Internet Appendix to "Rank Order Tournaments and Incentive Alignment: The Effect on Firm Performance"*

Table IA. I
Determinants of Alternative Tournament Measures

Panel A of the table reports fixed-effect OLS regressions of alternative tournament measures, which are: (i) *Gini Coefficient (Total Comp)* = $1+\frac{1}{n}-\frac{2}{n^2\bar{y}}\left(y_1+2y_2+....ny_n\right)$, where *n* is the number of executives including the CEO, and y_1, y_2,..y_n represent the total compensation paid to each of the *n* executives, in decreasing order of size, (ii) *CDF (Total Gap)* is the cumulative density function of the *Total Gap* for each year, (iii and iv) *Total Gap (Max VP Comp* (*Mean VP Comp*)) is the difference between the *CEO's Total Compensation* and the highest paid (mean) *VP's Total Compensation* for each firm-year. Panel B reports results of *F*-tests for comparisons between two groups. The following dummy variables are set equal to one if the respective condition holds, and zero otherwise. *New CEO* is one in the CEO's first year of service as CEO and *CEO is Insider* is equal to one if the CEO is an insider. *Retiring CEO* is one if the CEO is more than 62 years of age. *Chair* is one if the CEO also holds the position of Chairperson. *Succession Plan* is one if the firm has a succession plan as defined in Appendix A. *CFO is VP* takes on a value of one when any one of the VPs is the CFO. *Industry Homogeneity* is the average partial correlation coefficient of all firms in the same two-digit SIC code with the industry return, holding market return constant. *No. of VPs* is the number of VPs for each firm-year in the ExecuComp database. *Median Industry Value* represents the respective median values for tournament measures for all firms in the same two-digit industry and size quartile. *CEO Age* is the age of the CEO as of the sample year. *CEO experience* is the number of years the CEO has held position as CEO in the firm. *Firm Size* is Log (Sales). *Stk. Return Volatility is* the variance of 60 monthly returns prior to the sample year. *No. of Segments* is the number of business segments of the firm in the Compustat segment database. All variables are winsorized at the 1st and 99th percentile levels. All specifications contain year dummies and firm fixed effects. Values of the *t*-statistics are in parentheses and are computed using heteroskedasticity- robust standard errors, clustered by firm. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Fixed effects regressions

	Gini Coefficient (Total Comp)	CDF (Total Gap)	Log (Total Gap Max VP Comp)	Log (Total Gap Mean VP Comp)
Constant	-0.037 (-0.63)	-0.581*** (-3.90)	2.210 (1.62)	2.804*** (3.38)
New CEO (β_5)	0.055*** (8.68)	0.101*** (6.98)	0.104 (1.43)	0.286*** (4.35)
CEO is Insider (β_6)	-0.007 (-1.52)	-0.030*** (-2.89)	-0.125*** (-2.96)	-0.118** (-2.56)
New CEO * CEO is Insider (β_7)	-0.046*** (-6.92)	-0.112*** (-7.28)	-0.206** (-2.66)	-0.348*** (-4.92)
Industry Homogeneity	0.029 (1.22)	0.022 (0.41)	-0.013 (-0.05)	-0.006 (0.03)
Retiring CEO	0.001 (0.30)	0.003 (0.39)	-0.005 (-0.17)	0.036 (1.14)
Chair	0.008*** (2.79)	0.016** (2.31)	0.048 (1.55)	0.041 (1.30)
No. of VPs	0.026*** (31.83)	0.007*** (4.22)	-0.044*** (-4.98)	0.011 (1.52)
Succession Plan	0.008*** (4.07)	-0.024*** (-5.43)	-0.155*** (-6.71)	-0.290*** (-7.84)
Median Industry Value	0.565*** (29.25)	0.131*** (17.10)	0.885*** (6.70)	0.729*** (12.55)
CFO is VP	-0.003 (-1.20)	0.010* (1.94)	-0.012 (-0.52)	0.028 (1.28)
Log (CEO Age)	0.003 (0.23)	-0.077** (-2.13)	-0.091 (-0.48)	-0.269 (-1.58)

(Continued)

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Table IA. I (Continued)
Determinants of Alternative Tournament Measures

	Gini Coefficient (Total Comp)	CDF (Total Gap)	Log (Total Gap Max VP Comp)	Log (Total Gap Mean VP Comp)
Log (CEO Experience)	0.001 (0.49)	0.002 (0.33)	-0.020 (0.75)	-0.018 (-0.73)
Firm Size	0.002 (0.53)	0.056*** (7.99)	-0.064** (-2.04)	0.067** (2.22)
Stk. Ret. Volatility	-0.054 (-0.37)	-0.309 (0.91)	0.985 (0.64)	-0.541 (-0.31)
No. of Segments	-0.001 (-0.94)	-0.004** (-2.39)	-0.017** (-2.09)	-0.020** (-2.41)

Panel B: Comparisons (F- statistic)

		Gini Coefficient (Total Comp)	CDF (Total Gap)	Log (Total Gap Max VP Comp)	Log (Total Gap Mean VP Comp)
(a) New CEO with Continuing CEO	$\beta_5 + \beta_7$* *Mean(Insider)*	0.021*** (35.42)	0.019** (6.01)	-0.050 (1.48)	0.027 (0.53)
(b) New CEO from Outside with New CEO from Inside	$-(\beta_6 + \beta_7)$	0.053*** (59.62)	0.141*** (95.84)	0.331*** (20.56)	0.466*** (50.17)
Within R^2		0.24	0.11	0.03	0.09
No. of observations (Year dummies)		16,460 (Yes)	16,460 (Yes)	16,460 (Yes)	16,460 (Yes)
No. of firms (Firm fixed effects)		2,166 (Yes)	2,166 (Yes)	2,166 (Yes)	2,166 (Yes)

Table IA. II

Effects of Tournament and Alignment Incentives on Firm Performance - Fixed Effects Regressions using Alternate Tournament Measures

The table reports fixed effect regressions of *ROA* and *Firm q* on tournament and alignment with alternate tournament measures. The sample period is from 1993 through 2004. The dependent variables are firm performance measured as *ROA,* which is the ratio of Net income to Total assets and *Firm q* equal to (Market value of equity + Book value of debt) / Total assets. *Gini coefficient (Total Comp)* = $1+\frac{1}{n}-\frac{2}{n^2\bar{y}}\left(y_1+2y_2+....ny_n\right)$, where *n* is the number of executives for firm *i* in year *t*, including the CEO, and y_1, y_2,..y_n represent the *Total compensation* paid to each of the *n* executives, in decreasing order of size. *CDF (Total Gap)* is the cumulative density function or normalized rank of the *Total Gap* for each year in the sample. *Total Gap (Max VP Comp) (Mean VP Comp)* is the difference between the *CEO's Total Compensation* and the highest paid (mean) VP'*s Total Compensation* for any given firm-year. *CEO (VP) Alignment* represents the stock price sensitivity of the CEO's (VP's) stock and option portfolio at the beginning of the year. *σ VP Comp* is the standard deviation of the *Total Compensation* among all the VPs for any firm-year. All models include the following control variables: *Log (CEO Age), Industry Homogeneity, Firm Size, Firm Size Square*d, *Stk. Return Volatility*, *Capital to Sales, Leverage, R&D to Capital, Advertising to Capital, and Dividend Yield.* All these variables are defined in Appendix A. All variables are winsorized at the 1st and 99th percentile levels. All specifications contain year dummies and firm fixed effects. Values of the *t*-statistics are in parentheses and are computed using heteroskedasticity-robust standard errors, clustered by firm. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Firm performance measured by ROA				
Using Tournament Measure →	Gini Coefficient (Total Comp)	CDF (Total Gap)	Log (Total Gap Max VP Comp)	Log (Total Gap Mean VP Comp)
Tournament Measure	-1.507*	2.635***	0.210**	0.394***
	(1.90)	(6.41)	(2.47)	(4.16)
CEO Alignment	0.122***	0.130***	0.122***	0.125***
	(4.52)	(4.76)	(4.48)	(4.59)
VP Alignment	2.336***	2.448***	2.443***	2.443***
	(5.42)	(5.68)	(5.64)	(5.66)
Log (σ VP Comp)		-0.089	0.133	0.093
		(0.90)	(1.36)	(0.97)
Panel B: Firm performance measured by Firm q				
Using Tournament Measure →	Gini Coefficient (Total Comp)	CDF (Total Gap)	Log (Total Gap Max VP Comp)	Log (Total Gap Mean VP Comp)
Tournament Measure	0.528***	0.311***	0.031***	0.059***
	(5.26)	(6.10)	(2.69)	(4.63)
CEO Alignment	0.015***	0.015***	0.014***	0.015***
	(3.64)	(3.77)	(3.56)	(3.68)
VP Alignment	0.156***	0.153***	0.153***	0.153***
	(2.98)	(2.96)	(2.96)	(2.97)
Log (σ VP Comp)		0.098***	0.126***	0.120***
		(8.23)	(10.10)	(10.09)

Table IA. III

Effects of Alignment and Tournament Incentives on Firm Performance: Fixed Effects and 2SLS Fixed effects Regressions using Alternate Performance Measures (OIBD to Capital and ROE)

The table reports fixed effect 2SLS regressions of *OIBD to Capital* and *ROE* on tournament and alignment. The sample period is from 1993 to 2004. *OIBD to Capital* = Operating income before depreciation / Net fixed assets. *ROE* = Net income / Total equity. *Total Gap* is the difference between the *CEO's Total Compensation* and the *Median VP's Total Compensation* for any given firm-year. *ST (LT) Gap* is the difference between the *CEO's ST (LT) Compensation* and the median VP's *ST (LT) Compensation* for any given firm-year. *CEO (VP) Alignment* represents the stock price sensitivity of the CEO's (VP's) stock and option portfolio at the beginning of the year. *σ VP Comp* is the standard deviation of the *Total Compensation* among all the VPs for any firm-year. All models include the following control variables: *Log (CEO Age), Industry Homogeneity, Firm Size, Firm Size Squared, Stk. Return Volatility, Capital to Sales, Leverage, R&D to Capital, Advertising to Capital,* and *Dividend Yield*. All these variables are defined in Appendix A. Statistics from tests for relevance and validity of instruments are reported in the bottom panel. All variables are winsorized at the 1st and 99th percentile levels. All specifications contain year dummies and firm fixed effects. Values of the *t*-statistics are in parentheses and are computed using heteroskedasticity-robust standard errors, clustered by firm. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Fixed effects regressions				
	OIBD to Capital		ROE	
Log (Total Gap)	0.046*** (4.60)		1.137*** (4.80)	
Log (ST Gap)		0.096*** (5.27)		2.744*** (7.10)
Log (LT Gap)		0.019** (2.30)		0.253 (1.17)
CEO Alignment	0.009*** (2.91)	0.009*** (3.06)	0.257*** (3.15)	0.273*** (3.27)
VP Alignment	0.186*** (4.03)	0.186*** (4.05)	6.536*** (5.77)	6.508*** (5.70)
Log (σ VP Comp)	0.031*** (2.71)	0.032*** (2.78)	0.106 (0.39)	0.144 (0.53)
Panel B: 2SLS with fixed effects regressions				
	OIBD to Capital		ROE	
Log (Total Gap)	0.167*** (3.51)		2.829*** (3.35)	
Log (ST Gap)		0.278*** (3.91)		8.713*** (6.21)
Log (LT Gap)		0.084** (2.56)		1.011 (1.14)
CEO Alignment	0.018 (1.46)	0.022* (1.80)	0.252 (1.13)	0.400 (1.53)
VP Alignment	0.914*** (5.76)	0.787*** (5.13)	39.283*** (8.34)	35.501*** (7.51)
Log (σ VP Comp)	0.026** (2.16)	0.028** (2.25)	0.364 (1.15)	0.314 (0.97)
Anderson-Rubin *F*-statistic	9.13***	8.32***	23.77***	25.53***
Hansen *J*-statistic (*p*-value)	5.29* (0.07)	4.64* (0.09)	1.82 (0.40)	0.12 (0.94)

Table IA. IV

Fama-French-Carhart Four-Factor Model: ST GAP after Controlling for CEO Alignment

The table reports the results of four-factor equally weighted monthly returns for portfolios of firms sorted first by *CEO Alignment* quintiles and then by *ST Gap* quintiles. The rows in each panel report excess returns in percent per month when we buy the portfolio in the highest quintile of *ST Gap* and sell short the portfolio with the lowest *ST Gap* after controlling for *CEO Alignment*. The portfolios are reset every year. The explanatory variables (RMRF, SMB, HML, and UMD) are suppressed and only intercepts are reported. The sample period is from 1993 to 2004. All excess returns that are significant at the 5% level or better are denoted by *.

	Equally Weighted						Value Weighted					
Year	Q1	Q2	Q3	Q4	Q5	Q5 - Q1	Q1	Q2	Q3	Q4	Q5	Q5 - Q1
1993	0.303	0.117	0.580	0.394	0.574*	0.271	-0.365	-0.373	-0.503	0.382	0.301*	0.666*
	(0.71)	(0.30)	(1.94)	(1.75)	(2.72)		(-0.86)	(-1.58)	(-1.95)	(1.47)	(2.68)	
1994	-0.536	-0.185	-0.006	0.243	0.570*	1.106*	-0.529	-0.649*	-0.312	0.163	0.231	0.760*
	(-1.84)	(-0.77)	(-0.02)	(1.12)	(2.40)		(-1.24)	(-2.19)	(-0.77)	(0.98)	(1.50)	
1995	-0.524	-0.386	-1.034*	-0.166	0.516	1.040*	-0.559	-0.410	-0.125	0.735	-0.627*	-0.068
	(-0.77)	(-0.97)	(-3.73)	(-0.28)	(1.52)		(-0.44)	(-0.63)	(-0.18)	(1.54)	(-3.13)	
1996	-0.226	-0.530	-0.139	0.499*	0.681*	0.907*	0.490	-1.289*	-0.320	-0.333	0.376	-0.114
	(-0.94)	(-1.71)	(-0.34)	(2.27)	(2.93)		(1.21)	(-2.39)	(-0.91)	(-1.66)	(1.69)	
1997	-0.198	-0.288	-0.047	0.356	0.604*	0.802*	1.149*	-0.503	-0.549	-0.528	0.547	-0.603
	(-0.43)	(-0.66)	(-0.09)	(0.70)	(2.62)		(2.54)	(-0.66)	(-0.88)	(-1.00)	(1.72)	
1998	0.771	0.820	0.105	0.371	0.270	-0.502	2.776*	-1.055	-0.904	0.548	0.116	-2.660*
	(0.88)	(1.45)	(0.15)	(1.19)	(1.03)		(2.29)	(-0.92)	(-1.36)	(1.72)	(0.40)	
1999	0.305	0.469	0.538	0.567	1.018*	0.713*	-0.499	-0.473	-1.059*	-0.947	0.493	0.992*
	(0.80)	(2.48)	(1.61)	(1.47)	(2.45)		(-0.40)	(-0.57)	(-2.28)	(-1.55)	(1.68)	
2000	1.192	1.052	1.328	1.636	2.124*	0.932*	-1.041	0.299	-1.204	-1.181	1.858*	2.899*
	(1.18)	(1.70)	(1.66)	(1.89)	(3.95)		(-0.62)	(0.21)	(-0.78)	(-0.96)	(3.11)	
2001	0.998*	0.317	0.406	0.786	1.090	0.092	0.386	-1.024	-0.473	0.251	0.356	-0.030
	(2.10)	(0.89)	(0.77)	(1.85)	(1.80)		(0.49)	(-0.95)	(-0.83)	(0.50)	(0.83)	
2002	0.924*	0.662	0.864*	1.083*	1.137*	0.213	0.597	-0.697	-0.507	-0.346	0.650*	0.054
	(2.27)	(1.66)	(2.64)	(4.61)	(2.62)		(0.83)	(-1.42)	(-0.68)	(-0.85)	(2.13)	
2003	-1.217*	-1.021*	-0.745*	0.124	-0.128	1.089*	0.003	-1.709*	-0.858	0.553	-0.074	-0.077
	(-3.58)	(-3.01)	(-2.19)	(0.37)	(-0.52)		(0.00)	(-2.75)	(-1.32)	(1.19)	(-0.22)	
2004	-0.982*	-0.208	0.358	0.589	1.317*	2.299*	-0.551	-0.594	-0.453	-0.274	0.362	0.913*
	(-3.47)	(-0.92)	(1.09)	(1.65)	(3.02)		(-1.01)	(-1.59)	(-1.41)	(-0.76)	(1.32)	
Overall	-0.081	0.085	0.253	0.451	0.848	0.928*	0.117	-0.665	-0.617	0.451	0.456	0.338

Table IA. V

Fama-French-Carhart Four-Factor Model: CEO Alignment after Controlling for ST Gap

The table reports the results of four-factor equally weighted monthly returns for portfolios of firms sorted first by *ST Gap* then by *CEO Alignment* quintiles. The rows in each panel report excess returns in percent per month when we buy the portfolio in the highest quintile of *CEO Alignment* and sell short the portfolio with the lowest *quintile of CEO Alignment* after controlling for *ST Gap*. The portfolios are reset every year. The explanatory variables (RMRF, SMB, HML, and UMD) are suppressed and only intercepts are reported. The sample period is from 1993 to 2004. All excess returns that are significant at the 5% level or better are denoted by *.

	Equally Weighted						Value Weighted					
Year	Q1	Q2	Q3	Q4	Q5	Q5 - Q1	Q1	Q2	Q3	Q4	Q5	Q5 - Q1
1993	0.131	0.097	0.494	0.576	0.666	0.535	0.084	0.229	0.076	0.063	-0.213	-0.297
	(0.57)	(0.41)	(0.90)	(1.05)	(1.46)		(0.36)	(1.58)	(0.24)	(0.12)	(-0.47)	
1994	-0.465*	-0.015	0.100	0.266	0.194	0.658*	-0.145	0.171	-0.026	0.202	0.480	0.625*
	(-2.81)	(-0.08)	(0.83)	(0.97)	(0.67)		(-0.78)	(0.58)	(-0.11)	(0.61)	(1.80)	
1995	-0.523	0.167	-0.357	-0.216	-0.679	-0.156	-0.537	-0.174	0.314	-0.037	-0.023	0.514
	(-1.51)	(0.26)	(-0.44)	(-0.34)	(-1.35)		(-1.15)	(-0.33)	(0.40)	(-0.07)	(-0.03)	
1996	-0.614*	-0.155	0.266	0.326	0.462	1.076*	-0.249	0.173	0.083	0.050	1.175*	1.425*
	(-3.55)	(-0.63)	(0.85)	(1.57)	(1.07)		(-1.14)	(0.78)	(0.22)	(0.13)	(5.13)	
1997	-0.491	-0.194	0.250	0.151	0.709	1.200*	0.169	-0.052	-0.211	-0.156	1.651*	1.482
	(-1.09)	(-0.39)	(0.74)	(0.55)	(1.67)		(0.70)	(-0.21)	(-0.46)	(-0.27)	(2.25)	
1998	0.088	-0.193	0.435	0.785	1.224*	1.137*	0.672	-1.080	0.285	-0.162	1.821	1.149
	(0.09)	(-0.37)	(0.95)	(1.74)	(2.94)		(1.72)	(-1.45)	(0.43)	(-0.25)	(1.29)	
1999	-0.023	0.875	0.258	0.880*	0.907*	0.931*	-0.504	0.558	0.206	0.606	-0.380	0.124
	(-0.12)	(2.05)	(0.60)	(2.41)	(2.39)		(-0.77)	(1.42)	(0.33)	(1.16)	(-0.24)	
2000	-0.137	0.816	2.015*	2.826*	1.793*	1.930*	0.871	0.395	-0.664	0.830	-0.542	-1.413
	(-0.20)	(0.89)	(2.57)	(3.28)	(2.81)		(1.22)	(0.46)	(-0.72)	(0.50)	(-0.38)	
2001	0.099	0.500	0.668	1.108*	1.211*	1.111*	0.072	0.148	-0.079	0.682	0.293	0.221
	(0.32)	(1.19)	(1.11)	(2.09)	(2.71)		(1.32)	(0.31)	(-0.18)	(0.72)	(0.38)	
2002	0.651	0.550*	0.776	1.322*	1.367*	0.716*	0.048	-0.071	0.132	0.348	0.855	0.807
	(1.88)	(1.99)	(1.83)	(4.06)	(4.29)		(0.28)	(-0.18)	(0.41)	(0.66)	(1.41)	
2003	-0.839*	-0.589*	-0.677*	-0.128	-0.746*	0.093	0.001	-0.212	-0.639	0.152	-0.354	-0.355
	(-3.38)	(-2.65)	(-2.43)	(-0.39)	(-2.39)		(0.01)	(-1.45)	(-1.30)	(0.25)	(-0.71)	
2004	-0.183	0.312	0.330*	0.185	0.440	0.623	-0.531*	0.691	0.558*	0.204	0.467	0.997*
	(-0.65)	(0.99)	(2.10)	(0.44)	(1.58)		(-2.57)	(1.73)	(3.43)	(0.46)	(1.04)	
Overall	-0.128	0.084	0.312	0.568	0.719	0.847*	-0.006	0.119	-0.027	0.568	0.578	0.584