital is found to be associated with higher levels of executive compensation (Lev et al., 2009; Eisfeldt and Papanikolaou, 2013). Despite this evidence, the extent to which organization capital promotes tournament incentives and whether such incentives are beneficial for firms, is so far unexplored. We fill this gap in the literature. We argue that understanding the relationship between organization capital and tournament incentives is important, since organization capital is the single largest category of intangible capital, accounting for more than 30% of the cash flows from physical capital (Atkeson and Kehoe, 2005; Corrado et al., 2009).

We conceptualize tournament incentives as the differences in pay between the CEO and other top executives. The promotion-based tournament incentives serve as a contest between senior executives, embracing the notion that only the best relative performer will be the winner (Lazear and Rosen, 1981; Bognanno, 2001). Tournament incentives are popular, as they reduce the need for costly supervision, provide strong incentives that better align principal-agent interests, and enable objective evaluation of agent performances (Bloom and Michel, 2002; Lazear and Rosen, 1981). Studies show that tournament incentives improve firm performance (e.g., Kale et al., 2009) and innovative efficiency (Shen and Zhang, 2018), and reduce employee turnover (Bloom and Michel, 2002). However, they increase risk-taking (Kini and Williams, 2012) and the propensity to engage in fraud (Haß et al., 2015). Despite the plethora of

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research on the consequences of tournament incentives, very little is already known about their determinants, with a notable exception in Burns et al. (2017). This motivates us to examine whether organizational capital is a driver of firm-level tournament incentives.

We expect a positive relationship between organization capital and tournament incentives for the following reasons. First, CEOs play a prominent role in developing and executing strategies for firms with high organization capital. Mishra (2014) argues that CEOs reside at the nucleus of organization capital, and CEOs in firms with high levels of organization capital undertake difficult tasks including, but not limited to, restructuring and acquisitions decisions. Such complex decision-making and execution require firms to invest in skilled key talents, who are likely to contest for CEO positions. Stronger tournament incentives enable firms to retain high-performing managers with appropriate human capital, thereby, helping to build a large pool of skilled internal candidates for the CEO position (Bloom and Michel, 2002). This reduces the entrenchment of the incumbent CEO by increasing the bargaining power of the board and decreases CEO succession risk. This is also consistent with the upper echelon theory, which posits that “leadership of a complex organization is a shared activity, and the collective cognitions, capabilities, and interactions of the entire TMT [top management team] enter into strategic behaviors (Hambrick, 2007, p.334).

Second, executives can reap compensation opportunistically when monitoring their activities is costly and difficult. This is particularly the case for firms with high levels of organizational capital in the presence of severe agency problems (Eisfeldt and Papanikolaou, 2013), thereby, making optimal contracting-based compensation schemes less effective for such firms. Tournament incentives, as an implicit internal monitoring mechanism, on the other hand, might be more efficient for such firms, as tournament incentives can motivate non-CEO executives to exert more effort towards enhancing firm performance and encourage them to uncover the CEO's wrongdoings. The latter is particularly important, because the opportunity for their promotion improves with the departure of the incumbent CEO.

We further posit that tournament incentives in firms with high levels of organization capital increase firm performance. This is because, tournament incentives motivate lower-level managers to exert greater effort to maximize their probability of promotion to CEO and to enhance the firm's output (Kale et al., 2009). We contend that, since tournament incentives allow firms with more organizational capital to develop and retain a pool of high-performing managers, the positive relation between tournament incentives and firm performance is more pronounced in the presence of more organization capital.

Using a sample of US data covering 1992–2020, we find robust evidence that firms with high levels of organization capital exhibit relatively more promotion-based tournament incentives. We also find that tournament incentives in high organization capital firms improve firm value and operating performance. We employ a series of sensitivity analyses and show that our results are robust, and they not driven by endogeneity problem.

Our study contributes to the scant literature on the determinants of tournament incentives by providing a firm-level explanation, as opposed to the macro-level determinants identified by Burns et al. (2017). We also enrich the growing literature on the implications of organization capital for corporate outcomes and executive performance incentives (Gao et al., 2021; Lev et al., 2009; Li et al., 2018). Finally, we extend the literature by documenting that tournament incentives in firms with high organization capital enhance operating performance and firm value.

The remainder of the paper proceeds as follows. Section 2 explains the data and methodology. Section 3 presents the results. Section 4 concludes.

2. Data and methodology

2.1. Data and sample

Our initial sample includes all firms in the ExecuComp database. The sample covers 1992–2020, as executive compensation data is available only since 1992. Financial data is from Compustat, governance data from Institutional Shareholder Services, and institutional ownership data from Thomson Reuters Institutional Holdings Database (13F). We exclude financial (Standard Industrial Classification (SIC) codes 6000–6999), utilities (SIC codes 4900–4999) and observations with missing data.

2.2. Measurement of organization capital

Follow Eisfeldt and Papanikolaou (2013), we estimate the stock of organization capital (OC) based on selling, general and administrative (SG&A) expenses.¹ Using the perpetual inventory method, we estimate OC each year by accumulating the deflated value of SG&A expenses as follows:

$$OC_{i,t} = OC_{i,t-1}(1 - \delta_0) + \frac{SGA_{i,t}}{cpi_t} \quad (1)$$

where $OC_{i,t}$ (and δ_0) denotes the stock of organization capital (depreciation rate of OC), while SGA and cpi_t are the SG&A expenses and consumer price index, respectively.

We estimate the initial stock of organization capital as follows:

¹ See Eisfeldt and Papanikolaou (2013) and Lev et al. (2009) for a discussion on the suitability of SG&A expenses to estimate organization capital.

Table 1

Summary statistics. This table presents summary statistics of the variables used in the study. TINC is the difference between the CEO's total compensation and the total compensation of the median V.P. TINC2 is the difference between the CEO's total pay and second-highest total pay to a non-CEO executive scaled by the CEO's total pay. OC/TA is the organization capital scaled by total assets. OC/PPE is the organization capital scaled by property, plant and equipment. SIZE is the natural logarithm of market value of equity. MTB is the ratio of market value of assets to book value of assets. ROA is return on assets. LEV is the sum of short and long-term debt scaled by market value of assets. CASH is the cash and marketable securities scaled by total assets. R&D is research intensity measured as R&D expenses divided by total assets. INST is the proportion of shares held by institutional investors. CEO_AGE is the natural logarithm of age of the CEO. DUALITY is a dummy variable that takes a value of 1 if there is a CEO-CHAIR duality, 0 otherwise. BSIZE is the natural logarithm of the board size. IND_DIR is the director independence measured as the proportion of independent directors in the board. TINC_ALTR is the alternative measure of tournament incentives measured as the ratio of the CEO's compensation to the median of the other V.P.'s total compensation package. OC/TA_PT is the organization capital scaled by total assets, where organization capital is measured following Peters and Taylor (2017). OC/PPE_PT is the organization capital scaled by property, plant and equipment, where organization capital is measured following Peters and Taylor (2017). Tobin's Q is market value of the firm divided by the book value of the firm. Continuous variables are winsorized at their 1% and 99% values.

Variables	Mean	Std. Dev.	p25	Median	p75
TINC (in 000s)	3674.323	4510.942	842.804	2142.383	4700.125
TINC (in log)	7.545	1.269	6.744	7.673	8.457
TINC2	0.474	0.201	0.338	0.500	0.624
OC/TA	1.258	1.206	0.434	0.927	1.684
OC/PPE	4.444	5.704	0.767	2.626	5.693
SIZE	7.407	1.680	6.265	7.289	8.465
MTB	3.237	4.422	1.459	2.343	3.845
ROA	0.037	0.113	0.015	0.051	0.089
LEV	0.205	0.202	0.035	0.154	0.307
CASH	0.151	0.171	0.027	0.085	0.215
R&D	0.035	0.079	0.000	0.003	0.040
INST	0.723	0.211	0.593	0.763	0.889
CEO_AGE	4.031	0.129	3.951	4.043	4.111
DUALITY	0.616	0.486	0.000	1.000	1.000
BSIZE	2.180	0.246	1.946	2.197	2.398
IND_DIR	0.696	0.214	0.600	0.750	0.857
TINC_ALTR	2.965	1.610	1.947	2.640	3.513
OC/TA_PT	0.270	0.269	0.089	0.188	0.363
OC/PPE_PT	0.936	1.215	0.161	0.550	1.177
TOBIN'Q	2.043	1.337	1.226	1.619	2.331

$$OC_{i,t_0} = \frac{SGA_{i,t_0}}{g + \delta_0}, \quad (2)$$

where t_0 is the initial year for sample firms and g is the average real growth of firm-level SG&A expenses. Following Eisfeldt and Papanikolaou (2013), we use a depreciation rate (δ_0) of 15%. We replace missing values of SG&A with zero. OC is scaled by total assets (OC/TA) or by property, plant and equipment (OC/PPE).

2.3. Measurement of tournament incentives

Following Haß et al. (2015), we measure tournament incentives (TINC) as the natural logarithm of the difference between the CEO's total compensation package and the median vice-president's (V.P.) total compensation package. We also use the difference between the CEO's total pay and the second-highest total pay of a non-CEO executive scaled by the CEO's total pay as an alternative proxy for tournament incentives (TINC2).

2.4. Regression model

We estimate the following ordinary least squares (OLS) regression to examine the relation between organization capital and tournament incentives:

$$TINC_{t+1} = \alpha_0 + \beta_1 OC_t + \theta' Controls_t + \varepsilon \quad (3)$$

where TINC is the tournament incentives and OC is the organization capital (OC/TA; OC/PPE). Following Burns et al. (2017), we control for firm size (SIZE), market-to-book ratio (MTB), return on assets (ROA), financial leverage (LEV), cash holdings (CASH), research and development (R&D), institutional shareholding (INST), CEO age (CEO_AGE), CEO-chair duality (DUALITY), board size (BSIZE), board independence (IND_DIR), industry (Fama-French 48 classification) and year-fixed effects.

Table 2

Baseline regression: Organization capital and tournament incentives. This table reports the OLS regression results of the relationship between organization capital and firm-level tournament incentives. Robust t-statistics (clustered at the firm level) are reported in parentheses. *, **, *** denote a two-tailed p-value of less than 0.10, 0.05, and 0.01 level, respectively. Variable definitions are provided in Table 1.

Dep. Var. =	(1) TINC _{t+1}	(2) TINC2 _{t+1}	(3) TINC _{t+1}	(4) TINC2 _{t+1}	(5) TINC _{t+1}	(6) TINC2 _{t+1}	(7) TINC _{t+1}	(8) TINC2 _{t+1}
OC/TA	0.035*** [3.24]	0.005** [2.08]	0.061*** [4.13]	0.009** [2.49]				
OC/PPE					0.005** [2.40]	0.001 [0.71]	0.010*** [3.52]	0.001** [2.19]
SIZE	0.493*** [62.24]	0.016*** [9.93]	0.470*** [40.66]	0.015*** [5.93]	0.488*** [62.47]	0.015*** [9.59]	0.461*** [40.39]	0.013*** [10.12]
MTB	-0.002 [-1.30]	-0.000 [-0.05]	-0.003 [-1.40]	0.000 [0.69]	-0.002 [-1.11]	0.000 [0.08]	-0.002 [-0.98]	0.000 [1.27]
ROA	-0.194** [-2.17]	0.018 [1.00]	-0.388*** [-2.67]	0.019 [0.60]	-0.212** [-2.37]	0.019 [1.05]	-0.387*** [-2.68]	0.026 [1.14]
LEV	1.051*** [17.85]	0.052*** [3.98]	0.918*** [11.66]	0.041** [2.11]	1.024*** [17.34]	0.049*** [3.82]	0.854*** [10.99]	0.032*** [2.94]
CASH	0.026 [0.30]	-0.028* [-1.66]	0.061 [0.62]	-0.038* [-1.67]	-0.007 [-0.08]	-0.034* [-1.95]	0.005 [0.05]	-0.047*** [-3.58]
R&D	0.332** [2.24]	0.009 [0.31]	0.479 [1.64]	-0.066 [-0.94]	0.421*** [2.80]	0.028 [0.95]	0.623** [2.17]	-0.033 [-0.83]
INST			0.912*** [9.58]	0.091*** [4.44]			0.876*** [9.32]	0.085*** [7.74]
CEO_AGE			-0.106 [-1.01]	-0.093*** [-3.71]			-0.102 [-0.98]	-0.091*** [-6.64]
DUALITY			0.079*** [3.22]	0.014*** [2.67]			0.081*** [3.28]	0.015*** [4.36]
BSIZE			0.024 [0.36]	-0.036** [-2.39]			0.058 [0.90]	-0.035*** [-4.27]
IND_DIR			0.532*** [6.12]	0.158*** [8.97]			0.553*** [6.40]	0.160*** [13.68]
Constant	2.685*** [11.62]	0.243*** [6.46]	2.449*** [4.94]	0.559*** [5.39]	2.745*** [11.95]	0.252*** [6.72]	2.481*** [5.01]	0.566*** [8.93]
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,618	29,316	18,428	16,399	33,479	29,194	18,377	16,350
Adj. R ²	0.46	0.06	0.47	0.09	0.46	0.06	0.48	0.08

3. Empirical results

3.1. Descriptive statistics

Table 1 presents the descriptive statistics. We find that the mean (median) difference between the CEO's total compensation package and the median V.P.'s total compensation package is \$3.67 million (\$2.14 million). Moreover, the mean difference between the CEO's total pay and the second-highest total pay of a non-CEO executive is 47.4% of the CEO's total pay. We also find that the mean (median) OC/TA and OC/PPE are 1.258 (0.927) and 4.444 (2.626), respectively.

3.2. Baseline regression

Table 2 presents the regression results. In Columns (1)–(4), our main explanatory variable is OC/TA, whilst it is OC/PPE in Columns (5)–(8). We estimate OLS regression results with standard errors clustered at the firm level. We predict that organization capital will increase future tournament incentives. The coefficients on OC/TA are 0.035 ($p < 0.01$) and 0.005 ($p < 0.05$) when the TINC and TINC2 measures of tournament incentives are used in Columns (1) and (2), respectively. The results are economically meaningful. For example, the coefficient in Column (1) suggests that a one standard deviation increase in OC/TA (=1.206) leads to a 4.22% increase in tournament incentives. Given the mean TINC of \$3.67 million, this economic significance corresponds to an increase in tournament incentives of \$0.155 million per year. When we control for CEO- and firm-level governance characteristics (Column (3)), this economic significance increases to 7.36% (\$0.27 million) per year. The coefficients on controls are generally consistent with prior literature (e.g., Burns et al., 2017). We find similar results for the OC/PPE measure. Overall, Table 2 provides evidence that firms with high levels of organization capital are related positively to tournament incentives, lending support to our prediction.²

² As an additional analysis, we estimate tournament incentives separately using total current compensation (salary + bonus) and option awards. Results in Table A1 (online appendix) show that our finding is mainly driven by the current compensation measure of tournament incentives.

Table 3

Robustness Checks This table reports the OLS regression results of the relationship between organization capital and firm-level tournament incentives using alternative organization capital measure of Peters and Taylor (2017) (Panel A) and alternative measure of tournament incentives: the ratio of the CEO's compensation to the median of the other V.P.'s total compensation package (TINC_ALTR) (Panel B). Robust t-statistics (clustered at the firm level) are reported in parentheses. *, **, *** denote a two-tailed p-value of less than 0.10, 0.05, and 0.01 level, respectively. Variable definitions are provided in Table 1. Panel A: Alternative measure of organization capital.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var. =	TINC	TINC2	TINC	TINC2	TINC	TINC2	TINC	TINC2
OC/TA_PT	0.161*** [3.22]	0.018* [1.75]	0.264*** [4.04]	0.032** [2.06]				
OC/PPE_PT					0.021** [2.08]	0.001 [0.35]	0.043*** [3.33]	0.003* [1.82]
Constant	2.678*** [11.49]	0.242*** [6.33]	2.428*** [4.89]	0.558*** [5.37]	2.743*** [11.83]	0.250*** [6.59]	2.474*** [5.00]	0.567*** [8.94]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,604	29,304	18,421	16,393	33,465	29,182	18,370	16,344
Adj. R ²	0.46	0.06	0.47	0.09	0.46	0.06	0.48	0.08

Panel 3A

Alternative measure of tournament incentives.

	(1)	(2)	(3)	(4)
Dep. Var. =	TINC_ALTR	TINC_ALTR	TINC_ALTR	TINC_ALTR
OC/TA	0.037*** [2.65]			
OC/PPE		0.008*** [2.78]		
OC/TA_PT			0.148** [2.35]	
OC/PPE_PT				0.032** [2.53]
Constant	1.716*** [3.90]	1.736*** [3.94]	1.698*** [3.85]	1.723*** [3.91]
Other controls	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	18,451	18,400	18,443	18,392
Adj. R ²	0.05	0.05	0.05	0.05

3.3. Alternative measures of key variables

We use the organization capital measure of Peters and Taylor (2017) to assess the robustness of our estimates. This measure is similar to that of Eisfeldt and Papanikolaou (2013) except that it uses a fraction of past SG&A expenses instead of the deflated value of SG&A expenses.³ Table 3 (Panel A) shows that the coefficient on the alternative measure of organization capital remains positive and statistically significant, providing evidence that the positive relation between organization capital and tournament incentives is insensitive to this change in the measure of organization capital.

Following Burns et al. (2017), we use the ratio of the CEO's compensation to the median of the other V.P.'s total compensation package (TINC_ALTR) as an alternative measure of tournament incentives. Table 3 (Panel B) shows a positive and statistically significant coefficient on organization capital, corroborating our main evidence.⁴

3.4. Endogeneity

We use three identification strategies to mitigate the endogeneity concerns resulting from omitted variable bias and reverse causality. First, we use the heteroskedasticity-based instruments approach of Lewbel (2012). This method does not rely on an external instrument, but instead uses heterogeneity in the error term of the first stage regression to generate instruments from within the existing model. Lewbel (2012) proposes this method for cases where other sources of identification, such as external instrumental

³ Peters and Taylor (2017) include 30% of SG&A as investment into organization capital.

⁴ In our data, OC/TA shows persistence over time and exhibits more cross-sectional variation (=1.05) than within firm variation (=0.57), suggesting that OLS regression is suitable for our analysis. However, to alleviate the concern that time-invariant firm characteristics (e.g., corporate culture and location) might affect the reported findings, we re-estimate the regressions after including corporate culture (Li et al., 2021) and headquarter dummies. The empirical analysis provides qualitatively similar results (see Table A2).

Table 4

Endogeneity test. This table reports endogeneity test results. Panel A shows results using instrumental variable method developed by [Lewbel \(2012\)](#), Panel B report entropy balancing regression estimates and Panel C reports results from change regression. Robust t/z-statistics (clustered at the firm level) are reported in parentheses. *, **, *** denote a two-tailed p-value of less than 0.10, 0.05, and 0.01 level, respectively. Variable definitions are provided in [Table 1](#).

Panel A:	(1)	(2)	Panel B:	(3)	(4)	Panel C:	(5)	(6)
	Lewbel (2012)			Entropy balancing			Change analysis	
Variables	TINC	TINC2	Variables	TINC	TINC2	Variables	ΔTINC	ΔTINC2
OC/TA	0.060*** [3.09]	0.008* [1.96]	OC/TA	0.059*** [3.64]	0.010** [2.23]	ΔOC/TA	0.070* [1.69]	0.023** [2.27]
SIZE	0.470*** [38.77]	0.015*** [5.56]	SIZE	0.481*** [33.97]	0.017*** [5.36]	ΔSIZE	0.124*** [3.87]	0.021*** [2.79]
MTB	−0.003 [−1.39]	0.000 [0.70]	MTB	0.001 [0.21]	0.001 [1.13]	ΔMTB	0.003 [1.41]	0.000 [0.63]
ROA	−0.387*** [−2.66]	0.020 [0.60]	ROA	−0.294 [−1.32]	0.018 [0.36]	ΔROA	−0.145 [−1.00]	−0.001 [−0.04]
LEV	0.918*** [11.35]	0.040** [2.08]	LEV	0.948*** [9.51]	0.046** [2.03]	ΔLEV	0.116 [0.87]	0.049 [1.64]
CASH	0.061 [0.62]	−0.038* [−1.68]	CASH	0.089 [0.67]	−0.025 [−0.85]	ΔCASH	0.183 [1.50]	−0.009 [−0.30]
R&D	0.481 [1.62]	−0.065 [−0.92]	R&D	0.820** [1.96]	−0.151 [−1.14]	ΔR&D	−0.277 [−0.68]	0.018 [0.22]
INST	0.911*** [9.51]	0.091*** [4.40]	INST_HOLD	0.901*** [7.75]	0.064** [2.53]	ΔINST_HOLD	0.111 [0.98]	0.044* [1.69]
CEO_AGE	−0.106 [−1.02]	−0.093*** [−3.72]	CEO_AGE	−0.183 [−1.34]	−0.110*** [−3.71]	ΔCEO_AGE	0.147 [1.13]	−0.129*** [−3.46]
DUALITY	0.079*** [3.23]	0.014*** [2.67]	DUALITY	0.077** [2.34]	0.016** [2.34]	ΔDUALITY	0.011 [0.47]	−0.006 [−0.91]
BSIZE	0.024 [0.36]	−0.036** [−2.36]	BSIZE	−0.035 [−0.47]	−0.055*** [−2.97]	ΔBSIZE	−0.083 [−1.15]	−0.019 [−1.18]
IND_DIR	0.532*** [6.13]	0.159*** [8.96]	IND_DIR	0.611*** [5.83]	0.159*** [7.50]	ΔIND_DIR	−0.023 [−0.31]	−0.012 [−0.71]
Constant	3.395*** [6.80]	0.786*** [7.55]	Constant	2.432*** [3.96]	0.688*** [5.31]	Constant	0.393*** [2.99]	0.032 [1.01]
Observations	18,428	16,399	Observations	18,428	16,399	Observations	15,471	12,828
Adj. R ²	0.47	0.09	Adj. R ²	0.48	0.09	Adj. R ²	0.01	0.00
Underidentification test								
Kleibergen-Paap rk LM stat.	311.696	305.381						
p-value	0.00	0.00						
Weak identification test								
Cragg-Donald F stat.	488.365	417.588						
Stock-Yogo critical value	136.30	136.30						
Over-identification test								
Hansen J stat.: p-value	0.737	0.409						

Table 5

Implications. This table reports the OLS regression results of the firm performance on organization capital and firm-level tournament incentives and their interaction along with controls. Panel A shows results for Tobin's q measure of firm performance and Panel B reports for operating performance proxied by return on assets (ROA). Robust t-statistics (clustered at the firm level) are reported in parentheses. *, **, *** denote a two-tailed p-value of less than 0.10, 0.05, and 0.01 level, respectively. Variable definitions are provided in Table 1. Panel A: Tournament incentives, organization capital and firm value

Dep. Var. =	(1) Tobin's q_{t+1}	(2) Tobin's q_{t+1}	(3) Tobin's q_{t+1}	(4) Tobin's q_{t+1}
OC/TA	0.138*** [7.56]	0.172*** [7.40]	0.127*** [6.92]	0.168*** [6.89]
TINC	-0.007 [-0.56]	-0.015 [-0.82]		
TINC*OC/TA	0.037*** [4.01]	0.050*** [4.12]		
TINC2			-0.010 [-0.17]	-0.043 [-0.59]
TINC2* OC/TA			0.168*** [3.42]	0.129* [1.75]
Constant	0.573*** [2.79]	2.272*** [4.20]	0.570*** [3.91]	2.290*** [4.22]
Firm-level controls	Yes	Yes	Yes	Yes
Governance controls	No	Yes	No	Yes
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	33,474	18,387	29,192	16,364
Adj. R ²	0.37	0.44	0.37	0.44

Panel 5A

Tournament incentives, organization capital and operating performance (ROA)

Dep. Var. =	(1) ROA _{t+1}	(2) ROA _{t+1}	(3) ROA _{t+1}	(4) ROA _{t+1}
OC/TA	0.006*** [4.27]	0.010*** [6.90]	0.003** [2.08]	0.011*** [7.27]
TINC	0.003*** [2.76]	0.002 [1.62]		
TINC * OC/TA	0.006*** [6.55]	0.003*** [4.04]		
TINC2			0.008** [2.03]	0.009** [2.00]
TINC2 *OC/TA			0.010** [2.28]	0.003 [0.76]
Constant	-0.035** [-2.19]	-0.014 [-0.38]	-0.042*** [-2.91]	-0.008 [-0.20]
Firm-level controls	Yes	Yes	Yes	Yes
Governance controls	No	Yes	No	Yes
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	33,516	18,394	29,228	16,371
Adj. R ²	0.26	0.26	0.25	0.25

variables, are weak or nonexistent. In Panel A of Table 4, we find a robust positive relation between organization capital and tournament incentives. We also confirm that our estimates do not suffer from under-identification, weak instrument or over-identification problems.

Second, following contemporary literature, we employ entropy balancing estimates (Hainmueller, 2012). Based on the median OC/TA, we divide the sample into treatment (high OC) and control (low OC) groups. Table A3 shows that the mean, variance, and skewness of all covariates are balanced across the treatment and control groups. Using the entropy balanced sample, we once again perform the regression analysis. Panel B of Table 4 shows that the coefficient on OC/TA remains positive and significant.

Finally, we undertake a change analysis, which could filter out unobserved effects that are fixed over time (Hasan et al., 2021). Results reported in Panel C show that changes in OC/TA are positively and significantly related to changes in tournament incentives. Overall, results in Table 4 provide reasonable evidence that our result is not driven by an endogeneity problem.

3.5. Organization capital and tournament incentives: Implications

We now explore whether the tournament incentives adopted by high-organization capital firms affect firm performance. We regress

firm performance (Tobin's q and ROA) on tournament incentives, organization capital and their interaction. We expect the coefficient of the interaction term (TINC* OC) to be positive and significant if tournament incentives in high organization capital firms enhance firm performance.

$$\text{Performance}_{i,t+1} = \alpha_0 + \beta_1 \text{TINC}_i + \beta_2 \text{OC}_i + \beta_3 \text{TINC}_i * \text{OC}_i + \theta' \text{Controls}_i + \varepsilon \quad (4)$$

Table 5 (Panels A–B) shows that the interaction term (TINC* OC) is positive and statistically significant, implying that tournament incentives in firms with substantial levels of organization capital result in higher firm values (Tobin's q) and higher operating performances (ROA).

Table 3A, Table 5A

4. Conclusion

This paper assesses the effect of organization capital on promotion-based tournament incentives. Using a sample of U.S. public firms, we find that firms with high levels of organization capital exhibit strong tournament incentives. Furthermore, tournament incentives in firms with high levels of organization capital increase operating performance and firm value. Overall, our study has important implications as it reveals that tournaments are an important incentive mechanism for motivating and retaining key talents, and that the use of tournament incentives in firms with high levels of organization capital leads to improved firm performance.

Our study contributes to both tournament incentive and organizational capital literature. Our findings should be important for remuneration committees designing appropriate pay schemes for CEOs and top executives, as we provide strong evidence that tournament incentives are beneficial for firms with substantial organization capital.

Although we employ a set of identification strategies to alleviate endogeneity concerns, we acknowledge that, without an exogenous shock, it remains difficult to draw causal inferences. Therefore, our findings should be interpreted with caution. We encourage future research to investigate how tournament incentives in high organization capital firms affect costs of equity and debt. Future research may also examine the channels through which organization capital affects tournament incentives.

Declaration of Competing Interest

None

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.frl.2021.102468](https://doi.org/10.1016/j.frl.2021.102468).

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