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Performance pay and catering incentives☆

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ARTICLE INFO	ABSTRACT
Keywords: CEO Pay for performance Accounting goals Catering incentives	This paper explores how boards of directors design executive compensation to cater to investor demand. Following the literature of catering incentives and using a comprehensive dataset of accounting-based performance goals, we show that firms tie executive compensation to accounting goals (pay-for-performance) according to investor preferences for specific accounting metrics. Moreover, firms with powerful CEOs are less affected by investor demand for accounting metrics. Finally, our results are robust to alternative specifications and subsamples.

1. Introduction

The last financial crisis raised several questions regarding the compensation plans of executives, not only for the large size of their compensation but for the way that not-properly disclosed packages induced managers to engage in risky activities. Before 2006, firms were not required to provide details of compensation packages (stocks, bonuses or grants) tied to performance goals. Then, as a consequence of investors' concerns about the level of disclosure and the financial crisis, the Securities and Exchange Commission (SEC) issued new rules to improve the disclosure of detailed and standardized information regarding managers' compensation contract terms (grants of plan-based awards). Thus, researchers began to collect new and detailed information regarding managers' incentive plans from proxy statements. For instance, grants to the firm's executives linked to absolute accounting-based metrics.

Since then, there is a growing literature attempting to understand the benefit and consequences of performance terms in CEO compensation contracts. For instance, De Angelis and Grinstein (2011, 2015) hand-collect the terms of the CEO compensation contracts from each firm's proxy statement after 2006 to study their characteristics and the cross-sectional characteristics of the firms that employ them. Additionally, they investigate the use of relative performance evaluation in CEO compensation contracts. Moreover, Bennett et al. (2017) provide evidence on the most common accounting metrics that firms employ to tie compensation to performance goals for the 954 largest firms in the US. In addition, they show that linking executive compensation to accounting goals has several costs in terms of manipulation of reported accounting performance to achieve compensation goals. Our study is closely related to this new stream of literature that tries to understand the benefits and costs of designing executive compensation using accounting performance goals.

However, the scope of this study is to understand how boards of directors tie the compensation of managers to several accounting-based performance goals (pay-for-performance). Specifically, we attempt to address the research question: *How do firms decide which metrics to focus on when they are designing compensation plans?* We propose that boards of directors consider the short-term investor demand to design the executive compensation plans according to investor preferences for specific accounting metrics. Following the

catering theory (Baker and Wurgler (2004a, 2004b); Polk and Sapienza (2009)), we measure investor demand as the difference between the average market-to-book ratio of firms in the top of the distribution and firms in the bottom according to their performance in different accounting metrics. We call this measure *Value Premium*. Our conjecture is that boards of directors cater to investor preferences for certain accounting metrics with purpose of inducing executives to improve firms' performance on those metrics and increase firms' market value.

Our results suggest boards of directors tie the compensation of CEOs and Top executives to different accounting metrics by catering to investor demand. In terms of economic magnitude, a one standard deviation increase in the *Value Premium* increases the fraction of total compensation linked to accounting performance goals of CEOs and Top executives by 0.13%%and;0.1%, respectively. Considering that in our sample the average fraction of total compensation associated with accounting-based metrics is 1.5%%, the effect of investor demand is economically significant. However, the effect of investor demand for specific accounting metrics on executive compensation is less pronounced in firms with powerful CEOs. Finally, our results are robust to different specifications and subsamples.

2. Hypotheses development

Our paper is related to the catering theory. This stream of literature shows that investors do not always trade based on the fundamental values of firms, and their demand for securities can deviate from fundamentals in the short-term. Hence, managers rationally exploit these deviations and cater to investor demand in order to maximize the firm's value in the short term. These actions can be changes in corporate policies in order to attract investors who demand firms with certain corporate policies (Baker and Wurgler, 2004b; Polk and Sapienza, 2009). Baker and Wurgler (2004a) provide evidence that firms decide to start (stop) the payment of dividends when the investor demand for dividend paying firms is high (low). Managers cater to investors by paying dividends when investors put a stock price premium on dividend payers, and by not paying dividends when investors prefer non-dividend payers. Li and Lie (2006) extend the previous work considering changes in dividend pay. The researchers show that the decision to change dividends and the magnitude of those changes depend on the investor demand for higher dividend payers versus lower dividend payers. In catering theory, the variable that captures investor preferences is the premium that investors pay for firms with certain corporate policies. The most frequent measure for the premium paid by investors is the difference between the average market-to-book ratio of firms in the top of the distribution with respect to a corporate policy of interest (dividend payout policy or investment) and the average market-to-book ratio of firms in the bottom. Baker and Wurgler (2004b) refer to this measure as the dividend premium, which is the difference between the average market-to-book ratio of dividend payers and non-dividend payers.

In this study, we propose that boards of directors cater to investor demand for firms with better performance in certain accounting metrics. For instance, when boards of directors care about the current stock price, they tend to focus executive compensation packages on increasing sales growth when there is a premium for growing firms. On the other hand, in times when investors prefer firms with higher levels of profitability, directors encourage managers to focus on reducing costs and improving efficiency by linking their compensation to accounting metrics associated with efficiency. Thus, the hypothesis is the following:

Hypothesis 1 : *Firms decide executive performance pay based on the accounting metrics preferred by investors.*

Our hypothesis is consistent with the results documented by Glushkov and Bardos (2012). The authors show that times of high growth premium (sales and investment growth) are followed by higher sales and investment growth. Moreover, catering to the premium is more pronounced for firms whose managers care more about maximizing short-term stock prices. However, our objective is to show that firms decide performance pay associated with accounting goals based on investor preferences.

3. Empirical design and key variables

We are interested in understanding how firms design executive compensation. Specifically, we attempt to show that firms link the compensation of executives to accounting performance targets by catering to investor demand. We employ eight accounting metrics used by firms to tie executive compensation to accounting performance goals: EPS, Sales, Operating Income, Earnings, EBITDA, EBIT, ROE and Cash flow from operations.

Following Baker and Wurgler (2004b) and Polk and Sapienza (2009), we create a variable called *Value Premium*, which measures the premium that investors pay for firms with better performance on the accounting metrics of interest, compared to firms with worse performance. Notably, firms can either tie the executive compensation to accounting metrics in level terms or in growth terms (Bennett et al., 2017). However, using an accounting goal in level terms implies a growth performance goal with respect to the previous year. Thus, in this paper we calculate the *Value Premium* using the firms' performance with respect to the eight accounting metrics in growth terms, such as sales growth or EPS growth instead of sales or EPS in level terms.

The variable *Value Premium* is the log difference between the average market-to-book ratios of firms with better accounting performance (top of the distribution) and firms with worse accounting performance (bottom of the distribution). We rank firms in each year and two-digit SIC code industry classification based on their performance with respect to each of the eight accounting metrics identified above (based on the entire Compustat universe). We use the 80th (20th) and 75th (25th) percentiles as cutoff points to indentify the firms that are in the top (bottom) quintile and quartile, respectively. Thus, we calculate the *Value Premium* using firms in the top (bottom) quintile and quartile of the sample distribution.

For instance, if we want to determine the *Value Premium* for *sales growth,* we sort the firms from highest growth rate in sales to firms with lowest growth rate in each year and two-digit SIC code industry classification. Then, we calculate the average market-to-book ratio of firms in the top quintile (quartile) and bottom quintile (quartile) of the *sales growth* distribution and perform the log

difference between the two groups.[1] We define the market-to-book ratio (*MTB*) as the market value of assets (market value of common shares plus preferred stock liquidating value plus short and long debt minus deferred taxes and investment tax credit) divided by the book value of total assets.[2] Hence, our main variable is defined as follow:

$$Value\ Premium_{jkt} = Ln(\bar{MTB}_{HG})_{jkt} - Ln(\bar{MTB}_{LG})_{jkt}$$

where $Ln(\bar{MTB}_{HG})_{jkt}$ and $Ln(\bar{MTB}_{LG})_{jkt}$ are the log average market-to-book ratios for the firms with high growth and low growth rates in the industry j on the accounting metric k for the year t, respectively. Moreover, when the difference is positive investors place a premium on firms with better growth rates for a given performance metric. A priori, we expect a positive coefficient associated with *Value Premium*$_{jkt}$. Additionally, in order to reduce endogeneity concerns we use the first lag of the variable. Thus, to test our first hypothesis we run the following regression:

$$PerformancePay_{ijkt} = \alpha + \beta_1 ValuePremium_{jkt-1} + \beta_2 PeerPay_{-ijkt-1} + \beta_3 Ind.\ Performance_{jkt} + \gamma Z_{it} + \lambda_i + \mu_t + \epsilon_{ijkt} \qquad (1)$$

where subscript i refers to the firm, subscript j refers to the industry, and subscript t refers to time in years. In addition, subscript k refers to the eight accounting performance metrics linked to executive compensation. The dependent variable *Performance Pay*$_{ikt}$ is a vector that contains the fraction of the total executive compensation (which is the sum of annual salary, bonus, present value of stock awards, present value of stock option awards, other annual compensation, long-term incentive payouts, and other cash payouts) tied to the accounting-metric goal *k*. Moreover, firms can tie awards to accounting metrics using either target goals in level or growth terms and for short- and long-term horizons. Thus, *Performance Pay*$_{ijkt}$ is the sum of the short- and long-term incentives associated with the accounting goal *k*, defined either in level or growth terms.

In addition, performance measures, performance pay measures and control variables are winsorized at the 1st and 99th percentiles to mitigate the effect of outliers. Additionally, we cluster the standard errors at firm-year level.[3] The matrix Z_{it} contains control variables, such as stock return in the current year, sales growth, the ratio cash-flows-to-total-assets, bid-ask spread, firm size, CEO tenure and CEO stock ownership.[4] Moreover, we include the variable *Industry Performance*$_{jkt}$, which is the average performance of the firm's peers in the same industry (three-digit SIC code), with respect to each of the eight metrics mentioned above in growth terms. In addition, we include the variable *Peer Pay*$_{-ijkt-1}$, which is a vector that contains the fraction of the total executive compensation tied to each of the eight accounting performance goals of peer firms in the same industry classification (three-digit SIC code) and in the previous year (we exclude the firm *i*'s own compensation to calculate the industry peer compensation).[5] We expect that individual firms tend to follow the CEO compensation of their peers in the same industry. Moreover, we include corporate governance measures such as Power Index (Morse et al., 2011), which is a variable with a range from 1 to 3, depending on the number of titles that a CEO holds in the firm. If the CEO is the president of the firm and the chairman of the board, the index is equal to 3. If the CEO is only the chairman of the board the index is equal to 2. Finally, if the CEO is not the chairman of the board the index is equal to 1. Moreover, we include a dummy variable that takes the value of 1 if the firm has an Entrenchment Index at the bottom 40% of the sample distribution, and zero otherwise. Additionally, we include an independent director dummy variable, which takes the value of 1 if a firm has a percentage of independent directors at the top 40% of the sample distribution, and zero otherwise. Lastly, as a robustness test, in Table 5 we employ a more compelling specification and include firm-year fixed effects to control for any time-varying firm characteristic.

4. Data and empirical results

The final sample for our paper comes from standard sources and covers the time period 2006–2012. From CRSP-COMPUSTAT, we obtain the financial variables of firms and stock prices. From ExecuComp we collect the top executives' information for the S&P 1500 firms. Moreover, the accounting performance goals on which firms based managers' compensation come from Incentive Lab (IL).[6] Our data set starts in 2006 because data available regarding the accounting goals was not properly disclosed until that year (SEC standardized disclosure requirements for plan-based awards). Our final sample contains 4361 CEO-year and Top Executive-year observations.[7] Excluding the CEO, we define Top Executives as the top five highest paid executives according to ExecuComp. Moreover, we employ the average performance pay of the top 5 executives.

In Table 1, we provide the summary statistics for the main variables of our paper. Specifically, in Panel A, we provide information about the fraction of the total compensation tied to each of the eight accounting metrics used in this study. For instance, on average, the performance pay tied to sales growth is roughly 2% for either CEOs and Top Executives. In addition, the compensation linked to

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[1] We require at least ten industry-year observations to calculate the *Value Premium* for a given metric. Moreover, we employ equally-weighted averages.

[2] Compustat items: *(prcc_f*csho + pstkl + dlc + dltt-txditc)/at.*

[3] The results are also robust to standard errors clustered at firm level.

[4] See Appendix A for a complete definition of the variables used in this study.

[5] The results are qualitatively similar when we use two-digit SIC code as industry classification.

[6] I thank Radha Gopalan for sharing the performance pay information. We work with the same data set used in his papers: *"Managerial Compensation in Multi-Division Firms"* (Alok and Gopalan, 2017; see Internet Appendix) and *"Compensation Goals and Firm Performance"* (Bennett et al., 2017).

[7] To ensure consistency throughout our primary analysis, we require for each firm in a given year to have nonmissing data for the performance pay of CEO and Top Executives.

Table 1

Summary statistics. This table presents the summary statistics for the performance pay, the *Value Premium* variable and firm characteristics. Panel A shows the summary statistics for the fraction of the total compensation tied to the eight accounting metrics (at firm-year level). Panel B displays the statistics for *Value Premium* variable with respect to the eight accounting metrics (at industry-year level). Panel C provides the information regarding performance pay, *Value Premium*, CEO characteristics, peer performance pay and control variables (at firm-accounting metric-year level). The eight accounting metrics are: EPS, Sales, Operating Income, Earnings, EBITDA, Cash flow, ROE and EBIT. All variables used in the regression analysis are winsorized at the 1st and 99th percentiles.

Panel A: Performance Pay

	CEO				Top Executives			
	N	Mean	SD	$I(Performance\ Pay_k > 0)$	N	Mean	SD	$I(Performance\ Pay_k > 0)$
Sales	4361	0.022	0.06	0.22	4361	0.02	0.05	0.238
Earnings	4361	0.009	0.037	0.078	4361	0.009	0.035	0.093
Operating Income	4361	0.02	0.068	0.134	4361	0.018	0.057	0.166
Cash Flow	4361	0.011	0.041	0.127	4361	0.009	0.034	0.135
EBIT	4361	0.003	0.017	0.03	4361	0.003	0.016	0.037
EBITDA	4361	0.008	0.038	0.062	4361	0.008	0.035	0.07
ROE	4361	0.003	0.018	0.026	4361	0.002	0.016	0.026
EPS	4361	0.038	0.095	0.228	4361	0.031	0.078	0.232

Panel B: Value Premium (VP)

VP based on:	Quintiles						Quartiles					
	N	Mean	SD	P25	Median	P75	N	Mean	SD	P25	Median	P75
Sales	4254	0.488	0.349	0.282	0.49	0.71	4254	0.459	0.321	0.255	0.451	0.661
Earnings	4254	0.26	0.31	0.057	0.265	0.453	4254	0.246	0.285	0.051	0.227	0.44
Operating Income	4254	0.312	0.314	0.107	0.31	0.483	4254	0.302	0.285	0.109	0.282	0.493
Cash Flow	4161	0.149	0.28	‐0.03	0.162	0.344	4161	0.152	0.253	0.012	0.143	0.314
EBIT	4254	0.298	0.304	0.109	0.294	0.475	4254	0.288	0.288	0.117	0.28	0.455
EBITDA	4254	0.312	0.314	0.107	0.31	0.483	4254	0.302	0.285	0.109	0.282	0.493
ROE	4254	0.211	0.317	‐0.004	0.224	0.393	4254	0.203	0.291	0.025	0.196	0.389
EPS	4254	0.209	0.312	0.021	0.228	0.401	4254	0.21	0.287	0.036	0.202	0.412

| Panel C: Full sample	Eight metrics						Sales and net income-related metrics					
	N	Mean	SD	P25	Median	P75	N	Mean	SD	P25	Median	P75
Performance pay	20950	0.015	0.055	0	0	0	10496	0.018	0.062	0	0	0
Performance pay (Top Executives)	20950	0.012	0.046	0	0	0	10496	0.015	0.051	0	0	0
Peer pay	20950	0.013	0.032	0	0	0.014	10496	0.017	0.037	0	0	0.023
Peer pay (Top Executives)	20950	0.012	0.027	0	0	0.012	10496	0.015	0.031	0	0	0.018
Value Premium-quintile	20950	0.283	0.324	0.066	0.279	0.477	10496	0.296	0.341	0.059	0.29	0.506
Value Premium-quartile	20950	0.272	0.298	0.077	0.255	0.455	10496	0.282	0.315	0.063	0.268	0.467
Stock Return	20950	0.128	0.467	‐0.158	0.09	0.332	10496	0.128	0.466	‐0.157	0.09	0.332
Sales Growth	20950	0.084	0.195	‐0.012	0.069	0.155	10496	0.084	0.195	‐0.012	0.069	0.155
Cashflow/TA	20950	0.15	0.083	0.1	0.143	0.19	10496	0.15	0.083	0.1	0.143	0.19
Spread	20950	0.001	0.001	0	0.001	0.001	10496	0.001	0.001	0	0.001	0.001
Size	20950	8.515	1.308	7.634	8.4	9.321	10496	8.515	1.308	7.636	8.4	9.322
Market-to-Book	20950	1.534	0.986	0.856	1.263	1.893	10496	1.534	0.986	0.856	1.264	1.894
Industry Performance	20950	‐0.013	0.568	‐0.17	0.01	0.154	10496	‐0.01	0.557	‐0.145	0.017	0.17
Stock Ownership (CEO) (%)	20950	1.299	3.361	0.023	0.318	1.193	10496	1.299	3.363	0.021	0.316	1.192
Tenure (CEO)	20950	7.47	5.995	3.305	5.844	9.663	10496	7.469	5.995	3.31	5.843	9.66
Power Index (CEO)	20950	1.859	0.822	1	2	3	10496	1.859	0.822	1	2	3
Independent Director (Dummy)	20950	0.366	0.482	0	0	1	10496	0.366	0.482	0	0	1
Entrenchment Index (Dummy)	20950	0.551	0.497	0	1	1	10496	0.551	0.497	0	1	1
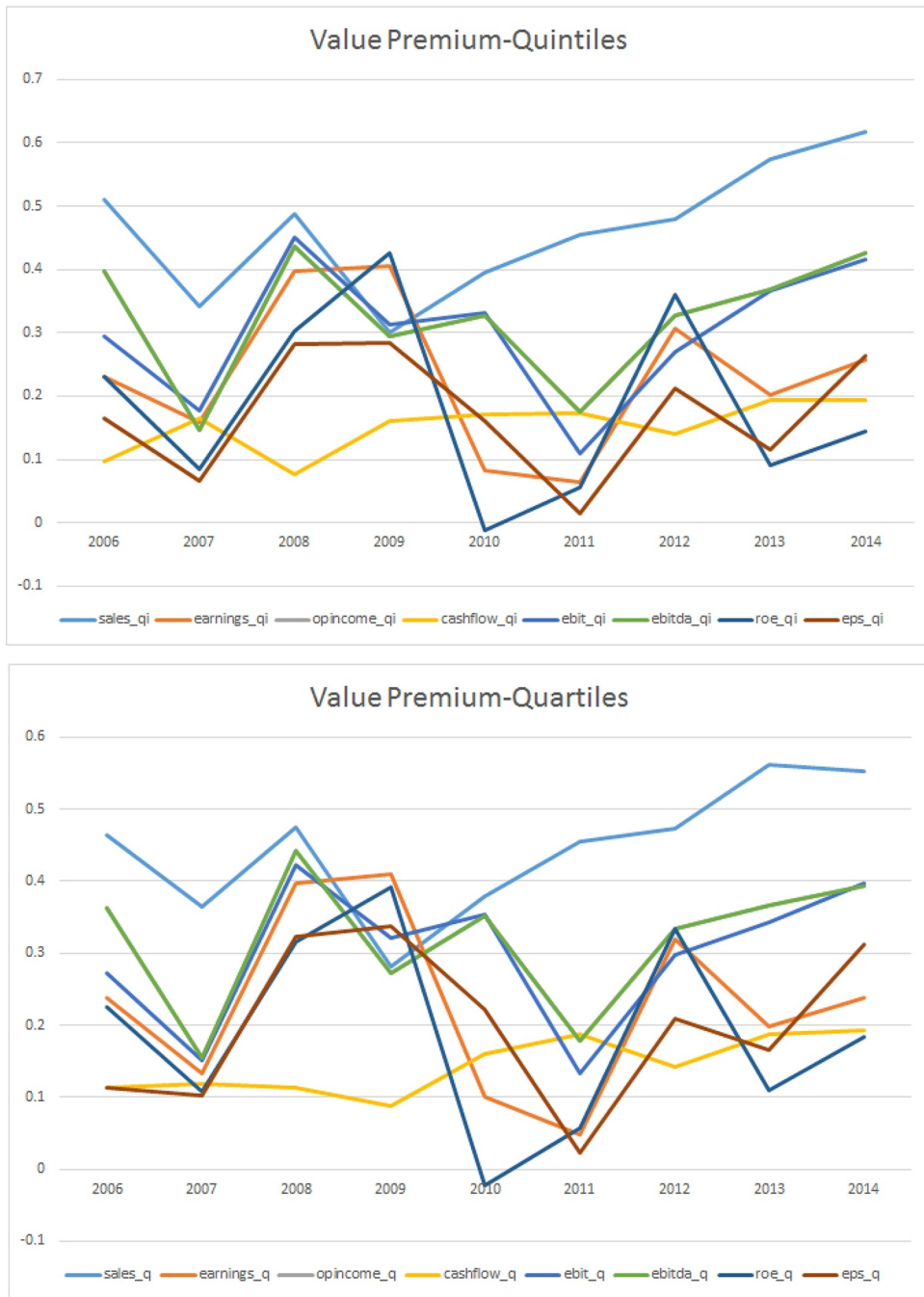
Fig. 1. Value Premium associated with the eight accounting metrics.

earnings per share (EPS) goals is the most important in our sample; the fraction linked to EPS is on average 3.8% of CEO total compensation. Moreover, grants linked to sales and EPS are the most popular ones, on average more than 20% of the CEO (Top Executives)-year observations have a fraction of their compensation tied to sales ($I(Performance\,Pay_{Sales} > 0)$) and EPS ($I(Performance\,Pay_{EPS} > 0)$).[8]

In panel B, we show our proxy for investor demand (*Value Premium*) for each of the eight accounting metrics. Consistent with our hypothesis, the *Value Premium* is on average positive for all the accounting metrics, and for the two cutoffs (quintiles and quartiles).

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[8] $I(Performance\,Pay_k > 0)$ is a binary indicator that takes the value of one when a firm in a given year ties a fraction of the CEO (Top Executive) compensation to the accounting goal k, and zero otherwise.

Table 2

Executive compensation and catering incentives. The table presents the effect of *Value Premium* on executive compensation. The dependent variable is *Performance Pay,* which is the fraction of the total compensation tied to a specific accounting metric. Our main independent variable is the *Value Premium (VP),* which captures investor demand for a specific accounting metric. Moreover, we have two samples: (1) CEO compensation and (2) Top executive compensation. Panel A shows the results using the eight accounting metrics (EPS, Sales, Operating Income, Earnings, EBITDA, Cash flow, ROE and EBIT) and Panel B considers only sales and net income-related accounting metrics (Sales, EPS, Earnings and ROE). The control variables are winsorized at the 1st and 99th percentiles. All regressions include firm and year fixed effects and the standard errors are clustered at firm-year level. For brevity we suppress the constant. See Appendix A for complete variable definitions. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively. Standard errors are in parentheses.

VP based on:	Panel A: Eight metrics				Panel B: Sales and net income-related metrics			
	CEO		Top executives		CEO		Top executives	
	Quintiles (1)	Quartiles (2)	Quintiles (3)	Quartiles (4)	Quintiles (5)	Quartiles (6)	Quintiles (7)	Quartiles (8)
Value Premium	0.004	0.005	0.003	0.004	0.005	0.007	0.005	0.006
	(0.001)**	(0.002)***	(0.001)***	(0.001)***	(0.002)**	(0.002)***	(0.002)**	(0.002)***
Peer pay	0.206	0.206	0.189	0.189	0.236	0.235	0.207	0.205
	(0.019)***	(0.019)***	(0.018)***	(0.018)***	(0.025)***	(0.025)***	(0.023)***	(0.023)***
Stock Own.	0.000004	0.000008			0.00002	0.00002		
	(0.0002)	(0.0002)			(0.0003)	(0.0003)		
Tenure	0.000001	0.000001			0.0003	0.0003		
	(0.0002)	(0.0002)			(0.0003)	(0.0003)		
Power Index	0−.002	0−.002	0−.001	0−.001	0−.003	0−.003	− 0.001	− 0.001
	(0.0007)***	(0.0007)***	(0.0005)**	(0.0005)**	(0.001)**	(0.001)**	(0.0009)	(0.0009)
Independent Director	0.001	0.001	0.001	0.0009	0.003	0.003	0.002	0.002
	(0.0007)*	(0.0007)*	(0.0006)	(0.0006)	(0.001)**	(0.001)**	(0.001)*	(0.001)*
Entrenchment Index	0.003	0.003	0.002	0.002	0.004	0.004	0.003	0.003
	(0.0009)***	(0.0009)***	(0.0007)***	(0.0007)***	(0.001)***	(0.001)***	(0.001)**	(0.001)**
Stock return	0−.002	0−.002	0−.002	0−.002	0−.002	0−.002	0−.002	0−.002
	(0.0007)***	(0.0007)***	(0.0006)***	(0.0006)***	(0.001)*	(0.001)*	(0.0009)**	(0.0009)**
Sales growth	0.0007	0.0008	0.001	0.001	− 0.002	− 0.002	− 0.003	− 0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Cashflow/TA	0.003	0.003	0.005	0.005	− 0.005	− 0.005	− 0.003	− 0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.008)	(0.008)	(0.006)	(0.007)
Spread	0.436	0.438	0.121	0.122	0.336	0.339	0.241	0.244
	(0.431)	(0.431)	(0.351)	(0.352)	(0.702)	(0.703)	(0.523)	(0.525)
Size	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.003
	(0.001)	(0.001)	(0.001)*	(0.001)*	(0.002)	(0.002)	(0.002)*	(0.002)*
Industry Performance	−0.00006	−0.0001	−0.00009	−0.0001	0.0005	0.0004	0.0005	0.0004
	(0.0006)	(0.0006)	(0.0005)	(0.0005)	(0.0008)	(0.0008)	(0.0007)	(0.0007)
Market-to-Book	0.001	0.001	0.0009	0.0009	0.0009	0.0009	0.0004	0.0005
	(0.0008)	(0.0008)	(0.0006)	(0.0006)	(0.001)	(0.001)	(0.001)	(0.001)
Obs.	20950	20950	20950	20950	10496	10496	10496	10496
R^2	0.095	0.095	0.096	0.097	0.183	0.183	0.182	0.182

Sales growth is the accounting metric with the highest *Value Premium,* which is on average 0.49 when we use quintiles and 0.46 when we use quartiles. Regarding the most important accounting metrics in our sample, EPS, we find that the *Value Premium* is on average 0.21 for both cutoffs. Panel C shows the summary statistics at the firm (i)-accounting metric (k)-year (t) level. To ensure consistency throughout our primary analysis, we require for each firm-accounting metric-year observation to have nonmissing data for all the variables used in the baseline regression. Lastly, in Fig. 1 we can observe an important across-time variation in the *Value Premium* associated with the eight accounting metrics.

We begin our empirical analysis by testing *Hypothesis 1* and presenting the results in Table 2. According to *Hypothesis 1*, we should expect a positive sign for the coefficient associated with our main independent variable, *Value Premium*. Columns (1) and (2) show the results for the CEO sample (Panel A). We find a positive coefficient on the variable *Value Premium* in the two columns. These results suggest that firms design CEO compensation following investor demand for specific accounting metrics in the previous period, that means an increase in the percentage of the total compensation linked to accounting-performance goals. The results are also consistent using the average compensation of the top 5 executives in the firm (Columns (3)-(4)). In terms of economic magnitude, a one standard deviation increase in *Value Premium* increases the fraction of total compensation linked to accounting goals of CEOs (Top executives) by 0.13–0.15%%. Considering that in our sample the performance pay associated with the eight accounting metrics of CEOs (Top executives) is on average 1.5%%, the effect of investor demand is economically significant.

Panel B shows the results associated with the *Value Premium* variables only considering sales and net income-related accounting metrics (Sales, EPS, Earnings and ROE). We use this subsample because those metrics are highly employed by firms, in terms of number of grants and also as a percentage of the total compensation. The results are consistent with Panel A, however, the coefficients associated with *Value Premium* are larger when we restrict our sample to these accounting metrics. In terms of economic magnitude, a one standard deviation increase in *Value Premium* increases%–% the performance pay of CEOs (Top executives) by 0.17-

Table 3

Executive compensation, catering incentives and firm performance. The table presents effect of *Value Premium* on CEO compensation. The dependent variable is *Performance Pay(ΔPerformance Pay),* which is the fraction (change in the fraction) of the total compensation tied to a specific accounting metric. Our main independent variable is the *Value Premium (VP),* which captures investor demand for a specific accounting metric. Panel A shows the results using the eight accounting metrics (EPS, Sales, Operating Income, Earnings, EBITDA, Cash flow, ROE and EBIT) and Panel B considers only sales and net income-related accounting metrics (Sales, EPS, Earnings and ROE). We use two subsamples according to the performance of firms associated with each of the eight accounting metrics. Following the methodology to calculate the *Value Premium,* the first (second) subsample contains the firms ranked in the top (bottom) quintile/quartile according to the firm performance in the accounting metric *k.* The control variables are winsorized at the 1st and 99th percentiles. In columns (1)–(4) we include firm and year fixed effects. In columns (5)–(8) we include industry (three digit SIC code) and year fixed effects. Standard errors are clustered at firm-year level. For brevity we suppress the constant. See Appendix A for complete variable definitions. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively. Standard errors are in parentheses.

Panel A: Eight accounting metrics

	Performance Pay				ΔPerformance Pay			
VP based on:	Quintiles		Quartiles		Quintiles		Quartiles	
	Bottom (1)	Top (2)	Bottom (3)	Top (4)	Bottom (5)	Top (6)	Bottom (7)	Top (8)
Value Premium	0.0004	0.016	0.006	0.017	− 0.007	0.007	− 0.003	0.006
	(0.007)	(0.005)***	(0.005)	(0.005)***	(0.004)	(0.003)**	(0.003)	(0.003)**
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E	Yes	Yes	Yes	Yes	No	No	No	No
Year F.E	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E	No	No	No	No	Yes	Yes	Yes	Yes
Obs.	2296	2624	3207	3557	2260	2595	3149	3513
R^2	0.258	0.275	0.236	0.223	0.068	0.056	0.042	0.043

Panel B: Sales and net income-related metrics

	Performance Pay				ΔPerformance Pay			
VP based on:	Quintiles		Quartiles		Quintiles		Quartiles	
	Bottom (1)	Top (2)	Bottom (3)	Top (4)	Bottom (5)	Top (6)	Bottom (7)	Top (8)
Value Premium	− 0.005	0.016	0.003	0.016	− 0.009	0.008	− 0.003	0.005
	(0.012)	(0.008)**	(0.009)	(0.006)**	(0.007)	(0.003)**	(0.006)	(0.003)*
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E	Yes	Yes	Yes	Yes	No	No	No	No
Year F.E	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E	No	No	No	No	Yes	Yes	Yes	Yes
Obs.	1294	1413	1717	1904	1273	1398	1691	1880
R^2	0.407	0.489	0.4	0.427	0.112	0.091	0.064	0.069

0.22% (0.17-0.19%). Again, considering that in our sample the fraction of the total compensation tied to accounting metrics of CEOs (Top executives) is on average 1.8% (1.5%), the effect of investor demand is economically significant. Overall, our analysis suggests that boards of directors tend to link executive compensation to performance metrics according to investor demand, and they do so to encourage managers to focus on those metrics with purpose of increasing the current market value of the firm.

In addition, the positive and significant coefficient associated with the variable *Peer Pay* in all of the columns in Panels A and B suggests that peer compensation (in the same industry) has a direct effect on the compensation of individual firms. Thus, these results shed light on the influence of investor preferences and the peers' executive compensation on the individual firm's executive compensation design. Moreover, the coefficient of the variable *Stock Return* is negative and significant. Firms tend to link executive compensation to accounting performance metrics when stock price performance is poor.

Regarding corporate governance metrics, we find that the variables *Power Index, Independent Director Ratio* and the *Entrenchment Index* are statistically significant and have negative and positive signs, respectively. Powerful CEOs tend to have a lower fraction of their compensation tied to accounting metrics. CEOs with higher *Performance Pay* have to work harder (more effort) to achieve the accounting goals. That is because accounting goals are easy to verify, which induces CEOs to increase their efforts. On the other hand, *Independent Director Ratio and Entrenchment Index* (both dummy variables) are proxy variables that capture shareholders' rights.[9] Hence, firms with higher (lower) *Independent Director Ratio (Entrenchment Index)* have a higher fraction of the CEO compensation tied to accounting metrics.

In Table 3 Panel A we consider two subsamples according to the performance of firms associated with the accounting metrics.

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[9] *Entrenchment Index* is inversely related to the strength of shareholder rights.

Table 4

Executive compensation, catering incentives and corporate governance. The table presents the effect of *Value Premium* and corporate governance characteristics on CEO compensation. The dependent variable is *Performance Pay,* which is the fraction of the total compensation tied to a specific accounting metric. Our main independent variable is the *Value Premium (VP),* which captures the investor demand for a specific accounting metric. Panel A shows the results using the eight accounting metrics (Sales, Earnings, Operating income, Cash flows, EBIT, EBITDA, ROE and EPS) and Panel B considers only sales and net income-related accounting metrics (Sales, EPS, Earnings and ROE). The control variables are winsorized at the 1st and 99th percentiles. All regressions include firm and year fixed effects and the standard errors are clustered at firm-year level. See Appendix A for complete variable definitions. For brevity we suppress the constant. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively. Standard errors are in parentheses.

Panel A: Eight metrics

VP based on:	Quintiles (1)	Quartiles (2)	Quintiles (3)	Quartiles (4)	Quintiles (5)	Quartiles (6)	Quintiles (7)	Quartiles (8)
Value Premium (VP)	0.004	0.005	0.004	0.006	0.004	0.005	0.004	0.005
	(0.001)**	(0.002)***	(0.002)***	(0.002)***	(0.002)**	(0.002)**	(0.001)**	(0.002)***
VP x Power Index	−.005	−.006						
	(0.002)***	(0.002)***						
VP x Independent Directors			− 0.002	− 0.001				
			(0.003)	(0.003)				
VP x Entrenchment Index					− 0.0009	− 0.0003		
					(0.003)	(0.003)		
VP x Tenure							− 0.0002	−.0005
							(0.0003)	(0.0003)**
Power Index	−.002	−.002	−.002	−.002	−.002	−.002	−.002	−.002
	(0.0007)***	(0.0007)***	(0.0007)***	(0.0007)***	(0.0007)***	(0.0007)***	(0.0007)***	(0.0007)***
Independent Directors	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.0007)	(0.0007)	(0.0007)*	(0.0007)*	(0.0007)*	(0.0007)*	(0.0007)*	(0.0007)*
Entrenchment Index	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	(0.0009)***	(0.0009)***	(0.0009)***	(0.0009)***	(0.0009)***	(0.0009)***	(0.0009)***	(0.0009)***
Tenure	0.00001	0.000005	0.00001	0.00001	0.00001	0.00001	0.000007	− 0.00002
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Additional Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	20950	20950	20950	20950	20950	20950	20950	20950
R^2	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095

Panel B: Sales and net income-related metrics

VP based on:	Quintiles	Quartiles	Quintiles	Quartiles	Quintiles	Quartiles	Quintiles	Quartiles
Value Premium	0.005	0.007	0.005	0.007	0.007	0.009	0.005	0.007
	(0.002)**	(0.002)***	(0.002)**	(0.002)***	(0.003)**	(0.003)***	(0.002)**	(0.002)***
VP x Power Index	−.006	−.006						
	(0.002)**	(0.002)**						
VP x Independent Directors			−0.00006	0.0003				
			(0.004)	(0.004)				
VP x Entrenchment Index					−0.002	−0.003		
					(0.004)	(0.004)		
VP x Tenure							−.0007	−.0009
							(0.0004)*	(0.0004)**
Power Index	−.003	−.003	−.003	−.003	−.003	−.003	−.003	−.003
	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**
Independent Directors	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003
	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**	(0.001)**
Entrenchment Index	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
	(0.001)**	(0.001)**	(0.001)***	(0.001)***	(0.001)***	(0.001)***	(0.001)**	(0.001)**
Tenure	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Additional Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	10496	10496	10496	10496	10496	10496	10496	10496
R^2	0.183	0.184	0.183	0.183	0.183	0.183	0.183	0.184

Following the methodology to calculate the *Value Premium*, the first (second) subsample contains the firms ranked in the bottom (top) quintile/quartile according to their performance in the accounting metric *k*. If boards of directors tie the compensation of CEOs and top executives according to performance-related investor demand in the previous year, we would expect the performance pay sensitivity to be higher for managers who work in firms ranked in the top quintile/quartile. In addition, we use the dependent variable (*Performance Pay*) in level and first differences. Our results suggest that firms in the top quintile face a higher sensitivity to investor demand. When firms are top-ranked according to accounting performance we find a statistically significant increase in performance pay when the *Value Premium* increases in the previous year (columns (2), (4), (6) and (8)). Specifically, in columns (6)

Table 5

Robustness test. The table presents the results of the effect of *Value Premium* on executive compensation, which are robust to the inclusion of firm-year fixed effects. The dependent variable is *Performance Pay,* which is the fraction of the total compensation tied to a specific accounting metric. Our main independent variable is the *Value Premium (VP),* which captures investor demand for a specific accounting metric. Moreover, we have two samples: (1) CEO compensation and (2) Top executive compensation. Panel A shows the results using the eight accounting metrics (EPS, Sales, Operating Income, Earnings, EBITDA, Cash flow, ROE and EBIT) and Panel B considers only sales and net income-related accounting metrics (Sales, EPS, Earnings and ROE). The control variables are winsorized at the 1st and 99th percentiles. Standard errors are clustered at firm level. See Appendix A for complete variable definitions. For brevity we suppress the constant. Statistical significance at the 10%, 5% and 1% levels is denoted by *, ** and ***, respectively. Standard errors are in parentheses.

Panel A: Eight metrics

	CEO		Top executives	
VP based on:	Quintiles (1)	Quartiles (2)	Quintiles (3)	Quartiles (4)
Value Premium	0.005	0.007	0.005	0.006
	(0.003)*	(0.003)**	(0.002)**	(0.002)***
Peer pay	0.216	0.215	0.197	0.196
	(0.032)***	(0.032)***	(0.031)***	(0.031)***
Industry Performance	0.0005	0.0004	0.0006	0.0005
	(0.0008)	(0.0008)	(0.0007)	(0.0007)
Firm-Year FE	Yes	Yes	Yes	Yes
Obs.	20950	20950	20950	20950
R^2	0.133	0.134	0.134	0.135

Panel B: Sales and net income-related metrics

	CEO		Top executives	
VP based on:	Quintiles	Quartiles	Quintiles	Quartiles
Value Premium	0.007	0.010	0.006	0.009
	(0.005)	(0.005)**	(0.004)*	(0.004)**
Peer pay	0.257	0.255	0.222	0.220
	(0.046)***	(0.046)***	(0.044)***	(0.044)***
Industry Performance	0.0007	0.0005	0.001	0.0008
	(0.001)	(0.001)	(0.001)	(0.001)
Firm-Year FE	Yes	Yes	Yes	Yes
Obs.	10496	10496	10496	10496
R^2	0.263	0.263	0.257	0.258

and (8) we find an increase in the change of *Performance Pay* (*ΔPerformance Pay*).[10] Overall, these results help us to support our hypothesis that boards of directors are catering to investor demand.[11]

We perform additional cross-sectional tests related to corporate governance characteristics. Specifically, we look at the interaction between our main variable, *Value Premium,* and the *Power Index, Independent Directors* and *Entrenchment Index* variables. Given that firms cater to investor demand, an increase in *Value Premium* increases the pay-for-performance associated with accounting goals (*Performance Pay*). However, we expect powerful CEOs to avoid that situation having *Performance Pay* less sensitive to investor demand for accounting metrics. On the flip side, firms with stronger shareholders rights increase the pay for performance associated with accounting metrics that investors are putting a premium. Therefore, we expect the coefficient associated with the interaction term *Value Premium x Power Index (Value Premium x Independent Director and Value Premium x Entrenchment Index)* to be negative (positive).

Table 4 provides the results of the interaction between *Value Premium* and the corporate governance variables. We only find the expected results for the interaction term *Value Premium x Power Index,* the coefficient is negative and statistically significant (Columns (1)–(2)). Hence, the effect of investor demand for specific accounting metrics is less pronounced for powerful CEOs.

As an additional result, we test whether CEO tenure reduces the sensitivity to investor demand. We expect CEOs with longer tenure to have more influence on boards' decisions and are less affected by investor preferences. In columns (7) and (8), the interaction term *Value Premium x Tenure* is negative, we find evidence that CEO tenure reduces the effect of *Value Premium* on pay for performance. However, we need to interpret the results with caution because the coefficients associated with *Tenure* are not statistically significant in our baseline regressions (Table 2).

Finally, for robustness we change the specification of the Eq. (1). Instead of using firm characteristics contained in the vector Z_{it},

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[10] Our results are similar if we only consider sales and net income-related metrics; see Panel B.
[11] We thank the anonymous referee for suggesting that we use *ΔPerformance Pay* and the two subsamples to support our results.

we exploit the fact that we have an extra dimension in our panel data, which is the accounting metric *k*, and we include firm-year fixed effects. Doing so, we control for any time-varying firm characteristic. In other words, firm-year fixed effects absorb any variation attributable to constant characteristics within firm-years. This specification is more demanding than just controlling for observed characteristics (Z_{it}). However, we can only estimate the parameters that have variation within firm-years such as *Value Premium, Peer Pay* and *Industry Performance*. Additionally, we cluster at firm level.[12]

In Table 5 we show that all the coefficients associated with *Value Premium* are larger than those found in Table 2, for both subsamples (CEO and Top Executives), which also implies higher economic magnitudes. However, given that this specification is more demanding than our baseline regression, we find weak evidence for the case of quintiles. Focusing on quartiles, where we find a positive and statistically significant coefficient, an increase in one standard deviation of *Value Premium* increases the fraction of CEO total compensation tied to accounting-based goals by 0.21% (0.32%), when we consider the eight metrics (sales and net income-related metrics). Overall, our results are robust to different specifications and we find the strongest effect using the *Value Premium* based on quartiles.

5. Conclusions

We use a comprehensive dataset containing information on the accounting performance goals employed by firms to provide evidence that firms design executive compensation to cater to investor demand. We show that boards of directors tie the compensation of their executives to accounting metrics preferred by investors. We create the *Value Premium* variable, which is a proxy for investor preferences, to show that an increase in the *Value Premium* in the previous year has a positive effect on the executive performance pay associated with specific accounting metrics in the current year. Finally, given the new SEC rules issued after 2006, there are several open questions regarding executive contracts. This study contributes to the discussion of how firms design compensation plans for their executives. However, further research is necessary to understand better how the characteristics of compensation contracts impact firm performance in the short- and long-run.

Appendix A. Variable definitions

- Cash Flows: Operating Income minus Accruals ($\Delta CA - \Delta CashandEq. - \Delta CL - \Delta Short - Term\ Debt - DP$). Cash Flow/TA: Cash flows to total assets.
- Earnings: Net income.
- EBIT: Earnings before interest and taxes.
- EBITDA: Earnings before interest, taxes, depreciation and amortization.
- Entrenchment index is the Bebchuk et al. (2009) entrenchment index.
- EPS: Net income divided by the total number of shares outstanding.
- Independent Directors (percentage): fraction of independent directors on the firm's board.
- Industry Performance: Average performance (growth rates) of the firm's peers in the same industry (three-digit SIC code) with respect to the eight metrics (Sales growth, Earnings growth, Operating income growth, Cash flows growth, EBIT growth, EBITDA growth, ROE growth, and EPS growth).
- Market-to-Book: Market value of assets (market value of common shares plus preferred stock liquidating value plus short and long debt minus deferred taxes and investment tax credit) divided by the total book asset value.
- Operating Income: Gross profit less operating expenses.
- Peer Pay: Peer executive compensation linked to the eight performance metrics in the same three-digit SIC code industry classification.
- *Performance Pay*: Vector that contains the fraction of total compensation (which is the sum of annual salary, bonus, present value of stock awards, present value of stock option awards, other annual compensation, long-term incentive payouts, and other cash payouts) linked to the accounting performance metrics.
- Power Index (Morse et al., 2011): Variable with a range from 1 to 3 depending on the number of titles that a CEO holds in the firm. If the CEO is the president of the firm and the chairman of the board the index is equal to 3. If the CEO is only the chairman of the board the index is equal to 2. Finally, if the CEO is not the chairman of the board the index is equal to 1.
- ROE: Net income divided by common equity.
- Sales Growth: Change in sales between the previous year and the current year divided by the sales of previous year.
- Size: Natural logarithm of total assets.
- Spread: Average daily stock bid-ask spread.
- Stock Return: Annual stock return.
- *Value Premium*: Natural logarithmic difference of the average market-to-book ratios between firms with higher accounting performance (top of the distribution) versus firms with lower accounting performance (bottom of the distribution). For each year and two-digit SIC code industry classification we rank the firms based on the firm performance with respect to each of the eight accounting metrics.

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[12] We obtain similar results if we run the same specification but clustering at accounting metric (*k*)-industry (*j*)-year (*t*) level.

Supplementary material

Supplementary material associated with this article can be found, in the online version, at 10.1016/j.frl.2018.01.008.

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