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Does obfuscating excessive CEO pay work?

The influence of remuneration report readability on say-on-pay votes

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This paper assesses whether reducing ‘readability’ is an effective obfuscation strategy for influencing the level of shareholder say-on-pay voting dissent in firms with excessive CEO pay. Based on a sample of UK-listed firms, our results indicate that in cases of excessive CEO pay, a less readable remuneration report is associated with reduced say-on-pay voting dissent. However, the effect of the obfuscation strategy diminishes as institutional ownership increases. Using obscurely written remuneration reports may even backfire (i.e. associated with increased voting dissent) when a firm’s majority shares are held by institutional investors. Our results are robust to controlling for compensation contract complexity as well as other alternative explanations. The results are also robust to various controls for endogeneity including a two-stage instrumental variable approach and propensity-score matching. Our findings offer regulatory implications that regulators could minimize the use of ‘obfuscation’ in pay-related disclosures by prescribing how information is to be presented.

Keywords: disclosure; readability; say on pay; shareholder votes

1. Introduction

‘Say on pay’ is one of the most influential legislation on corporate governance and shareholder activism in the past decade as it gives shareholders an opportunity to express their support for, or opposition against, CEO pay. Regulators in various countries introduced say on pay in response to public calls to curb what is perceived to be excessive CEO compensation (Conyon and Sadler 2010, Larcker et al. 2011).¹ Evidence suggests that a high level of voting dissent is frequently accompanied by considerable negative publicity. Ignoring shareholders’ discontent regarding

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CEO pay is thus potentially costly to boards of directors, as it is likely to subject the quality of the board's supervision to public criticism and directly undermine the directors' reputation in the labor market (Ertimur et al. 2010, Krause et al. 2014).² Directors are naturally unwilling to risk such damage to their reputation, which explains why they are responsive to the mere threat of voting dissent (Ertimur et al. 2010, Ferri and Maber 2013).

One option for mitigating potential damage *ex ante* is to employ a strategy that is often termed 'obfuscation' by those examining the relationship between the readability of corporate disclosures and firm outcomes (Merkl-Davies and Brennan 2007, 2011, Li 2008, Biddle et al. 2009, Libby and Emett 2014, Loughran and McDonald 2014, Li and Zhang 2015). Indeed, a recent study of US-listed firms finds that the higher a CEO's excessive pay, the less readable the related compensation disclosures become (Laksmana et al. 2012). Moreover, several studies demonstrate that the readability of corporate disclosures affects shareholders' evaluations of a firm's financial performance and their investment decisions (Miller 2010, Lee 2012, Rennekamp 2012, Lawrence 2013, Libby and Emett 2014, Tan et al. 2014, Bushee et al. 2016). Drawing on this recent research and using a sample of UK-listed firms, we assess whether reducing 'readability' of compensation disclosures is an effective obfuscation strategy by the board of directors to influence the level of dissent on say-on-pay votes in firms with excessive CEO pay.

The UK is a useful setting for studying obfuscation in the context of say on pay for three important reasons. First, according to regulations of the Directors' Remuneration Report (DRR) in the UK, the board of directors is exclusively responsible for preparing the remuneration report. In contrast to the US where compensation reports are produced principally by top management, the DRR is *not* subject to the CEO or CFO certification in the UK (Davis 2007). Our study aims to show that board directors have an incentive to obfuscate excessive CEO pay by reducing the readability of a remuneration report. As such our study complements prior work that primarily focused on managerial incentives and management writing styles (see, e.g. Laksmana et al. 2012). Second, the UK DRR Regulations require that remuneration reports should include information on a firm's philosophy on executives' compensation and the details of individual executives' compensation packages. Although the content of remuneration reports is regulated, the DRR Regulations do not address how the information should be presented. Unlike the US, there is no 'plain English' rule that requires information in reports to be disclosed in a readable fashion in the UK. Directors thus have considerable discretion to vary the level of readability in a remuneration report, allowing them to 'obfuscate' excessive CEO pay. Third, relative to the US, the UK setting provides us with a longer time series of data on say on pay as well as detailed information on executive compensation contracts.³

Shareholders in the UK learn about a firm's CEO compensation policy and details from the DRR in the firm's annual report. The fact that CEO compensation packages are, almost without exception, multifaceted and complicated (Buck et al. 2003) means that the information included in a DRR is complex and difficult to process. The judgment and decision-making literature suggests that when information is complex, investors become susceptible to the way in which information is presented (Tversky and Kahneman 1974, Libby et al. 2002, Hirschleifer and Teoh 2003, Bloomfield et al. 2015). Both experimental and archival studies show that linguistic complexity affects investors' response to 'news' contained in financial disclosures (Merkl-Davies and Brennan 2007, 2011, Miller 2010, Lee 2012, Rennekamp 2012, Lawrence 2013, Libby and Emett 2014, Tan et al. 2014, De Franco et al. 2015, Winchel 2015, Bushee et al. 2016). Prior studies suggest that 'bad news' (e.g. losses) written in less readable language is associated with reduced investor reactions. In the context of say on pay, readability may become increasingly important when shareholders are concerned that CEO pay is excessive. Following this line of literature, one will expect lower readability to affect shareholder reactions to information contained in remuneration reports, as an obscurely written remuneration report is likely to distract readers

and affect their understanding (Courtis 2004).⁴ Specifically, the use of less readable language in a DRR may reduce the degree of shareholder voting dissent in firms with excessive CEO pay.

However, research based on the incomplete revelation hypothesis (Bloomfield 2002, Li 2008, Miller 2010, Lehavvy et al. 2011, Lee 2012) provides an alternative view. It argues that the potentially high cost of processing less readable information may reduce shareholders' willingness to acquire information, even when it is relevant to their decision-making. As such, one would expect that more difficult-to-read remuneration reports will be discarded and thus not affect shareholders' voting behavior at say on pay. A third stream of literature indicates that some shareholders, such as more sophisticated investors, can see through the self-serving behavior on the part of preparers and consider firm disclosures with low readability a warning sign, and thus react negatively to such disclosures (Tan et al. 2014). In this case, more difficult-to-read remuneration reports would backfire and increase shareholder voting dissent in firms with excessive CEO pay. In light of these alternative views, whether more difficult-to-read remuneration reports lead to higher or lower voting dissent is an empirical question.

Tan et al. (2014) suggest that investors' reaction to the ways in which corporate disclosures are presented depends on the sophistication of investors. The use of heuristics tends to describe less sophisticated investors' information-processing behavior. Sophisticated investors, however, tend to process information in a more analytical way and may therefore be able to see through the strategically chosen form of presentation. Therefore, we expect their voting behavior to remain unaffected or less likely to be affected by the report's readability. Moreover, sophisticated investors are sensitive to preparers' reporting incentives and may consider unreadable remuneration reports a warning sign (Rennekamp 2012, Tan et al. 2014). In this case, more difficult-to-read remuneration reports would backfire.

Our sample consists of UK-listed firms during the fiscal years 2003–2009.⁵ We find that in cases of excessive CEO pay, a less readable remuneration report is associated with a lower degree of say-on-pay voting dissent. In other words, we find evidence that obfuscation is associated with reduced voting dissent. Furthermore, we find that the effectiveness of obfuscation decreases with an increase in investor sophistication; using obscurely written reports may even backfire when institutional investors own no less than 50% of outstanding shares of a firm.

Our study makes several contributions to the literature. First, we contribute to the growing body of literature on say on pay. By drawing on recent studies demonstrating that the readability of corporate disclosures affects shareholders' reactions (Miller 2010, Lee 2012, Rennekamp 2012, Lawrence 2013, Libby and Emett 2014, Tan et al. 2014, Bushee et al. 2016), we assess whether manipulating 'readability' is an effective obfuscation strategy that influences the level of dissent on say-on-pay votes in firms with excessive CEO pay. Although prior evidence suggests that boards of directors have incentives to obfuscate excessive pay in compensation disclosures (Mangen and Magnan 2012, Abernethy et al. 2015), we know relatively little about whether a board's reporting strategies actually influence shareholders' perceptions of the legitimacy of CEO pay and, ultimately, their voting behavior. Given the importance of say on pay in empowering shareholders to determine CEO compensation arrangements, we thus contribute to the ongoing debate on the effectiveness of say on pay, as well as the literature on shareholder activism in general (Ertimur et al. 2011, Larcker et al. 2011, Ertimur et al. 2013, Ferri and Maber 2013, Krause et al. 2014).

Second, the current study also contributes to the literature on textual analysis of corporate disclosures. We are among the first to provide evidence on the role of the readability of compensation-related disclosures in say-on-pay settings. In doing so, we add to the limited body of research on how corporate boards may influence voting outcomes (Dimitrov and Jain 2011, Ferri and Oesch 2016). We also contribute to research that has shown that the form of presentation used in corporate disclosures influences shareholders' evaluations of financial performance, their

judgments of stock valuation, and their trading behavior (Miller 2010, Lee 2012, Lawrence 2013, Bushee et al. 2016). These prior studies focus on shareholders' 'exit' behavior. In contrast, by analyzing the effects of remuneration report readability on say-on-pay voting behavior at general meetings, we investigate shareholder 'voice' (Hirschman 1970, Hillman et al. 2011), a less studied aspect of shareholder behavior.

Our findings also have implications for regulators concerned with the growth in CEO compensation and its impact on shareholder value. When the UK government introduced say on pay, one of its primary goals was to ensure that shareholders had sufficient information to assess the 'appropriateness' of CEO compensation arrangements (Conyon and Sadler 2010, Alissa 2015). While boards may now provide shareholders with sufficient compensation-related information, this does not mean that the information in these disclosures cannot be used to 'manipulate' say-on-pay voting outcomes, particularly in the absence of significant institutional ownership. Our paper provides evidence that boards can undermine regulators' efforts to make compensation arrangements more transparent by orchestrating readability. Our findings suggest that regulators could minimize the use of 'obfuscation' in compensation disclosures by prescribing how information should be presented. As such, we expect our findings to be of particular interest to regulators in other market economies that share similar concerns regarding how to improve the design and disclosure of CEO compensation.

The remainder of the paper is organized as follows. Section 2 provides the institutional background of say on pay in the UK, reviews prior literature, and develops our hypotheses. Section 3 discusses the research design and sample selection procedure. We present descriptive statistics and our primary empirical results in Section 4, and robustness tests in Section 5. Section 6 concludes.

2. Institutional background, literature review, and hypotheses development

2.1. Institutional background

The DRR Regulations, implemented in 2002, contain provisions regarding the remuneration report, which is an important section in a firm's annual report. The Regulations stipulate that non-executive directors (hereafter, directors) are responsible for preparing the remuneration report. Indeed, Chahed and Goh (2012) note that directors basically determine the content and wording of the remuneration report, whereas managers, in contrast to the situation in the US, do not have much influence. Following the DRR Regulations, remuneration reports should present information on the firm's pay philosophy and the details of each executive's current pay package. While the basic content of remuneration reports is regulated, the DRR Regulations do not address how the information should be presented. That is, in the UK, *unlike* the US, there is no 'plain English' rule that requires information in the remuneration report to be disclosed in a readable fashion. Hence, directors have considerable discretion to vary the level of readability in the remuneration report and thereby make excessive CEO pay less salient.

The DRR Regulations also introduced the say-on-pay vote in the UK. The say-on-pay vote, which is a mandatory item on the agenda of the annual general meeting every year, enables shareholders to cast their votes on remuneration arrangements of the company's executive directors (i.e. the vote involves the CEO's as well as other executive directors' remuneration arrangements).⁶ During our test period, a key feature of say on pay in the UK is that the vote is non-binding or advisory. This implies that even if the majority (i.e. more than 50%) of the shareholders reject the remuneration arrangements, the vote would not legally affect existing remuneration arrangements. An important source for shareholders to decide how to vote on the say-on-pay resolution is the firm's remuneration report that is typically distributed two to three months prior to

the annual general meeting. Moreover, during the annual general meeting, shareholders have the possibility to ask questions (Apostolides 2007). Apart from the say-on-pay resolution shareholders also vote on other resolutions (Conyon and Sadler 2010).⁷ The notice of the annual general meeting, which is distributed prior to the meeting, includes the agenda which provides information on the sequence in which resolutions will be passed, as well as some explanatory information for each resolution.

2.2. Theoretical background

In keeping with agency theory, executive pay can help align the interests of the CEO and shareholders if the board designs a pay package that links pay and performance in an appropriate fashion. However, recent meta-analytic evidence suggests that boards often agree to remuneration contracts that are favorable to CEOs at the expense of shareholders (van Essen et al. 2015). This evidence, based on managerial power theory, supports the view that powerful CEOs can influence boards' decisions (Bebchuk and Fried 2004, Morse et al. 2011, Abernethy et al. 2015, Shin 2016). CEO power may come from several sources, such as the CEO's formal position (the CEO usually sits on the board and may sit on multiple board committees) and compromised board directors as directors tend to accommodate the CEO, possibly as a result of collegiality, norms of reciprocity or a natural desire to avoid conflicts (Shin 2016). Thus, a CEO could be awarded excessive pay (Core et al. 2008).

Given that excessive pay is awarded to the CEO, directors may want to make this less salient in the firm's annual report. One reason for this may be that the directors' ability to discipline managers and represent shareholders' interests is likely to be questioned publicly when they overpay the CEO. Ultimately, this negative publicity will harm their reputation as representatives for shareholders' best interest and consequently their value in the labor market (Bebchuk and Fried 2004, Ertimur et al. 2010, Krause et al. 2014). Moreover, directors are likely concerned about potential litigation, if they fail to set appropriate compensation. One potential way for directors to 'cover up' a CEO who has been paid excessively is by using their discretion over reporting in the remuneration report; for instance, by varying its readability (Li 2008, Laksmana et al. 2012). This conjecture is in line with the managerial power view, which suggests that 'the main costs to directors of adopting compensation arrangements that favor managers [...] depend mainly not on how costly the arrangements actually are to shareholders, but on how the arrangements are *perceived*' (Bebchuk and Fried 2004, p. 67, italics in original). Hence, given the importance of shareholders' perceptions, directors may attempt to limit shareholder dissatisfaction and thus protect their reputation by obscuring or hiding excessive pay (Bebchuk and Fried 2004).⁸

2.3. Related literature on say on pay

Whilst say on pay has been embraced by regulators as a value-enhancing governance mechanism, the merits of say on pay have been subject to heated debate. Advocates of say on pay emphasize that giving shareholders a vote on CEO compensation helps constrain 'unbridled' growth in CEO pay. They argue that empowering shareholders to determine CEO compensation arrangements may help boards in their negotiations with CEOs and reduce the likelihood of the CEO capturing the pay-setting process and extracting 'rents' from the firm (Cai and Walking 2011, Ferri and Maber 2013). By contrast, opponents of say on pay claim that shareholder voting does not contribute to effective oversight of CEO compensation, because boards of directors have various incentives to support pay arrangements that appear to reflect shareholders' interests but actually increase their CEO's personal wealth, even at the cost of shareholders (Mangen and Magnan

2012). The potential threat to the directors' professional reputation following say-on-pay voting dissent might prompt a board to adopt an obfuscating strategy, so as to justify the legitimacy of current pay practices. From this perspective, say on pay might not act as the constraint initially intended by regulators and it can even contribute to sub-optimal or inefficient compensation contracts (Bainbridge 2008, Larcker et al. 2011, Armstrong et al. 2013).

The rapidly growing literature on say on pay echoes these different opinions and finds mixed evidence (Ferri 2015). One strand of the literature focuses on the effects of the introduction of say-on-pay regulation on firm value and reports inconclusive results (Cai and Walking 2011, Larcker et al. 2011, Ferri and Maber 2013). A second strand of the literature investigates the effectiveness of say on pay in improving subsequent contract efficiency. Some studies find little or no evidence that say on pay influences CEO compensation contracts (Conyon and Sadler 2010, Armstrong et al. 2013). Others, however, show that say-on-pay voting outcomes lead to changes in contract design in ways that are viewed as more 'shareholder friendly' (Carter and Zamora 2009, Ferri and Maber 2013, Lo et al. 2014).

A third strand of the literature examines whether and how say-on-pay voting dissent is determined by the level and structure of CEO compensation (Carter and Zamora 2009, Conyon and Sadler 2010, Armstrong et al. 2013, Ferri and Maber 2013, Lo et al. 2014, Krause et al. 2014). Armstrong et al. (2013) find that 'excess pay' is associated with higher levels of voting dissent. Using different designs, both Carter and Zamora (2009) and Krause et al. (2014) demonstrate that the composition of executive pay and its association with firm performance affect shareholders' voting behavior. We extend the say-on-pay literature by examining, in cases of excessive CEO pay, whether 'obfuscation' strategy used in compensation disclosures can influence shareholders' perceptions of CEO pay and ultimately affect their voting behavior.

2.4. Hypotheses development

Previous studies suggest that shareholders do not necessarily oppose high CEO pay, so long as the level of pay reflects the quality or economic performance of the CEO. However, shareholders are dissatisfied when they believe or perceive that, given the underlying economic performance, high CEO pay is unjustified or 'excessive' (Ferri and Maber 2013, Krause et al. 2014). It is not uncommon for shareholders to resort to remuneration reports for detailed information regarding CEO pay arrangements when they have doubts about the 'appropriateness' of the CEO compensation. This enables them to 'learn all relevant information, including the facts and circumstances surrounding the process for determining executive remuneration, [and thus] to reach their own conclusions about the appropriateness of the executive reward system and the relationship between pay and performance' (Laksmana et al. 2012, p. 188). However, CEO compensation packages are almost without exception complex (Buck et al. 2003), so making an informed judgment to facilitate say-on-pay voting requires significant time and effort on the part of shareholders. We know from the judgment and decision-making literature that people often rely on heuristics or 'rules of thumb' to make decisions, especially when processing information demands a considerable amount of time and effort (Tversky and Kahneman 1974, Libby et al. 2002, Hirschleifer and Teoh 2003). Although heuristic shortcuts enable shareholders to solve complex problems by reducing them to simpler judgmental operations, reliance on heuristics also makes shareholders susceptible to the way in which information is presented (Rennekamp 2012, Tan et al. 2014). Preparers of corporate disclosures are possibly aware of this as research shows that they use more complex (i.e. less readable) language in an attempt to obfuscate the true nature of corporate outcomes (Courtis 1998, 2004, Merkl-Davies and Brennan 2007, 2011, Li 2008, Laksmana et al. 2012, Schleicher 2012, Li and Zhang 2015).

When shareholders make say-on-pay voting decisions, they are likely to be affected unknowingly by the way in which information is presented in remuneration reports, given the combination of their reliance on heuristics for judgment and the subtle use of obscure language in the reports.⁹ Specifically, if information about the CEO pay package is written in a less readable form, shareholders might become confused or distracted, which could reduce the likelihood that shareholders form the perception that pay and performance are disconnected and the pay arrangements are inappropriate. As a result, fewer shareholders become discontented with these pay arrangements and thus voting dissent is lower. In other words, when CEO pay is excessive, shareholders will vote less aggressively against the say-on-pay resolution when the remuneration report is less readable.¹⁰

Another perspective pertaining to how the readability of remuneration reports might affect shareholders' impressions of executive remuneration is the incomplete revelation hypothesis (e.g. Bloomfield 2002, 2008, Li 2008), which suggests that because of improved comprehension (Tan et al. 2014), information presented in an easily processed form gets absorbed more easily than information in a less readable form (Bloomfield 2002, Li 2008, Miller 2010, Leheavy et al. 2011, Lee 2012). The potentially high cost of processing less readable information (i.e. cognitive effort and time) may reduce shareholders' willingness to acquire information even if it is relevant to their decision-making (Bloomfield 2002). Moreover, recent studies in psychology and accounting document that readability influences readers' judgments through mechanisms of processing fluency, even if shareholders' willingness or ability to acquire information from complex and lengthy disclosures are not affected (Shah and Oppenheimer 2007, Rennekamp 2012). Processing fluency involves a process in which people place more weight on information that feels easy to process (Shah and Oppenheimer 2007); this is because they believe they can rely more on this information (Rennekamp 2012). In essence, both the incomplete revelation hypothesis and processing fluency suggest that when shareholders face a less readable remuneration report they choose not to process the information, because reading and comprehending the information is too costly or seems less reliable. Following this line of reasoning, one would argue that more difficult-to-read remuneration reports do not affect voting dissent on the say-on-pay resolution in overpaying firms.

A third perspective indicates that some shareholders are sensitive to directors' reporting incentives and consider unreadable remuneration reports a warning sign (Rennekamp 2012, Tan et al. 2014). It is possible that obfuscating excessive CEO pay may even backfire, because 'low readability obfuscates the information conveyed in the disclosure and leads to more suspicion about the credibility of the disclosed information' (Tan et al. 2014, p. 281). In this case, more difficult-to-read remuneration reports would backfire and trigger even worse say-on-pay voting outcomes.

In light of these alternative views, we state our first hypothesis in null form as follows:

H1: There is no association between remuneration report readability and voting dissent on say-on-pay resolutions in cases of excessive CEO pay.

The first hypothesis addresses whether remuneration report readability, on average, is associated with voting dissent on the say-on-pay resolution in cases of excessive CEO pay. Our second hypothesis pertains to whether this association is affected by the degree of investor sophistication. Prior studies in accounting and finance show that less sophisticated investors process information differently from the more sophisticated investors, and that they differ in terms of vulnerability to 'distortions' in disclosures (e.g. Bloomfield 2002, Hirshleifer and Teoh 2003, Lawrence 2013). For instance, both experimental and archival studies document that the presence of pro forma (i.e. non-GAAP) earnings numbers in press releases affects

judgments and decisions of less sophisticated investors, but not those of sophisticated investors (e.g. Frederickson and Miller 2004, Elliott 2006, Allee et al. 2007). In a similar vein, several recent studies demonstrate that, compared to the more sophisticated investors, less sophisticated investors are affected to a greater degree by how information is presented (e.g. Henry 2008, Miller 2010, Blau et al. 2015). For example, Miller (2010) find that the effects of the use of complex (i.e. less readable) language in company filings on trading is particularly pronounced for the less sophisticated investors, while Blau et al. (2015) document a similar effect for linguistic tone.¹¹

There are various reasons why more and less sophisticated investors may react differently to the ways in which corporate disclosures are presented. The use of heuristics tends to describe less sophisticated investors' information-processing behavior. Sophisticated investors, however, tend to process information in a more analytical way and may therefore be able to see through the strategically chosen form of presentation. Hence, it is possible that sophisticated investors are able to recognize pay packages that reward CEOs excessively, notwithstanding the use of more obscure language in the remuneration report. As such, their voting behavior remains unaffected or less affected by the report's readability. Moreover, sophisticated shareholders may stay vigilant to directors' reporting incentives and consider unreadable remuneration reports a warning sign (Rennekamp 2012, Tan et al. 2014). In this case, more difficult-to-read remuneration reports would backfire. Taken together, these arguments lead to the following hypotheses:

H2a: In cases of excessive CEO pay, remuneration reports with lower levels of readability are associated with lower levels of voting dissent on say-on-pay resolutions when shareholder sophistication is low rather than high.

H2b: In cases of excessive CEO pay, remuneration reports with lower levels of readability are associated with higher levels of voting dissent on say-on-pay resolutions when shareholder sophistication is high rather than low.

3. Research design

3.1. Sample selection and data sources

Our initial sample comprises the FTSE 350 firms, based on their market capitalization at the end of 2006. Consistent with prior research, we exclude firms in the financial and utility sectors due to their unique regulatory status and different compensation arrangements (Yermack 1996, Cadman et al. 2010b). In addition to the top 350 firms, we randomly select 40 firms from the FTSE Small-Cap.¹² Our investigation period covers the fiscal years 2003–2009, the early years after the implementation of the say-on-pay resolution in the UK.

Our data comes from several sources. Consistent with previous say-on-pay studies (Conyon and Sadler 2010, Ferri and Maber 2013), information on voting outcomes is retrieved from Manifest. Like Ferri and Maber (2013), while data on CEO pay, equity holdings, board structure, and other corporate governance features are obtained from BoardEx. We supplement these with manually collected data from firms' remuneration reports on performance targets, pay provisions, compensation consultants, and remuneration committees. Accounting and capital market information is obtained from Compustat Global. We obtain information on ownership concentration from Orbis, with the missing values manually collected from annual reports. Newspaper articles are obtained from LexisNexis Academic.

The final sample consists of 1426 firm-year observations from 247 firms between 2003 and 2009. Table 1 contains the sample selection procedure and the distribution of observations over the sampled years.

Table 1. Sample selection procedure.

Procedure	Number of firms
FTSE 350 and 40 SmallCap	390
minus: firms in financial or public sectors (with standard industrial classification codes of 4900–4999 or 6000–6999)	(111)
minus: firms without sufficient financial information or information on CEO compensation, CEO power, board features, or compensation consultant	(29)
minus: firms with insufficient say-on-pay voting information	(3)
Final sample:	247 firms 1426 firm-year observations
in which	
2003	176
2004	185
2005	201
2006	212
2007	218
2008	228
2009	206

3.2. Variable measurement

3.2.1. Voting dissent

Consistent with prior research, we measure voting dissent (*DISSENT*) as the non-transformed fraction of shareholders abstaining from voting or voting against a say-on-pay resolution (e.g. Conyon and Sadler 2010, Ferri and Maber 2013).¹³

3.2.2. Remuneration report readability

For each of the 1426 observations, we obtain the remuneration report from the firm's annual report. The Greenbury Report (1995) provides a template for UK-listed firms to follow when presenting managerial compensation. When extracting DRRs, we deliberately leave out as much template-related content (e.g. tables, figures, and graphs) as possible, so as to tease out the effects of the non-strategic components on remuneration report readability (Li 2008, Leheavy et al. 2011, Laksmana et al. 2012). We measure the readability of remuneration reports using a factor score based on the Fog index and report length (Li 2008, Leheavy et al. 2011). The Fog index estimates the years of formal education needed to understand the text on a first reading, which is determined by the average number of words per sentence and the percentage of complex words (i.e. with three or more syllables) in a document. A higher score on the Fog index indicates a less readable text. Report length provides a simple proxy for readability (Loughran and McDonald 2014). We aggregate the Fog index and length (i.e. the natural logarithm of the number of words) into one composite measure of readability using principal component analysis. As expected, the two items load positively on one factor, which we label *OBFUSCATE*. There is a lack of consensus regarding the most appropriate measure of readability (Li 2008, Leheavy et al. 2011, Loughran and McDonald 2014). By combining the Fog index and length into one readability measure, we intend to capture the two approaches that might be used separately or concurrently to manipulate readability.¹⁴ Our qualitative results are not affected when using the Fog index and report length separately.

3.2.3. Excessive CEO pay

Similar to previous studies, we measure excessive CEO pay using the residuals from a model in which we regress actual CEO pay on several economic determinants (Core and Guay 1999, Core et al. 2008).¹⁵ *OVERPAY* measures the excessive part of a CEO's actual compensation, above the expected compensation level (i.e. a positive residual). In the following analysis, we split our sample into overpay and underpay sub-samples.¹⁶

3.2.4. Shareholder sophistication

Similar to previous studies (Callen et al. 2005, Miller 2010, Krause et al. 2014), we measure shareholder sophistication by institutional ownership (*INSTHOLD*). Specifically, *INSTHOLD* is the percentage of shares held by institutional owners at the end of fiscal year t , with higher values indicating a greater degree of sophistication among the firm's shareholders.¹⁷

3.3. Empirical model

We argue that obfuscation is likely to appear in cases of overpayment, on the grounds that when shareholders suspect that a CEO's total pay is not justified by the economic determinants (i.e. the CEO is overpaid), they will resort to reading remuneration reports for more information. To test our first hypothesis, we split our sample into *overpay* and *underpay* firms and test the relation between *DISSENT* and *OBFUSCATE* using the following empirical model in each sub-sample:

$$DISSENT_{i,t} = c + \beta_1 OBFUSCATE_{i,t} + \sum \beta_k CONTROLS_{k,i,t} + \varepsilon_{i,t}, \quad (1)$$

where suppressing subscripts, *CONTROLS* is a vector of control variables, and ε is the error term. All variables are defined in Appendix 2. Our variable of interest is *OBFUSCATE* in Model 1 and a significantly negative sign on β_1 in the overpay sample will suggest that a less readable remuneration report is associated with a lower level of voting dissent in cases of overpayment. We do not expect to observe a significant β_1 in the underpay sample.

To test our second hypothesis we explore the cross-sectional variation in the association between DRR readability and say-on-pay voting dissent, using the following model in the overpay sample.

$$DISSENT_{i,t} = c + \beta_1 OBFUSCATE_{i,t} + \beta_2 INSTHOLD_{i,t} + \beta_3 OBFUSCATE_{i,t} * INSTHOLD_{i,t} + \sum \beta_k CONTROLS_{k,i,t} + \varepsilon_{i,t}. \quad (2)$$

Our test variable is the interaction *OBFUSCATE* * *INSTHOLD* and we expect β_3 to be positive and significant. Further, we split the overpay sample into two sub-samples based on whether the majority (i.e. $\geq 50\%$) of shares are held by institutional shareholders; we test Model 1 in each sub-sample and we expect β_1 to be significant and positive (negative) for firms with institutional ownership accounting for no less than 50% (less than 50%) of shares.

The language used in a remuneration report might not be exogenous as various factors can influence remuneration report readability and the same factors may also affect say-on-pay voting outcomes. For example, it is not unlikely that a more sophisticated compensation plan is associated with a higher Fog index and a longer report. If more sophisticated plans are those designed to be more shareholder friendly,¹⁸ then one can expect more sophisticated plans to receive lower voting dissent. To account for this alternative explanation, we include in Models

1 and 2 a host of proxies for the complexity/sophistication of compensation plan. More specifically, we control for the structure of CEO pay (*EQUITY*) (Core et al. 2008, Carter and Zamora 2009, Laksmana et al. 2012); the performance targets attached to stock (options) vesting (*MULTI-TARGETS*) and pay provisions (*SEVERANCE* and *RETEST*) (Ferri and Maber 2013); the use of compensation consultants (*CONSULTANT*) (Cadman et al. 2010a, Murphy and Sandino 2010); and the characteristics of remuneration committees (*RCSIZE* and *RCMEET*) (Core et al. 1999, Laksmana 2008, Goh and Gupta 2010, Murphy and Sandino 2010).¹⁹

Moreover, we control for CEO power (*CEOPOWER*)²⁰ because directors may have stronger incentives to please a CEO and hide excessive pay when a CEO is more powerful. As excessive CEO pay could prompt shareholder activism, which might ultimately undermine a CEO's position (Laksmana et al. 2012), one could expect a more powerful CEO to prefer her excessive pay to be less conspicuous and to use her influence over the board to achieve that goal. Thus, CEO power may have an impact on say-on-pay votes. In order to reflect the extent to which directors' reputation concerns affect report readability and voting dissent, we also include the percentage of directors who joined the board less than three years ago (*REPCONCERN*), as these directors are more eager to build a reputation as 'tough referees'. *BOARDHOLD*, which measures the ownership of all board members except the CEO, is included because a higher level of equity ownership may indicate a stronger alignment of directors' and shareholders' interests, which may in turn affect the likelihood of overpayment and remuneration report readability, as well as voting outcomes.

Given that the media can incorporate news from multiple sources in a timely manner and has a significant impact on public opinion (Core et al. 2008, Bednar 2012, Hooghiemstra et al. 2015), we control for the presence of negative articles about a firm's compensation practices during the period from the end of fiscal year t to the day of the annual general meeting (*NEWS2*). We also include firm growth (*MTB*), on the assumption that firms exhibiting better growth and investment opportunities have more favorable information to convey (Rogers et al. 2011). We include firm size (*SIZE*) to represent the information environment (Li 2008) and business complexity (Carter et al. 2009), accounting and market performance (*ROA* and *RET*) (Conyon and Sadler 2010, Ferri and Maber 2013), firm age (*FIRMAGE*), and firm risk (*VOLATILITY*). Directors might be aware of the general voting sentiment prior to writing the remuneration report. Then the pre-meeting discontent will influence the directors' writing style. The inclusion of negative media coverage (*NEWS2*), market return (*RET*), and earnings volatility (*VOLATILITY*) control for the potential reverse causality as they are all measured before the occurrence of the meeting and thus capture pre-meeting discontent.

It should be noted that the dependent variable (*DISSENT*) is the degree of voting dissent that relates to a firm's remuneration report for the fiscal year t ; the say-on-pay votes are cast at the general meeting held in fiscal year $t + 1$, whereas right-hand-side (RHS) variables are measured in fiscal year t .²¹ The natural time lag between the dependent and independent variables may help to enhance causal inference.

Furthermore, we include industry and year dummies to control for industry- and year-fixed effects.²² In empirical accounting studies using panel data, the variables of interest are often serially correlated, which violates the common assumption of independence in regression errors (Gow et al. 2010). This problem is particularly relevant in the context of corporate disclosures, because a general concern is that textual disclosures are 'boilerplate' or generic, as similar phrases are used over time (Bloomfield 2008, Li 2010). It is also possible that both firm disclosures and shareholder voting outcomes cluster by year. We therefore use standard errors clustered at both the firm and year levels to simultaneously allow for time-series and cross-sectional dependence (Petersen 2009, Gow et al. 2010).

4. Empirical results and discussion

4.1. Descriptive statistics

In Panel A of Table 2, we present the descriptive statistics of the variables for the full sample. To minimize the effect of outliers, we winsorize all continuous variables at the top and bottom 1%. The Fog index for the average firm in our sample is higher than 17, indicating that an average remuneration report requires a reading level of a post-graduate. Consistent with prior evidence, the remuneration reports in our sample on average receive low voting dissent on say on pay – the mean *DISSENT* is 8.2% (Gordon 2009, Conyon and Sadler 2010, Ferri and Maber 2013). Approximately 25% of the firms are subject to negative media coverage of CEO pay during the period from the annual general meeting for fiscal year $t - 1$ to the end of the current fiscal year t (*NEWSI*). Like Balsam et al. (2011), we find that for the average firm in our sample, 45% of annual CEO pay is equity-linked (*EQUITY*). Furthermore, the mean *CONSULTANT* is 0.83; hiring a compensation consultant is a common practice in the UK.²³

Panel B compares descriptive statistics between overpay and underpay samples. Firms that overpay their CEOs on average receive greater say-on-pay shareholder voting dissent. Overpaying firms are larger in size, report more volatile accounting performance, and receive greater negative media coverage before the annual meetings. CEOs in overpay firms have significantly higher power; their compensation has a greater proportion of equity-based pay; in addition, in case of missing performance targets, retesting is often allowed. Directors in those firms hold a smaller number of shares of their own firms. Overpay firms on average have a larger remuneration committee that holds more committee meetings; they have a higher likelihood of hiring external compensation consultants. Furthermore, the remuneration reports in overpay firms on average are more difficult-to-read.

Table 3 reports the Pearson correlation matrix based on the overpay sample. Voting dissent is positively correlated with excessive CEO pay ($p < .01$), *VOLATILITY* ($p < .01$), *MULTITARGETS* ($p < .01$), and *SEVERANCE* ($p < .01$), whereas *DISSENT* is negatively associated with *ROA* ($p < .01$).²⁴

4.2. Test of H1

Table 4 reports results of pooled OLS regressions for testing our first hypothesis. We first investigate the determinants of remuneration report readability to confirm the presence of obfuscation. We then examine whether obfuscation affects say on pay. Column 1 of Table 4 presents the results of an analysis in which our obfuscation measure is regressed on a set of possible determinants of remuneration report readability. The results show that after controlling for the complexity of compensation contracts (measured by CEO pay structure, performance targets, pay provisions, the use of compensation consultants, and remuneration committee characteristics),²⁵ corporate governance features, and firm characteristics, higher levels of *OVERPAY* are associated with less readable remuneration reports ($p = .01$). These results indicate that the results found by Laksmana et al. (2012), which are based on a sample of Compensation Discussion and Analysis disclosures of US-listed firms, also hold in the UK context.

Having confirmed the presence of obfuscation in remuneration reports, we present in Columns 3 and 4 of Table 4 the main results of the association between obfuscation and say-on-pay voting dissent. We perform a sub-sample analysis; specifically, we split our sample into overpay and underpay firms, and test the relationship between *DISSENT* and *OBFUSCATE* using Model 1 in each group. Consistent with our prediction, *OBFUSCATE* is significantly and negatively associated with *DISSENT* in the overpay sample ($p = .05$). In particular, the coefficient on *OBFUSCATE* is -0.006 . All else being equal, a one standard deviation increase in the

Table 2. Descriptive statistics.

Panel A: Full sample, $N = 1426$

Variable	Mean	Std. dev.	Q1	Median	Q3
<i>DISSENT</i>	0.082	0.091	0.021	0.051	0.098
<i>OBFUSCATE</i>	0.002	0.979	−0.528	0.064	0.654
<i>OVERPAY</i>	0.227	0.339	0.000	0.003	0.375
<i>UNDERPAY</i>	0.224	0.342	0.000	0.000	0.344
<i>EQUITY</i>	0.450	0.197	0.317	0.447	0.583
<i>MULTITARGETS</i>	0.388	0.487	0.000	0.000	1.000
<i>SEVERANCE</i>	0.065	0.247	0.000	0.000	0.000
<i>RETEST</i>	0.097	0.296	0.000	0.000	0.000
<i>CONSULTANT</i>	0.830	0.376	1.000	1.000	1.000
<i>RCSIZE</i>	1.306	0.266	1.099	1.386	1.609
<i>RCMEET</i>	1.637	0.370	1.386	1.609	1.946
<i>CEOLETTER</i>	0.001	0.984	−0.660	0.102	0.694
<i>CEOPOWER</i>	0.006	0.992	−0.605	−0.174	0.245
<i>REPCONCERN</i>	0.285	0.238	0.125	0.250	0.400
<i>BOARDHOLD</i>	0.043	0.105	<0.001	0.003	0.022
<i>INSTHOLD</i>	0.244	0.180	0.108	0.214	0.364
<i>NEWS1</i>	0.252	0.434	0.000	0.000	1.000
<i>MTB</i>	1.185	1.128	0.554	0.884	1.390
<i>SIZE</i>	6.843	1.638	5.707	6.675	7.731
<i>ROA</i>	0.059	0.076	0.031	0.057	0.092
<i>RET</i>	0.319	1.293	−0.173	0.138	0.417
<i>FIRMAGE</i>	3.780	1.021	3.091	3.932	4.625
<i>VOLATILITY</i>	0.050	0.082	0.016	0.029	0.052

Note: See Appendix 2 for variable definitions.

Panel B: Overpay and underpay samples									
Variable	Overpay sample (<i>N</i> = 716)			Underpay sample (<i>N</i> = 710)			Standardized differences (%)	Differences	
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		Mean	Median
<i>DISSENT</i>	0.086	0.057	0.090	0.078	0.044	0.093	8.74	0.008*	0.013***
<i>OBFUSCATE</i>	0.126	0.163	0.874	−0.121	−0.023	1.059	25.44	0.247***	0.186***
<i>OVERPAY/UNDERPAY</i>	0.458	0.379	0.355	−0.445	−0.340	0.365	250.81	0.903***	0.719***
<i>EQUITY</i>	0.521	0.521	0.190	0.380	0.393	0.178	76.59	0.141***	0.128***
<i>MULTITARGETS</i>	0.392	0.000	0.488	0.383	0.000	0.486	1.85	0.009	0.000
<i>SEVERANCE</i>	0.084	0.000	0.277	0.039	0.000	0.195	18.79	0.045***	0.000
<i>RETEST</i>	0.117	0.000	0.322	0.069	0.000	0.254	16.55	0.048***	0.000*
<i>CONSULTANT</i>	0.878	1.000	0.327	0.783	1.000	0.413	25.50	0.095***	0.000***
<i>RCSIZE</i>	1.342	1.386	0.272	1.271	1.386	0.255	26.93	0.071***	0.000***
<i>RCMEET</i>	1.687	1.609	0.353	1.588	1.609	0.379	27.03	0.099***	0.000***
<i>CEOPOWER</i>	0.156	0.271	0.845	−0.166	0.093	1.095	32.92	0.322***	0.178***
<i>REPCONCERN</i>	0.291	0.250	0.225	0.279	0.250	0.251	5.03	0.012	0.000*
<i>BOARDHOLD</i>	0.027	0.002	0.079	0.058	0.005	0.124	−29.82	−0.031***	−0.003***
<i>INSTHOLD</i>	0.251	0.220	0.182	0.238	0.205	0.178	7.22	0.013	0.015
<i>NEWS2</i>	0.367	0.000	0.482	0.306	0.000	0.459	12.96	0.061**	0.000**
<i>MTB</i>	1.178	0.936	0.907	1.191	0.805	1.310	−1.15	−0.013	0.131***
<i>SIZE</i>	7.017	6.865	1.698	6.673	6.523	1.560	21.10	0.344***	0.342***
<i>ROA</i>	0.060	0.062	0.073	0.058	0.053	0.079	2.63	0.002	0.009**
<i>RET</i>	0.302	0.139	1.194	0.335	0.137	1.384	−2.55	−0.033	0.002
<i>FIRMAGE</i>	3.812	4.060	1.053	3.748	3.892	0.988	6.27	0.064	0.168*
<i>VOLATILITY</i>	0.055	0.030	0.092	0.046	0.028	0.071	10.95	0.009**	0.002*

Notes: The standardized difference in percent is $100(\bar{x}_1 - \bar{x}_2)/\sqrt{(s_1^2 + s_2^2)}/2$, where $\bar{x}_1$ and $\bar{x}_2$ (s_1^2 and s_2^2) are the sample mean (variance) in the overpay and underpay samples. Standardized differences < −20 or >20 suggest large differences (see e.g. Rosenbaum and Rubin 1983, Ferri and Maber 2013). Two-sample *t*-tests are used to test the differences in means, and Wilcoxon two-sample rank-sum tests are used to test differences in medians. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. See Appendix 2 for variable definitions.

Table 3. Pearson correlation matrix for determinants of say-on-pay voting dissent (overpay sample).

Variable		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
DISSENT	A																					
OBFUSCATE	B	-.047 .205																				
OVERPAY	C	.144 .000	.031 .412																			
CEOPOWER	D	.006 .869	-.199 .000	.003 .930																		
REPCONCERN	E	-.018 .627	.018 .628	.089 .017	-.122 .001																	
BOARDHOLD	F	-.027 .480	-.159 .000	-.009 .817	.241 .000	-.094 .012																
NEWS2	G	.059 .113	.083 .026	.065 .082	-.092 .014	.038 .314	-.068 .067															
EQUITY	H	.033 .375	.225 .000	.344 .000	-.126 .000	.088 .018	-.042 .268	.238 .000														
CONSULTANT	I	-.054 .150	.131 .000	-.048 .198	-.125 .001	.048 .200	-.032 .395	.053 .159	.103 .006													
MTB	J	-.036 .339	-.086 .021	.061 .104	.069 .063	-.001 .985	.011 .774	.015 .694	.075 .044	-.027 .476												
SIZE	K	.013 .736	.318 .000	-.038 .316	-.111 .003	-.011 .768	-.237 .000	.403 .000	.492 .000	.188 .000	.159 .000											
ROA	L	-.120 .001	-.025 .498	.043 .246	.019 .613	-.026 .492	-.013 .727	-.015 .689	.076 .041	-.035 .354	.344 .000	.215 .000										
RET	M	.081 .030	-.018 .636	.129 .001	-.006 .882	-.010 .800	-.069 .065	-.011 .767	.040 .281	.023 .546	.123 .001	.028 .462	.014 .704									
RCSIZE	N	-.071 .059	.254 .000	-.099 .008	-.053 .155	-.005 .888	-.180 .000	.131 .001	.202 .000	.201 .000	-.001 .991	.405 .000	.079 .034	-.021 .574								
RCMEET	O	-.004 .918	.188 .000	-.033 .384	-.158 .000	.051 .176	-.129 .001	.161 .000	.143 .000	.109 .004	-.086 .022	.226 .000	-.086 .021	-.016 .670	.200 .000							
FIRMAGE	P	-.039 .296	.005 .889	-.040 .283	-.017 .644	-.016 .672	-.079 .035	.058 .119	.040 .291	-.065 .081	.154 .000	.094 .012	-.056 .134	-.118 .002	.157 .000							
VOLATILITY	Q	.101 .007	-.048 .204	.158 .000	-.077 .039	.117 .002	.141 .000	-.085 .024	-.088 .019	-.019 .620	.115 .002	-.207 .000	-.244 .000	.061 .100	-.146 .000	.021 .585	-.205 .000					
RETEST	R	.055 .142	.035 .352	.023 .543	-.017 .643	-.018 .633	-.033 .374	.049 .193	-.009 .809	.079 .035	.033 .385	.056 .136	-.042 .258	.049 .189	.073 .050	-.077 .040	.061 .105	.100 .008				
MULTITARGETS	S	.114 .002	-.052 .163	.062 .098	-.009 .814	.052 .166	.065 .081	-.073 .050	-.037 .321	-.041 .272	-.023 .531	-.055 .138	-.038 .312	.026 .492	-.083 .026	.032 .392	.012 .748	.053 .155	-.009 .818			
SEVERANCE	T	.236 .000	-.093 .013	.054 .149	.194 .000	-.059 .116	-.015 .680	-.028 .462	-.012 .750	-.015 .684	.006 .865	-.104 .005	-.027 .465	.124 .001	-.055 .140	-.093 .013	.017 .643	-.001 .981	.084 .024	.022 .553		
INSTHOLD	U	-.035 .353	-.074 .049	.095 .011	-.060 .108	-.019 .613	-.070 .061	-.093 .013	-.129 .001	-.097 .009	-.003 .948	-.328 .000	-.095 .011	-.064 .087	-.131 .001	-.060 .110	-.050 .183	.033 .384	-.094 .012	.010 .794	-.033 .379	

Notes: Two-tailed *p*-values are reported below correlation coefficients. Correlations with *p*-value less than .01 are in bold. Number of observations equals 716.

Table 4. Excessive CEO pay, remuneration report readability, and voting dissent.

	Full sample	Overpay sample		Underpay sample
	Dependent variable			
Independent variable	<i>OBFUSCATE</i> (1)	<i>DISSENT</i> (2)	<i>DISSENT</i> (3)	<i>DISSENT</i> (4)
<i>OBFUSCATE</i>			−0.006* (−1.95)	−0.007 (−1.24)
<i>OVERPAY</i>	0.241** (2.52)		0.032*** (3.47)	
<i>UNDERPAY</i>	0.087 (0.78)			−0.005 (−0.58)
<i>EQUITY</i>	−0.146 (−0.72)	0.003 (0.11)	−0.025 (−0.86)	0.005 (0.21)
<i>MULTITARGETS</i>	−0.088 (−1.42)	0.017** (2.11)	0.015* (1.91)	0.009 (0.96)
<i>SEVERANCE</i>	−0.149 (−0.75)	0.100*** (3.68)	0.100*** (3.66)	0.106*** (3.82)
<i>RETEST</i>	0.224* (1.72)	0.004 (0.34)	0.003 (0.37)	−0.008 (−0.52)
<i>CONSULTANT</i>	0.340** (2.34)	−0.014 (−1.44)	−0.013 (−1.32)	−0.001 (−0.12)
<i>RCSIZE</i>	0.293** (1.96)	−0.024** (−2.00)	−0.019 (−1.54)	0.001 (0.07)
<i>RCMEET</i>	0.362*** (3.56)	0.002 (0.14)	0.004 (0.26)	0.020 (1.21)
<i>CEOLETTER</i>	0.080*** (4.60)			
<i>CEOPOWER</i>	−0.084 (−1.62)	−0.002 (−0.61)	−0.004 (−1.04)	−0.002 (−0.61)
<i>REPCONCERN</i>	0.055 (0.50)	−0.004 (−0.18)	−0.006 (−0.27)	−0.008 (−0.36)
<i>BOARDHOLD</i>	0.018 (0.03)	−0.047 (−0.55)	−0.036 (−0.40)	−0.073*** (−3.22)
<i>INSTHOLD</i>	0.142 (0.73)	−0.016 (−0.73)	−0.021 (−0.96)	−0.006 (−0.25)
<i>NEWS1</i>	−0.019 (−0.19)			
<i>NEWS2</i>		0.009 (1.54)	0.007 (1.23)	0.014** (2.02)
<i>MTB</i>	−0.050 (−1.36)	−0.002 (−0.60)	−0.003 (−0.64)	−0.006*** (−2.88)
<i>SIZE</i>	0.160*** (4.50)	0.003 (1.36)	0.006** (2.54)	−0.002 (−0.34)
<i>ROA</i>	−0.760* (−1.69)	−0.108 (−1.37)	−0.130 (−1.60)	0.043 (0.81)
<i>RET</i>	0.022 (1.16)	0.002 (1.09)	0.001 (0.46)	0.004 (1.52)
<i>FIRMAGE</i>	−0.028 (−0.72)	−0.001 (−0.39)	−0.001 (−0.50)	0.002 (0.50)
<i>VOLATILITY</i>	0.155 (0.36)	0.086** (2.50)	0.061 (1.62)	0.057 (0.80)
<i>INDUSTRY</i>	YES	YES	YES	YES
<i>YEAR</i>	YES	YES	YES	YES

(Continued)

Table 4. Continued.

	Full sample	Overpay sample		Underpay sample
	Dependent variable			
Independent variable	<i>OBFUSCATE</i> (1)	<i>DISSENT</i> (2)	<i>DISSENT</i> (3)	<i>DISSENT</i> (4)
<i>N</i>	1426	716	716	710
<i>R</i> -squared	0.30	0.13	0.14	0.14
Prob > <i>F</i>	0.000	0.000	0.000	0.000

Notes: This table contains pooled OLS regressions of cross-sectional determinants of remuneration report readability and say-on-pay voting dissent. The *t*-statistics in parentheses are based on standard errors clustered at both firm and year levels. ***, **, and * indicate significance at 1%, 5%, and 10% levels (two-tailed), respectively. See Appendix 2 for variable definitions.

obfuscation score is associated with a decrease of 9.2% in say-on-pay voting dissent relative to the median of the overpay sample.²⁶ In cases of underpayment, however, there is no significant relationship between *OBFUSCATE* and *DISSENT* (see Column 4).

We also run a baseline model by including just the control variables in Model 1 except for *OVERPAY* and results are reported in Column 2. Comparing results of control variables in Columns 2 and 3, we do not find large deviation. When firms offer generous severance pay arrangements (i.e. a payment in lieu of a required notice period longer than 12 months), shareholder voting dissent increases ($p < .01$). It also holds for the underpay sample. Firms using multiple performance targets for performance-vested equity plans attracted greater voting dissent ($p < .10$), suggesting that shareholders discount the merits of setting multiple performance targets. Before including *OBFUSCATE* and *OVERPAY*, performance volatility (*VOLATILITY*) has a significantly positive association with voting dissent, whereas remuneration committee size (*RCSIZE*) has a significantly negative coefficient in Column 2 ($p < .05$). In the full model with *OBFUSCATE* and *OVERPAY* included, *VOLATILITY* and *RCSIZE* become insignificant while firm size by market value loads significantly positive ($p < .05$). Furthermore, in Column 3 the coefficient on *OVERPAY* is significantly positive ($p < .01$); shareholders tend to vote against a firm's say-on-pay resolution when the CEO is granted generous rewards in the absence of an economic justification (Carter and Zamora 2009, Conyon and Sadler 2010, Ferri and Maber 2013). In the underpay sample (Column 4), a more favorable voting result is observed in firms with greater growth and investment opportunities and/or when board members hold a larger percentage of the company's shares ($p < .01$). Negative publicity in the media (*NEWS2*) adversely affects shareholders' perceptions of a firm's pay practices ($p < .05$).

To summarize, our findings show that in the presence of excessive CEO pay, all else being equal, a less readable remuneration report is associated with lower levels of say-on-pay voting dissent – the obfuscation strategy is an effective means of influencing shareholder say-on-pay voting in cases of excessive CEO pay.

4.3. Test of H2

To examine the moderating effect of shareholder sophistication on the relationship between *OBFUSCATE* and *DISSENT*, we test Model 2 using the overpay sample. Column 1 of Table 5 presents the results. The coefficient on *OBFUSCATE* is negative and significant ($-0.011, p < .01$); *OBFUSCATE* * *INSTHOLD* loads positively and significantly ($0.023, p = .06$). Next, we replace *INSTHOLD* in Model 2 with a dichotomous measure of investor sophistication (i.e. *HIGH INSTHOLD*) equal to one if institutional ownership is no less than 50%, and zero otherwise. The results

Table 5. Sophisticated versus less sophisticated shareholders.

Independent variable	Overpay sample		Institutional ownership $\geq 50\%$	Institutional ownership $< 50\%$
	Dependent variable: <i>DISSENT</i>			
	(1)	(2)	(3)	(4)
<i>OBFUSCATE</i>	-0.011*** (-2.79)	-0.008** (-2.52)	0.016** (1.99)	-0.007** (-2.28)
<i>INSTHOLD</i>	-0.018 (-0.98)		-0.039 (-0.33)	-0.005 (-0.29)
<i>OBFUSCATE * INSTHOLD</i>	0.023* (1.87)			
<i>HIGH_INSTHOLD</i>		-0.012 (-0.86)		
<i>OBFUSCATE * HIGH_INSTHOLD</i>		0.029*** (2.73)		
<i>OVERPAY</i>	0.033*** (3.53)	0.035*** (3.58)	0.038* (1.85)	0.037*** (3.19)
<i>EQUITY</i>	-0.022 (-0.79)	-0.025 (-0.96)	-0.086 (-1.10)	-0.027 (-0.84)
<i>MULTITARGETS</i>	0.018** (2.41)	0.017** (2.30)	0.005 (0.18)	0.018** (2.04)
<i>SEVERANCE</i>	0.103*** (3.85)	0.101*** (3.80)	0.207*** (3.14)	0.098*** (3.25)
<i>RETEST</i>	0.006 (0.75)	0.005 (0.65)	0.014 (0.25)	0.012 (1.30)
<i>CONSULTANT</i>	-0.012 (-1.25)	-0.013 (-1.43)	-0.039 (-0.66)	-0.014 (-1.31)
<i>RCSIZE</i>	-0.019 (-1.48)	-0.018 (-1.41)	0.038 (0.95)	-0.020 (-1.47)
<i>RCMEET</i>	0.002 (0.14)	0.002 (0.10)	-0.007 (-0.22)	0.005 (0.26)
<i>CEOPOWER</i>	-0.003 (-0.79)	-0.002 (-0.65)	-0.011 (-0.80)	-0.001 (-0.20)
<i>REPCONCERN</i>	-0.011 (-0.53)	-0.012 (-0.58)	0.049 (0.96)	-0.016 (-0.74)
<i>BOARDHOLD</i>	-0.028 (-0.32)	-0.023 (-0.27)	0.052 (0.42)	-0.031 (-0.34)
<i>NEWS2</i>	0.007 (1.43)	0.006 (1.22)	-0.022 (-0.76)	0.008 (1.15)
<i>MTB</i>	-0.003 (-0.99)	-0.004 (-1.03)	-0.034 (-1.47)	-0.002 (-0.42)
<i>SIZE</i>	0.007*** (2.75)	0.007*** (3.47)	0.030** (2.11)	0.006** (2.15)
<i>ROA</i>	-0.124 (-1.56)	-0.121 (-1.48)	-0.010 (-0.12)	-0.154* (-1.78)
<i>RET</i>	0.002 (0.67)	0.002 (0.67)	0.009* (1.84)	0.001 (0.37)
<i>FIRMAGE</i>	-0.003 (-1.06)	-0.003 (-1.12)	-0.033*** (-3.52)	-0.003 (-0.90)

(Continued)

Table 5. Continued.

Independent variable	Overpay sample		Institutional ownership $\geq 50\%$	Institutional ownership $< 50\%$
			Dependent variable: <i>DISSENT</i>	
	(1)	(2)	(3)	(4)
<i>VOLATILITY</i>	0.067 (1.61)	0.070* (1.66)	0.042 (0.52)	0.067 (1.63)
<i>INDUSTRY</i>	YES	YES	YES	YES
<i>YEAR</i>	YES	YES	YES	YES
<i>N</i>	716	716	73	643
<i>R-squared</i>	0.13	0.14	0.49	0.14
<i>Prob > F</i>	0.000	0.000	0.000	0.000

Notes: This table contains pooled OLS regressions of cross-sectional determinants of say-on-pay voting dissent. The *t*-statistics in parentheses are based on standard errors clustered at both firm and year levels. ***, **, and * indicate significance at 1%, 5%, and 10% levels (two-tailed), respectively. See Appendix 2 for variable definitions.

reported in Column 2 of Table 5 show that the coefficient on the interaction term *OBFUSCATE* * *HIGH_INSTHOLD* is positive and significant (0.029, $p < .01$). Therefore, our findings suggest that the effect of the obfuscation strategy diminishes as institutional ownership increases.

Sophisticated shareholders are alert to directors' reporting incentives and may consider unreadable remuneration reports a warning sign (Rennekamp 2012, Tan et al. 2014). In this case, more difficult-to-read remuneration reports would backfire. Indeed, Column 2 of Table 5 shows that for firms with majority shares held by institutional investors, obscurely written remuneration reports are associated with increased say-on-pay voting dissent as in the regression of *DISSENT* the coefficient on *OBFUSCATE* is 0.021 (= 0.029–0.008) when *HIGH_INSTHOLD* equals one. For robustness, we partition the overpay sample based on *HIGH_INSTHOLD* and re-run Model 1 in each sub-sample. Columns 3 and 4 of Table 5 report the results. We find a negative and significant relationship (–0.007, $p = .02$) between *OBFUSCATE* and *DISSENT* in firms with less than 50% of outstanding shares owned by institutional investors; in stark contrast, the relationship turns positive and significant (0.016, $p = .05$) for firms with no less than 50% of shares owned by institutional investors.²⁷ Overall, our results speak to the 'backfiring' effect of using obscurely written reports by firms with majority shares owned by sophisticated investors.

5. Robustness checks

5.1. Two-stage least squares (2SLS) regression analysis

In Model 1, we control for a battery of determinants of remuneration report readability and voting dissent. The possibility remains, however, that correlated omitted variables may still exist.²⁸ To mitigate the endogeneity problem, we perform a 2SLS regression analysis. In the first stage, we instrument for the endogenous variable *OBFUSCATE* using all the controls in the regression of *DISSENT* (i.e. Model 1), plus the readability of CEO letter (*CEOLETTER*). On the one hand, *ex ante* we expect that the readability of CEO letter has a significantly positive association with the readability of DRR for several reasons. First, a CEO letter often summarizes the firm's current performance and future prospects, so it can serve as a benchmark of annual report readability, which is determined by firm-specific economic conditions; by including the readability of the CEO letter, we could control for the consistency in language across various parts of the firm's

annual report (Chahed and Goh 2012). Second, assuming that the CEO has some influence over financial reporting, the readability of the CEO letter may aggregate the effects of their individual characteristics (e.g. risk-taking, overconfidence, integrity) on the choice of words in the remuneration report, even though the board is mainly responsible for the report. On the other hand, the association between CEO letter's readability and say-on-pay voting dissent is *ex ante* unclear. Indeed, our prior findings show that *CEOLETTER* is highly correlated with *OBFUSCATE* ($p < .01$) (Column 1 of Table 4) but has no significant relationship with *DISSENT* ($p = .16$) (not tabulated).

In the second stage of the analysis, we extract the residual term from the regression of *OBFUSCATE* (Column 1 of Table 4), and calculate a predicted obfuscation score as *OBFUSCATE* minus the residual term; then we use the predicted obfuscation score to replace *OBFUSCATE* in Model 1 and re-run the analysis. Untabulated results show that the coefficient on the predicted obfuscation is significantly negative ($-0.047, p < .01$), which is in line with our expectation that making remuneration reports more difficult to read would allow directors to influence say-on-pay voting outcomes.

5.2. Propensity-score matching (PSM)

To further triangulate our previous findings, we use a PSM approach. Not only can PSM measure the sensitivity of the treatment effects to correlated omitted variable bias, but PSM also relaxes the assumption on linear or any other forms of relationship (Armstrong et al. 2010).²⁹

To implement this approach, we use the overpay sample and fit a logit model in which the dependent variable is an indicator equal to one if a firm has an obfuscation score that falls into the top quartile, and zero otherwise; the regressors include all RHS variables in the regression of *OBFUSCATE* except for *UNDERPAY* (see Column 1 of Table 4). We then derive propensity scores based on all the covariates. We use a nearest-neighbor matching approach with a caliper constraint (≤ 0.01) to construct matched pairs (Erkens and Bonner 2013). More specifically, we match firms with obfuscation scores in the top quartile with firms that have the closest propensity to fall into the top quartile, but in fact fall into the bottom three *OBFUSCATE* quartiles.³⁰ In other words, we use a matched-pair research design that matches a high obfuscation firm (i.e. treatment) with a low obfuscation firm (i.e. control) but with otherwise similar characteristics. Panels A and B of Table 6 present the results of the comparison between firms with less readable remuneration reports and firms with more readable reports, pre- and post-PSM, respectively. The results show that in both the pre- and post-PSM comparisons, high obfuscation firms experience significantly lower levels of say-on-pay voting dissent than low obfuscation firms, whereas all significant pre-PSM differences in covariates between the two groups disappear with the propensity-score matched pairs (i.e. post-PSM). Furthermore, we follow Rosenbaum (2002) and employ the bounding approach to determine how strongly correlated omitted variables can alter the inference about the treatment effect. The null hypothesis that we have overestimated the true treatment effect is rejected ($p < .01$) when varying the odds of differential assignment due to unobserved factors from 1 to 8.

We next test Models 1 and 2 using the PSM sample. The regression analysis results reported in Table 7 show that *OBFUSCATE* is significantly and negatively associated with *DISSENT* ($p < .01$), and that the coefficient on the interaction term *OBFUSCATE* * *INSTHOLD* is positive and significant ($p < .05$). In sum, our results based on PSM suggest that when firms are overpaying their CEOs, other things being equal (i.e. after we randomize the treatment effect), lower

Table 6. High *OBFUSCATE* group versus low *OBFUSCATE* group, using overpay sample and PSM.

Panel A: Pre-PSM, differences in voting dissent and covariates.

Variable	<i>OBFUSCATE</i> > Q3 (<i>N</i> = 179)			<i>OBFUSCATE</i> ≤ Q3 (<i>N</i> = 537)			Standardized differences (%)	Differences	
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		Mean	Median
<i>DISSENT</i>	0.072	0.049	0.071	0.089	0.058	0.093	−20.55	−0.017**	−0.009*
<i>OVERPAY</i>	0.482	0.409	0.351	0.451	0.366	0.357	8.76	0.030	0.043
<i>EQUITY</i>	0.578	0.587	0.160	0.502	0.497	0.195	42.61	0.076***	0.090***
<i>MULTITARGETS</i>	0.358	0.000	0.481	0.400	0.000	0.490	−8.65	−0.043	0.000
<i>SEVERANCE</i>	0.017	0.000	0.129	0.045	0.000	0.207	−16.23	−0.028**	0.000*
<i>RETEST</i>	0.106	0.000	0.309	0.093	0.000	0.291	4.33	0.013	0.000
<i>CONSULTANT</i>	0.905	1.000	0.294	0.868	1.000	0.339	11.66	0.037	0.000
<i>RCSIZE</i>	1.436	1.386	0.305	1.308	1.386	0.252	45.75	0.128***	0.000***
<i>RCMEET</i>	1.784	1.792	0.322	1.654	1.609	0.359	38.12	0.131***	0.183***
<i>CEOLETTER</i>	0.296	0.337	0.879	−0.075	0.045	0.970	40.08	0.371***	0.292***
<i>CEOPOWER</i>	0.261	0.249	0.697	0.119	0.278	0.890	17.76	0.141**	−0.029
<i>REPCONCERN</i>	0.315	0.273	0.208	0.281	0.250	0.230	15.51	0.034*	0.023**
<i>BOARDHOLD</i>	0.018	0.001	0.064	0.031	0.003	0.084	−17.41	−0.013**	−0.002***
<i>INSTHOLD</i>	0.240	0.221	0.174	0.255	0.220	0.184	−8.38	−0.015	0.001
<i>NEWS1</i>	0.318	0.000	0.467	0.272	0.000	0.445	10.08	0.047	0.000
<i>MTB</i>	1.110	0.946	0.889	1.200	0.927	0.914	−9.98	−0.090	0.019
<i>SIZE</i>	7.661	7.492	1.732	6.797	6.697	1.640	51.23	0.864***	0.795***
<i>ROA</i>	0.061	0.064	0.065	0.060	0.061	0.076	1.41	0.001	0.003
<i>RET</i>	0.249	0.110	1.063	0.323	0.148	1.242	−6.40	−0.074	−0.038
<i>FIRMAGE</i>	3.749	4.190	1.125	3.830	3.951	1.032	−7.50	−0.081	0.239
<i>VOLATILITY</i>	0.055	0.030	0.105	0.054	0.030	0.085	1.05	0.001	0.000

Notes: The standardized difference in percent is $100(\bar{x}_{>Q3} - \bar{x}_{\leq Q3}) / \sqrt{(s_{>Q3}^2 + s_{\leq Q3}^2)/2}$, where $\bar{x}_{>Q3}$ and $\bar{x}_{\leq Q3}$ ($s_{>Q3}^2$ and $s_{\leq Q3}^2$) are the sample mean (variance) in the *OBFUSCATE* > Q3 and *OBFUSCATE* ≤ Q3 groups. Standardized differences < −20 or >20 suggest large differences (see e.g. Rosenbaum and Rubin 1983, Ferri and Maber 2013). Two-sample *t*-tests are used to test the differences in means, and Wilcoxon two-sample rank-sum tests are used to test differences in medians. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. See Appendix 2 for variable definitions.

Panel B: Post-PSM, differences in voting dissent and covariates

Variable	<i>OBFUSCATE</i> > Q3 (<i>N</i> = 164)			<i>OBFUSCATE</i> ≤ Q3 (<i>N</i> = 164)			Standardized differences (%)	Differences	
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		Mean	Median
<i>DISSENT</i>	0.073	0.048	0.074	0.102	0.070	0.106	−31.72	−0.029***	−0.022**
<i>OVERPAY</i>	0.489	0.409	0.351	0.474	0.447	0.330	4.40	0.015	−0.038
<i>EQUITY</i>	0.569	0.568	0.160	0.568	0.589	0.176	0.59	0.001	−0.021
<i>MULTITARGETS</i>	0.366	0.000	0.483	0.354	0.000	0.480	2.49	0.012	0.000
<i>SEVERANCE</i>	0.018	0.000	0.134	0.018	0.000	0.134	0.00	0.000	0.000
<i>RETEST</i>	0.116	0.000	0.321	0.104	0.000	0.306	3.83	0.012	0.000
<i>CONSULTANT</i>	0.902	1.000	0.298	0.933	1.000	0.251	−11.25	−0.030	0.000
<i>RCSIZE</i>	1.407	1.386	0.296	1.399	1.386	0.289	2.73	0.007	0.000
<i>RCMEET</i>	1.785	1.792	0.329	1.763	1.792	0.353	6.45	0.022	0.000
<i>CEOLETTER</i>	0.281	0.349	0.894	0.405	0.526	0.822	−14.44	−0.125	−0.177
<i>CEOPOWER</i>	0.240	0.253	0.712	0.097	0.329	0.914	17.45	0.144	−0.076
<i>REPCONCERN</i>	0.319	0.286	0.214	0.321	0.268	0.220	−0.92	−0.003	0.018
<i>BOARDHOLD</i>	0.020	0.001	0.068	0.029	0.002	0.089	−11.36	−0.009	−0.001
<i>INSTHOLD</i>	0.242	0.222	0.176	0.245	0.220	0.175	−1.71	−0.003	0.002
<i>NEWS1</i>	0.311	0.000	0.464	0.341	0.000	0.476	−6.38	−0.030	0.000
<i>MTB</i>	1.121	0.948	0.920	1.016	0.791	0.708	12.79	0.105	0.157
<i>SIZE</i>	7.488	7.358	1.663	7.297	7.040	1.861	10.82	0.191	0.318
<i>ROA</i>	0.060	0.062	0.067	0.058	0.057	0.065	3.03	0.002	0.005
<i>RET</i>	0.280	0.124	1.103	0.296	0.158	0.782	−1.67	−0.016	−0.034
<i>FIRIMAGE</i>	3.788	4.197	1.089	3.624	3.701	1.167	14.53	0.163	0.496
<i>VOLATILITY</i>	0.056	0.030	0.110	0.058	0.025	0.116	−1.77	−0.002	0.005

Notes: The standardized difference in percent is $100(\bar{x}_{>Q3} - \bar{x}_{\leq Q3}) / \sqrt{(s_{>Q3}^2 + s_{\leq Q3}^2)/2}$, where $\bar{x}_{>Q3}$ and $\bar{x}_{\leq Q3}$ ($s_{>Q3}^2$ and $s_{\leq Q3}^2$) are the sample mean (variance) in the *OBFUSCATE* > Q3 and *OBFUSCATE* ≤ Q3 groups. Standardized differences in covariates between treated and control groups in the range of [−20, 20] indicate a good match (Rosenbaum and Rubin 1983, Ferri and Maber 2013). Paired *t*-tests are used to test the differences in means and Wilcoxon matched pairs signed-rank tests are used to test differences in medians. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively. See Appendix 2 for variable definitions.

Table 7. Regression analysis results based on propensity-score matched sample.

Independent variable	Overpay sample	
	Dependent variable: <i>DISSENT</i>	
	(1)	(2)
<i>OBFUSCATE</i>	−0.030*** (−4.16)	−0.032*** (−4.27)
<i>INSTHOLD</i>	−0.013 (−0.21)	−0.017 (−0.41)
<i>OBFUSCATE * INSTHOLD</i>		0.033** (1.96)
<i>OVERPAY</i>	0.029 (1.04)	0.030 (1.05)
<i>EQUITY</i>	−0.024 (−0.27)	−0.036 (−0.43)
<i>MULTITARGETS</i>	0.007 (1.12)	0.006 (0.92)
<i>SEVERANCE</i>	0.028 (1.49)	0.018 (0.91)
<i>RETEST</i>	0.006 (0.29)	0.012 (0.55)
<i>CONSULTANT</i>	−0.041*** (−4.92)	−0.036*** (−5.34)
<i>RCSIZE</i>	−0.015 (−0.55)	−0.009 (−0.33)
<i>RCMEET</i>	0.037** (2.42)	0.033** (2.23)
<i>CEOPOWER</i>	−0.007 (−0.96)	−0.007 (−0.98)
<i>REPCONCERN</i>	0.026 (0.92)	0.021 (0.82)
<i>BOARDHOLD</i>	−0.070 (−0.91)	−0.060 (−0.80)
<i>NEWS2</i>	0.012 (1.52)	0.018* (1.90)
<i>MTB</i>	−0.018 (−1.48)	−0.017 (−1.44)
<i>SIZE</i>	0.017** (2.05)	0.018** (2.54)
<i>ROA</i>	−0.247** (−2.05)	−0.240** (−2.39)
<i>RET</i>	0.003 (0.30)	0.002 (0.21)
<i>FIRMAGE</i>	−0.001 (−0.37)	−0.005 (−0.95)
<i>VOLATILITY</i>	0.005 (0.11)	0.020 (0.61)
<i>INDUSTRY</i>	YES	YES
<i>YEAR</i>	YES	YES
<i>N</i>	328	328
<i>R-squared</i>	0.29	0.31
<i>Prob > F</i>	0.000	0.000

Notes: This table contains pooled OLS regressions of cross-sectional determinants of say-on-pay voting dissent. The *t*-statistics in parentheses are based on standard errors clustered at both firm and year levels. ***, **, and * indicate significance at 1%, 5%, and 10% levels (two-tailed), respectively. See Appendix 2 for variable definitions.

remuneration report readability leads to lower say-on-pay voting dissent, while the relationship is weaker when shareholder sophistication is at a high level.

5.3. *Alternative measures of readability*

Prior studies have presented various approaches to quantifying the readability of corporate disclosures (Li 2008, Lehavy et al. 2011, Laksmana et al. 2012). We apply several alternative methods, including the Smog readability index and the Flesch Reading Ease index, and replace the Fog index in the composite readability measure. The results confirm our findings that shareholders' voting on remuneration reports is affected by report readability in cases of excessive pay. In particular, the coefficient on readability is -0.006 when the Smog index is used and -0.007 when the (inverse) Flesch Reading Ease index is employed to measure readability ($p < .10$) in Model 1 (not tabulated).

5.4. *Simultaneous equation system*

We develop our hypotheses based on the assumption that excessive CEO pay gives rise to low readability of remuneration reports. However, it is possible that boards take into account their ability to manipulate report readability when they set a generous pay package for their CEO. In other words, the choices of excess pay and report readability could be determined simultaneously. To account for such simultaneity, we used a simultaneous equations system in which both directions of the causality between excess pay and report readability are estimated at the same time. More specifically, the regression of *OBFUSCATE* follows the model specification reported in Column 1 of Table 4, with *CEOLETTER* and *FIRMAGE* used as exclusion variables. The RHS variables for the regression of *OVERPAY* include *OBFUSCATE*, *CONSULTANT*, *CEOPOWER*, *REPCONCERN*, *BOARDHOLD*, *MTB*, *SIZE*, *ROA*, *RET*, *VOLATILITY*, as well as an exclusion variable (i.e. an indicator equal to one if the firm's CEO pay package received negative media coverage during fiscal year $t - 1$, and zero otherwise). The untabulated results show that the causation runs from *OVERPAY* to *OBFUSCATE*, rather than the reverse.

5.5. *Obfuscation or attention*

Li (2008, p. 243) recognizes that apart from the obfuscation explanation, 'one alternative explanation is that perhaps bad news is inherently more difficult to present and requires more complicated language'. In the context of say-on-pay votes, an alternative explanation for the negative relation between *OBFUSCATE* and *DISSENT* is that when a board is overpaying its CEO, the board tends to make a lengthy explanation of its compensation policies and hence increases the linguistic complexity in its remuneration report. Shareholders might consider a complex report well specified as it may represent the board's due attention on its pay practices, and thus vote less aggressively against the remuneration report. However, our finding that shareholder sophistication attenuates (or even flips) the relation between remuneration report readability and voting outcomes favors the *obfuscation* explanation rather than the *attention* explanation – it is not obvious why more sophisticated investors would appreciate less (or even sanction) the board's due attention.

5.6. *Compensation consultant fixed effects*

It is not unlikely that compensation consultants have an impact on both the writing of remuneration reports and say-on-pay voting outcomes. In the main analyses, we include a consultant

dummy to control for whether a firm uses a compensation consultant (*CONSULTANT*). To obtain a more granular measure of consultants, we retrieve the identity of consultants from firms' annual reports and create nine indicator variables for the main consultant (including New Bridge Street, Towers Perrin, Deloitte, PricewaterhouseCoopers, Watson Wyatt, Mercer HR Consulting, Kepler Associates, Hay, and other consultants) hired in each firm-year. We then re-run the analyses after including the consultant dummies. Untabulated results show that our findings continue to hold after controlling for the fixed effects of compensation consultants.

5.7. Other robustness checks

Both CEO pay and remuneration report may affect shareholders' perceptions of corporate management related policies and, in turn, influence shareholders' overall voting outcomes. In that case, excessive pay and report readability should be associated with not only say-on-pay resolution but also the degree of voting dissent on other resolutions. As a placebo test, we replicate our analysis using voting dissent on all other resolutions as the dependent variable. The regression results (not tabulated) show that neither excessive CEO pay nor report readability has the power to influence voting dissent on resolutions other than say on pay.

Shareholders' sentiments at the annual general meeting regarding a firm's overall practices might relate to say-on-pay voting outcomes. In a robustness test, we capture such general sentiments using the average voting dissent related to other resolutions and add it as a control variable to the regression of say-on-pay voting dissent. We find a positive and significant relationship between dissent on other solutions and say-on-pay voting outcomes; and *OBFUSCATE* still loads significantly negatively ($p < .10$).

Our main regressions use an untransformed measure of voting dissent as the dependent variable, which lies between zero and one. For robustness, we log-transform the dependent variable (i.e. $\log[DISSENT / (1 - DISSENT)]$) into a continuous variable in order to overcome problems related to the limited dependent variable. Furthermore, we use a Tobit model to deal with the left-censored dependent variable (*DISSENT*). Using both methods, we find results similar to those reported in the main analyses.

The timing of shareholder votes on a specific resolution at a general meeting may affect the voting results. We therefore control for the order of the vote on the say-on-pay resolution at these meetings using an indicator variable equal to one if the say-on-pay vote is cast in the first half of the meeting, and zero otherwise. In addition, voter turnout, which is likely to be affected by the length of the period between the report date and shareholder meeting date, might have an impact on voting outcomes (Young et al. 1993). We measure voter turnout as the number of shares represented by turnout votes on the say-on-pay resolution, divided by the total number of shares outstanding. We also include an indicator variable equal to one if all shares are 'one share, one vote', and zero otherwise. None of these model adjustments materially affect our conclusions.

We also examine the plausible effects of shareholder groups. It is noticeable that in the UK the interests of institutional shareholder are frequently promoted by specific groups (Association of British Insurers [ABI], Pensions & Investment Research Consultants [PIRC], etc.), whereas in the US institutional shareholders tend to rely on proxy advisors (e.g. Institutional Shareholder Services and Glass Lewis) (Balsam et al. 2016). To check whether our findings are robust to accounting for the effects of influential shareholder groups, we manually retrieve PRIC recommendations in 2009 from the organization's website and include them into our regression models.³¹ Our main inferences continue to hold.

Furthermore, we include market return over the three months prior to the general meeting to control for shareholders who vote by selling their shares. In line with Dimitrov and Jain (2011),

our results show that the market return preceding the meeting has a positive association with *DISSENT*, suggesting that indeed some unsatisfied shareholders ‘vote with their feet’. Lastly, we control for Big 4 auditors and the number of analyst following in Models 1 and 2 and find consistent results. However, including these controls would reduce our sample size by 12%; to avoid data attrition, we choose to exclude these variables from our primary analyses.

6. Conclusion

In this paper, we assess the effects of remuneration report ‘readability’ on the level of dissent on say-on-pay votes in firms with excessive CEO pay. We find that in cases of excessive CEO pay, a remuneration report that is obscurely written is associated with lower say-on-pay voting dissent. That is, we find support for the idea that obfuscation works in cases of excessive CEO pay. Furthermore, the effects of remuneration report readability on say-on-pay votes are not uniform for all groups of shareholders. Consistent with the view that sophisticated shareholders have greater information-processing power, we find that the effectiveness of obfuscation decreases with an increase in shareholder sophistication; using more difficult-to-read reports may even increase say-on-pay voting dissent in firms with majority shares owned by institutional investors. Our results are robust to controls for various alternative explanations as well as for correlated omitted variable bias.

The interpretation of our findings is subject to several caveats. First, this study focuses on the UK, a country where, during the period under investigation (i.e. 2003–2009), say on pay was an annual non-binding vote. An extension to this study would be to examine whether the association between remuneration report readability and voting dissent depends on the institutional context. For example, in October 2013, a revision to the DRR Regulations changed say-on-pay votes from non-binding to binding resolutions. Researchers could take advantage of this recent change in the UK institutional context and extend our study.

Second, although we show that say-on-pay voting dissent is affected by the way in which information is presented in the remuneration report, we could not control for how directors respond to (or evade) questions about executive pay arrangements during the general meeting, immediately before the vote takes place. Nevertheless, as it is likely that the way in which board members answer the questions about pay issues are largely consistent with how they write the remuneration report, our findings should stay robust. Likewise, we could not control for the possible impact of voting recommendations issued by proxy advisory firms. Further, although care has been taken to handle the endogeneity problem, readers should be mindful of possible correlated omitted variables.

Despite these caveats, our study has significant implications for regulators. Our paper shows that (unsophisticated) shareholders are susceptible to the extent to which information in a remuneration report is presented in a readable form, and that boards can therefore use ‘readability management’ to undermine the efforts of regulators to make compensation arrangements more transparent. Our study thus supports the view that requiring information on executive pay to be presented in a ‘readable’ way – a measure along the lines of the ‘plain English’ rule in the US setting – might heighten shareholders’ understanding of pay packages and thus facilitate the better functioning of say on pay. Our findings are of particular relevance to the UK setting where there is no plain English rule. Interestingly, it is noted that the readability of DRR in the UK-listed firms is on average low as an average remuneration report requires a reading level of a post-graduate, and that there is no sign of improvement on the readability over our investigation period. The UK policy-makers and also investors should encourage plain English disclosures in remuneration reports as well as in other corporate disclosures because our paper, among other studies, shows that qualitative attributes of corporate communication (e.g. readability) indeed affect the decision-making of investors, particularly less sophisticated ones. After all,

‘least sophisticated investors have the greatest need for a disclosure document they can understand’ (Securities and Exchange Commission [SEC] 1998, p. 10).

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No potential conflict of interest was reported by the authors.

Notes

1. The UK was the first country to adopt say-on-pay law. Regulators in other countries have followed suit. Between end-2002 and end-2013, 12 countries around the world have implemented say on pay, including the UK (2003), the Netherlands (2004), Australia (2005), Sweden (2006), Denmark (2007), Norway (2008), Portugal (2010), Italy (2011), South Africa (2011), the US (2011), Belgium (2012), and Switzerland (2013) (see, e.g. Correa and Le 2016).
2. Say-on-pay votes in the UK were non-binding during our test period and thus in principle allowed directors to ignore voting outcomes. However, the message in the UK say-on-pay legislation is influential, because according to the UK Companies Act company members have an unrestricted right to fire any director, with reasonable notice.
3. Although there had been several efforts in the US to require say on pay resolutions, it was not until the 2010 Dodd–Frank Act that a say on pay provision was introduced. In 2002, the UK DRR Regulations not only initiated say on pay but also required listed firms to include detailed disclosures of managerial compensation packages in their annual reports, while in the US a set of (comparable) rules on executive compensation disclosures were adopted by SEC in 2006.
4. According to Courtis (2004, p. 292), obfuscation is ‘a narrative writing technique that obscures the intended message, or confuses, distracts or perplexes readers, leaving them bewildered or muddled’.
5. Our sample covers the early years after the implementation of say on pay in the UK when say on pay was not binding and substantial voting dissent on a say-on-pay resolution did not usually prompt an immediate change to the executive’s compensation package. In June 2012 the UK government changed the non-binding, advisory nature of the say-on-pay vote into a binding resolution; the change took effect in October 2013. Hence, our findings capture the particularities of a given period of time. While our findings are not generalizable to the current situation, understanding the particularities of that given regulatory setting is important as there are more countries that adopt advisory rather than binding say on pay (Correa and Le 2016).
6. Voting at the meeting can be arranged by either a show of hands or by a poll taken at the meeting; poll voting is currently the preferred method (Conyon and Sadler 2010). Proxy voting is allowed. Ordinary resolutions, including say-on-pay resolutions, require a simple majority.
7. Other resolutions typically scheduled at an annual general meeting include the (re)election of directors, approval of major acquisitions or disposals, approval of proposals about equity, the (re)appointment of the external auditor, and the approval of the annual report.
8. Appendix 1 illustrates how a firm could manage voting dissent by preparing a difficult-to-read remuneration report.
9. Research shows that shareholders are not necessarily able to see through presentation bias in corporate disclosures. For instance, Beattie and Jones (2002) find that shareholders’ perceptions of a firm’s performance are affected when graphs are distorted by as little as 10% or more.
10. A board’s incentive to obfuscate is less obvious in cases that do not involve excess pay. Furthermore, in such cases, remuneration reports may be less important for shareholders wanting to evaluate the ‘appropriateness’ of CEO pay. This conjecture is in line with Krause et al. (2014) who argue that

- underpay does not involve (perceptions of) an ‘agency loss’, losses that are likely to trigger shareholders to vote against a say-on-pay resolution. Hence we do not hypothesize a relationship between remuneration report readability and shareholder voting outcomes when there is no excessive CEO pay.
11. Nevertheless, other studies document that even more sophisticated investors and market participants are affected by ‘distortions’ in disclosures (Henry 2008, Leavy et al. 2011, Bonsall and Miller 2016).
  12. We include both large and small firms in order to limit sampling bias. To check the representativeness of our SmallCap sample, we compare the market value of the 40 randomly selected SmallCaps in our sample with the market value of the rest of the FTSE SmallCap firms. After excluding penny stocks, the results of both a *t*-test and a Wilcoxon rank-sum test show no significant differences in market value between the two groups (*t*-statistic = -0.042 ; *z*-statistic = -0.964). Our empirical results are robust to dropping the SmallCap observations.
  13. ‘In the UK, institutional investors use abstention votes to signal dissent and indicate that, in the absence of action, they will vote against the remuneration report at subsequent meetings’ (Ferri and Maber 2013, p. 535). Our findings remain consistent when using the fraction of votes against a say-on-pay resolution alone to proxy for voting dissent.
  14. We recognize the limitations associated with the use of Fog index and length. See Loughran and McDonald (2016) for detailed discussion.
  15. Specifically, the determinants of expected pay in year *t* include the natural logarithm of total assets at the end of year *t*, earnings per share during year *t*, *ROA* during year *t*, buy-and-hold returns during year *t*, market-to-book ratio at the end of year *t*, standard deviation of stock returns over prior 12 months for the firm by the end of year *t*, the natural logarithm of the CEO’s age by the end of year *t*; the natural logarithm of (1 + the CEO’s tenure by the end of year *t*); the percentage of dependent directors on the board by the end of year *t*; and the natural logarithm of (1 + the number of board members) by the end of year *t*. Furthermore, we estimate expected pay using multiple-year data; year and industry dummies (Fama–French 12 industry classification) are included to control for year- and industry-fixed effects. Our results stay inferentially consistent when replacing total assets with market value in the expected pay estimation.
  16. In the overpay sample, we only include firms with a positive residual in the regression of CEO pay. *UNDERPAY* captures the part of CEO pay that falls short of the expected level. Following Lakshmana et al. (2012), observations with a zero or negative residual are included in the underpay sample. For robustness, we use the annual industry median compensation level based on all available BoardEx data (including those not sampled in the main regressions) as a benchmark to define overpay and underpay. The underlying idea is that rewarding CEOs above the industry median level may lead to a shareholder revolt, even if the CEO’s pay is well-grounded in firm performance, because the above-median pay may be perceived as unfair. Our main inferences are robust to the alternative measure of overpay/underpay.
  17. For robustness, we measure shareholder (un)sophistication using ‘free float’, that is, the percentage of total shares in issue available to ordinary investors, that is, total number of shares less the strategic holdings, and we find similar results.
  18. Ertimur et al. (2013) show that say on pay votes in the US have been used to promote performance-vested equity grants, arguably a ‘complex’ item.
  19. Although much care is taken to capture the complexity of compensation plans, our controls cannot exhaust all dimensions of compensation complexity.
  20. Similar to Abernethy et al. (2015) we construct the CEO power measure using a principal component analysis that extracts the common variation among six individual items measured at *t* – 1, that is, the number of board committees on which the CEO has a role, CEO tenure, board size, the proportion of independent directors, the percentage of shares owned by the largest outside owner, and the percentage of shares held by institutional owners.
  21. Consider GlaxoSmithKline, for example, whose fiscal year ends on 31 December. To estimate the impact of the readability of its remuneration report for 2002 on say-on-pay voting, we look at the dissent expressed on say-on-pay voting at the annual general meeting in 2003 (19 May 2003). The independent variable (i.e. remuneration report readability) and the control variables, however, are measured on the basis of the firm’s annual report for the fiscal year 2002 (which ended on 31 December 2002).
  22. We report our results using industry dummies based on Fama–French 12 industry classification, although, using Fama–French 48 industry classification or two-digit Standard Industrial Classification (SIC) code does not impact our inferences. Firm fixed effects are not used due to the lack of within-subject variation in several independent variables (including *OBFUSCATE*).

23. We also observe a clear pattern in the trend of shareholder voting behavior (not tabulated). At the beginning of our investigation period, when say-on-pay regulation took effect, shareholder voting dissent was highest (see also Conyon and Sadler 2010). Thereafter, shareholder dissent began to decrease, reflecting an uptrend in shareholder approval. Amid the 2008 financial crisis, shareholder dissent began to rise again. Average CEO excessive pay was largely reduced in 2008, whereas the Fog index and the length of remuneration reports remain stable in our test period.
24. Based on the full sample, the obfuscation score of remuneration reports is positively correlated (not tabulated) with the level of CEO excess pay ($p < .01$), the proportion of equity-link pay in total CEO compensation ($p < .01$), *RETEST* ($p < .10$), hiring a compensation consultant ($p < .01$), firm size ($p < .01$), the size of the remuneration committee ($p < .01$), the number of committee meetings ($p < .01$), and negative media coverage of CEO pay between the last annual general meeting and the end of current fiscal year ($p < .01$). The readability of remuneration reports is positively correlated with the readability of CEO letters ($p < .01$). *OBFUSCATE* is negatively correlated with CEO underpay ($p < .01$), board member ownership ($p < .01$), and firm performance in *ROA* ($p < .01$). Further, some RHS variables in Models 1 and 2 are significantly correlated. All variance inflation factors (VIFs) for the regression models that we use are less than five.
25. The current study differentiates from Laksmana et al. (2012) in that we use direct measures of compensation plan complexity whereas Laksmana et al. (2012) use firm operational complexity to infer the complexity of the CEO compensation plan.
26. With a one standard deviation increase (i.e. 0.874) in *OBFUSCATE*, *DISSENT* decreases by 0.5244% ($= 0.006 \times 0.874 \times 100\%$). For a median firm in the overpay sample, voting dissent is 5.7%. Thus, the 0.5244% decrease in *DISSENT* amounts to a 9.2% ($= 0.5244 / 5.7 \times 100\%$) decrease relative to the sample median. As a robustness check, we use the full sample and include an interaction between *OBFUSCATE* and an overpay dummy (i.e. dummy equal to one if *OVERPAY* > 0, and zero otherwise). The results are qualitatively similar suggesting that when the CEO is overpaid a more difficult-to-read remuneration report is associated with lower dissent.
27. Noticeably, our finding is based on a restrictive definition of ‘high institutional ownership’, which is no less than 50% institutional ownership (accounting for 10.2% of the overpay sample). However, our finding does not hold if we use a less restrictive definition of high institutional ownership (e.g. a median split). It appears that the ‘backfiring’ effect takes place only in firms with institutional owners having an overwhelming influence on shareholders’ voting outcomes.
28. To mitigate the influence of time-invariant omitted variables, one could employ a first differencing method. However, this method could be problematic in the current study because several independent variables (including *OBFUSCATE*) do not vary much over time.
29. The PSM approach is employed to alleviate some of the concerns with the use of 2SLS regression analysis as well as controlling for observable confounds. The validity of 2SLS analysis relies on the appropriateness of the instrumental variable. However, ‘the appropriateness of IV methods in typical accounting research settings is not obvious’ (Larcker and Rusticus 2010, p. 186). In our main analyses, we control for the confounding factors, by including them as RHS variables in Model 1. Yet, this common research design produces unbiased estimates ‘only if there is an identical functional relationship between the control variables and the outcome variable for each level of treatment’ (Armstrong et al. 2010, p. 228). However, the efficacy of the PSM approach is confined to address ‘observable’ confounds rather than the ‘unobservables’ (Tucker 2010).
30. Matching high obfuscation firms (i.e. *OBFUSCATE* > Q3) with low obfuscation firms defined as *OBFUSCATE* ≤ Q2 produces the same inferences.
31. Data availability precludes us from including PRIC recommendations in other years.

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Appendix 1. Example of a remuneration report

This appendix presents excerpts from a remuneration report with a low level of readability prepared by Sports Direct International plc. In the fiscal year 2007, Sports Direct International plc was in the top quartile in terms of excessive CEO pay, but in the bottom percentile for voting dissent (i.e. there were few votes against its remuneration report). This may have been a result of the language used in the remuneration report, which had a low level of readability (*OBFUSCATE* = 1.886 > 95th percentile).

Excerpts from the remuneration report

Remuneration policy

The Committee has endorsed the provisions of Section B of the Combined Code, and has had those provisions in mind when determining remuneration policies for the past, current and future years. Policies and practice in respect of remuneration inevitably evolve over time and, while it is currently believed that the policies described in this report will apply in future years, they will be subject to regular review.

The Committee seeks to ensure that levels of remuneration are sufficient to attract, retain and motivate directors and senior managers of the quality required to run the Group successfully, and, in order to maintain the Group's historic focus on growth, has adopted a strongly performance based remuneration policy for executive directors, under which a large proportion of their remuneration will be dependent upon the Group's performance. [...]

Remuneration policies and key elements of remuneration

Basic salaries are reviewed annually, but the first review post the Admission of the Company to the official list and to trading on the London Stock Exchange on 2 March 2007 (Admission) as envisaged in the prospectus issued prior to Admission did not take place until April 2008. [...]

The Annual Bonus Scheme rewards executive directors for achieving challenging business performance targets, chosen at the beginning of the period for their relevance in driving the short term performance of the Group towards the achievement of strategic goals. In the Year the maximum bonus payable to Dave Forsey and Bob Mellors was 100% of salary, and one half of the bonus was to be paid if both target sales and target EBITDA were achieved, and the remainder of the bonus would be paid if target sales are achieved and if a stretch target EBITDA is achieved, with no intermediate payments. [...]

For the purpose of the Performance Share Plan EPS means the diluted earnings per ordinary share of the Company calculated in accordance with IAS 33 Earnings Per Share or any modification or replacement to that standard with which the Company is obliged to comply provided that the Committee has the power (after consultation with the auditors) to adjust the EPS figure to arrive at a figure which reflects underlying business performance of the Group and also to take such steps as necessary to ensure that relevant accounting standards are applied on a consistent basis. [...]

TSR means, in relation to a share in the Company or an ordinary share in a company in the comparator group in a performance period, the aggregate of the increase above or decrease below the average market

value of such a share at the beginning of the relevant performance period and the aggregate value of dividends paid in that performance period (excluding any tax credit), where each such dividend is deemed to have been reinvested in the shares of each relevant company from the date of payment of the dividend to the last day of the performance period. [...]

Appendix 2. Variable definitions

Variable	Description
<i>DISSENT</i>	The percentage of 'votes against' plus 'votes abstained from' in the say-on-pay resolution expressed at a shareholders' general meeting.
<i>OBFUSCATE</i>	A factor score based on principal component analysis that comprises two items: the Fog index and length of the remuneration report of fiscal year t , where the Fog index is calculated as $0.4 \times (\text{average number of words per sentence} + \text{percentage of words of three or more syllables})$; length is calculated as the natural logarithm of $1 + \text{the number of words in the remuneration report}$.
<i>OVERPAY</i>	Equal to the residual term from the estimation model of CEO total pay (Core and Guay 1999) if the residual is positive, and zero otherwise.
<i>UNDERPAY</i>	Equal to the absolute value of the residual term from the estimation model of CEO pay (Core and Guay 1999) if the residual is zero or negative, and zero otherwise.
<i>EQUITY</i>	The proportion of equity compensation in total compensation of fiscal year t .
<i>MULTITARGETS</i>	An indicator variable equal to one if the vesting of performance-vested equity plans is conditional on more than one performance target during the fiscal year t , and zero otherwise. In the absence of performance-vested equity plans, the variable equals zero.
<i>SEVERANCE</i>	An indicator variable equal to one if the notice period for a CEO is longer than 12 months, and zero otherwise.
<i>RETEST</i>	An indicator variable equal to one if the vesting of performance-vested equity plans granted or to be vested during the fiscal year t is allowed to retest, and zero otherwise. In the absence of performance-vested equity plans, the variable equals zero.
<i>CONSULTANT</i>	An indicator variable equal to one if the firm employs at least one compensation consultant during fiscal year t , and zero otherwise.
<i>RCSIZE</i>	The natural logarithm of $1 + \text{the number of compensation committee members measured at the end of fiscal year } t$.
<i>RCMEET</i>	The natural logarithm of $1 + \text{the number of meetings held by the compensation committee during fiscal year } t$.
<i>CEOLETTER</i>	A factor score based on principal component analysis that comprises both the Fog index and the length of the CEO's letter to shareholders included in the annual report of fiscal year t , where the Fog index is calculated as $0.4 \times (\text{average number of words per sentence} + \text{percentage of words of three or more syllables})$; length is calculated as the natural logarithm of $1 + \text{the number of words in the CEO's letter}$.
<i>CEOPOWER</i>	A factor score based on principal component analysis that comprises six individual items of CEO power, that is, the number of board committees on which the CEO has a role, CEO tenure, board size, the proportion of independent directors, the percentage of shares owned by the largest outside owner, and the percentage of shares held by institutional owners, all measured at the end of fiscal year $t - 1$.
<i>REPCONCERN</i>	The percentage of new directors (< 3 years on board) among all board members at the end of fiscal year $t - 1$.
<i>BOARDHOLD</i>	Ownership of all board members except for the CEO at the end of fiscal year t .
<i>INSTHOLD</i>	The percentage of shares held by institutional owners at the end of fiscal year t .
<i>HIGH_INSTHOLD</i>	An indicator variable equal to one if institutional ownership is no less than 50%, and zero otherwise.

(Continued)

Continued.

Variable	Description
<i>NEWS1</i>	An indicator variable equal to one if a negative article about the firm's pay arrangements has been published during the period starting after the annual general meeting for fiscal year $t - 1$ to the end of the fiscal year t , and zero otherwise. Similar to Bednar (2012), we used Linguistic Inquiry and Word Count (LIWC) to identify a negative tone across texts. We focused on articles published in mainstream British newspapers (<i>The Daily Mail and Mail on Sunday</i> , <i>The Daily Telegraph</i> , <i>Financial Times</i> , <i>The Guardian</i> , <i>The Mirror and Sunday Mirror</i> , <i>The Sun</i> and <i>The Times</i>) covering CEO pay in a specific firm. In particular, we located newspaper articles written about CEO pay using the CEO's name, the company name and pay components (i.e. compensation, salary, bonus, options and restricted stock) as keywords for the search in LexisNexis.
<i>NEWS2</i>	An indicator variable equal to one if the firm has negative media coverage over the period from the day after the end of fiscal year t until the day of the annual general meeting for fiscal year t , and zero otherwise. Procedure is similar to <i>NEWS1</i> .
<i>MTB</i>	The market value of the firm divided by its book value measured at the end of fiscal year t .
<i>SIZE</i>	The natural logarithm of market value of the firm at the end of fiscal year t .
<i>ROA</i>	Return on assets measured at the end of fiscal year t .
<i>RET</i>	One year buy-and-hold return during fiscal year t .
<i>FIRMAGE</i>	The natural logarithm of $1 +$ the age of the firm since founded at the end of fiscal year t .
<i>VOLATILITY</i>	The standard deviation of return on assets over prior eight years at the end of fiscal year t .
<i>INDUSTRY</i>	Industry dummies identified on the basis of Fama–French 12 industry classification.
<i>YEAR</i>	Year dummies.