Media Tone and CEO Power

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Abstract

This study investigates the monitoring role of media tone on Chief Executive Officer (CEO) power. Using CEO pay slice (CPS) as a measure of CEO power, we find that negative tone is associated with a reduction in CEO power. The finding extends the theoretical framework explaining the importance and influence of media on corporate governance. Consistent with theoretical predictions, we find that the impact of negative tone on the extent of CEO power is stronger in well-governed firms. The evidence suggests that media tone plays an important role as an external monitor, moderating corporate governance through the dissemination of news.

Keywords: Media Tone; CEO Power; Corporate Governance

JEL Classifications: G32, G34

1. Introduction

This study investigates the association between the tone of media coverage about the CEO and the power that the CEO is able to exert on the board and the firm. The media plays an important corporate governance role collecting and disseminating information about firms (Zingales, 2000; Fang and Peress, 2009). Previous studies show that the media can detect corporate financial fraud and convey financial information to boards of directors (Miller, 2006; Joe et al., 2009). Media coverage also helps in removing uncertainty, increasing transparency, adding credibility, and highlighting the viability of future projects. Early research on media and subsequent managers' behaviour suggests that media had little effect. For example, Core et al. (2008) report that negative press coverage did not motivate the firm to decrease the CEO's compensation or increase CEO turnover. These results point to a lack of influence of CEO media coverage on subsequent CEO behaviour.

The topic of CEO media coverage has been developed by scholars and researchers in the corporate finance literature. The media can influence managers' actions by affecting the value of managers' reputational capital (Dyck et al., 2008). Therefore, external media reporting can increase (or decrease) managers' reputational capital, inducing CEOs to take action that increases (or decreases) consumption of private benefits. The media have an impact on the managerial perception of managers' ability in the labour market by influencing reputational capital (Liu and McConnell, 2013). The authors find that an increase (decrease) in the value of a manager's ability in the labour market predicts an increase (decrease) of a manager's power to extract firm resources for his/her private benefits. However, there is little empirical evidence on the role of the media as an external monitoring mechanism of CEO power. This study attempts to fill this gap in the literature by examining the role of media tone on CEO power.

This issue is of perennial interest because powerful CEOs can enhance the value of individual benefits by influencing the board of directors, thereby compromising the arm's-

length bargaining process to receive higher compensation (Bebchuk et al., 2002). The concept of CEO power is rather difficult to grasp because it is heterogeneous along many different dimensions. In this study, we use CEO pay slice (CPS) as a key measure of CEO power, which is defined as the percentage of CEO compensation relative to the top five paid executives including the CEO (Bebchuk et al., 2011).

We consider the role of media tone and its impact on CEO power using a large sample of CEOs in the ExecuComp database and an extensive collection of 45,934 press articles about each CEO and his/her respective firm from 1996 to 2014. We require the company's CEO to be in office for two consecutive years in order to rule out issues concerning CEO turnover. This requirement also ensures that media tone from the previous year can be used to explain changes in CEO power in the subsequent year. Our media tone measures are constructed following prior literature (Bednar, 2012; Liu and McConnell, 2013; Cheng et al., 2017). Following the financial dictionary developed by Loughran and McDonald (2011), we capture the negative tone of each article using the negative word counts.[1]

We begin by investigating whether negative media tone has a negative and significant impact on CEO power. The results point to the role that negative media tone plays in reducing a CEO's power to extract private benefits. The finding also emphasizes the economic relevance of media on monitoring and constraining the influence and power of the CEO. Furthermore, our study finds that media exposure plays an important role even after controlling for the existence of internal corporate governance mechanism. We classify the internal corporate governance of a firm by board size, independent directors, CEO duality, and institutional blockholders. For example, boards with more independent directors monitor management more effectively (Bednar, 2012). As such, when firms have efficient internal monitoring, media are

[1] Most studies in the prior literature focus solely on negative tone, as there is little evidence on the effect of positive tone on CEO compensation (Core et al., 2008; Liu and McConnell, 2013).

likely to act as an external monitoring mechanism to scrutinize CEO behaviour and to constrain CEO power.

In addition, when firms draw the attention of investors, the media may cater to audience demand by reporting sensitive topics without in-depth analysis (Core et al., 2008; You et al., 2017). To address this potential endogeneity issue, we rely on local firms as our instrumental variable in the two-stage least-squares (2SLS) framework and we find consistent results. We also perform additional analysis on the effect of new reporting requirements (FAS123R). Re-estimating the relation between negative tone and CEO power during two different periods, 1996–2005 and 2007–2014, we find that the effect of negative tone on the extent of CEO power is stronger post-2006. This result is consistent with technological and cultural change on the role and impact of the media concerning the communication of information in recent years. We also carry out further tests in examining the association between negative tone and change in CEO power, and we find that negative tone is negatively related to the change in CEO power. This finding supports the monitoring role of media in changing a CEO's power and influence.

This paper is the first to investigate the governance effect of news dissemination by the media in disciplining powerful CEOs seeking to extract higher compensation at the expense of shareholders. The corporate governance role of media has been documented in prior literature. The media can detect financial fraud (Dyck et al., 2008), influence a manager's capital allocation decision (Liu and McConnell, 2013), and increase the chance of forced top-executive turnover (You et al., 2017). Prior research has also focused primarily on the signalling effects of media coverage and CEO compensation (Core et al., 2008; Bednar, 2012). An important distinction between this study and prior studies is the emphasis on the role of media tone in mediating powerful CEOs. Our research focuses on the relation between media tone and CPS as a measure of CEO power. The empirical tests allow us to examine the relation between media tone and CEO power from the perspective of influence over the pay-setting process.

Thus, this study extends the corporate governance literature and enhances our understanding on the role of the media by documenting the effect of media tone as an external monitor.

This paper contributes to the prior literature by examining the effects of negative tone in news articles. Compared with positive press coverage, negative media coverage overcomes information asymmetry with management and is viewed as a credible source of information (Bednar et al., 2013). Negative tone can decrease a manager's reputation by disseminating information about his/her actions and by shaping perceptions of those actions (Dyck et al., 2008; Liu and McConnell, 2013). Researchers and scholars support the relative importance of negative words and find little incremental information in positive words in financial contexts (Tetlock, 2007). Previous studies have generally considered the effect of negative media coverage, with very few studies examining negative tones (Bednar, 2012). We argue that negative tone can be thought of as a source of CEO power that may constrain CEOs' discretionary firm actions.

Finally, when compared with the prior literature (Core et al., 2008; Bednar, 2012; Liu and McConnell, 2013; Liu et al., 2017), our extensive sample period covers close to two decades of information, allowing us to consider the impact of media tone over a substantial time period.

Our paper is organized as follows. Section 2 briefly reviews the literature and develops our research hypotheses. Section 3 describes the sample selection and the construction of our variable. The empirical results are presented in section 4. Section 5 presents the robustness tests. Finally, section 6 summarizes the results and concludes.

2. Background and hypotheses development

This section begins by summarizing the prior research on media and CEO power. First, we describe theories to explain why media tone is expected to influence CEO characteristics. Second, to develop our research questions, we review the literature on the association between media tone and CEO power.

2.1. Media

Prior literature investigates the role of media in several aspects. Media play an important role in detecting financial fraud through rebroadcasting information (Zingales, 2000; Miller, 2006). The media as the external governance mechanism can prompt firm action by making external information more salient to the firm and the firm leader (Bednar et al., 2013). Media can play a positive role in the important corporate functions of allocating capital and influencing managerial decisions (Liu and McConnell, 2013). An investigation into the effect of media on corporate governance by Dai et al. (2015) finds media to be effective in reducing insiders' trading profit by disseminating releases of insider trading activities.

A large component of research provides evidence that media affects CEO compensation. Bednar (2012) suggests that negative tone in media coverage prompts the board to increase the amount of at-risk compensation and that positive press allows managers to secure a higher percentage of cash compensation. However, there is little attention given in the existing literature on the role of media tone in influencing managerial power as an important outcome of corporate governance and monitoring.

To understand the influence of media tone on CEO power, it is salient to consider the role of media in relation to CEOs. First, the media provide a platform to publicize CEOs' views concerning their compensation. Scholars have recognized the potential of media tone to affect CEO compensation. Core et al. (2008) find that negative press is associated with the level and source of compensation. The study shows that negative attention generated by the media imposes costs on both the firm and the CEO. Similarly, Finkelstein et al. (2009) argue that CEOs should be concerned with the favourability of media coverage because of its potential effect on both the level and the mix of their compensation. Media coverage of firms is strongly associated with CEO cash compensation; CEOs of firms with high media coverage receive substantially higher cash compensation (Chen et al., 2013). Positive media coverage may

enhance a CEO's reputation and influence the board, viewing the CEO as having more value (Hayward et al., 2004; Wade et al., 2006). The media may influence the level of CEO pay by building up the reputation of the CEO through particular information disclosures (Bednar, 2012). Thus, the attention gained through reporting about the firm and its CEO's characteristics have an influence on CEO benefits.

Second, the media convey information about events, influencing public attitude and behaviour related to these events. In particular, investor perceptions may change following firm disclosures by the media. Firms are likely to instigate change if the media affect firm development. Prior research reports that stakeholders often overweight external signals of reputation when evaluating a CEO (Khurana, 2002; Wade et al., 2006). Negative information or events reduce the value of these individuals in the labour market if it places attention on the reputation of managers and directors (Fama and Jensen, 1983; Dyck and Zingales, 2004; Dyck et al., 2008). Thus, when a CEO is involved in wrongdoings or scandals that are highlighted in the media, the firm will be more likely to dismiss the CEO to protect their reputation. Compared with negative media coverage, positive press coverage can protect the CEO from negative news items and make the board more likely to attribute negative events to factors other than the CEO (Meindl et al., 1985; Bednar, 2012). Positive press coverage about the CEO's reputation should make a board less willing to dismiss the CEO.

Prior scholars focus on the role of media using the number of articles (Core et al., 2008; Dyck et al., 2008; Fang and Peress, 2009). In contrast, we aim to shed light on the effect of media tone, controlling for the amount of news reported around the CEO and firm. Prior research has largely focussed on the effects of negative media coverage (Core et al., 2008; Liu and McConnell, 2013; Liu et al., 2017) because from a financial context, there is little incremental information in positive words (Tetlock, 2007; Kothari et al., 2009; Liu et al., 2017). Therefore, our study investigates solely the negative tone in news.

2.2. CEO power

In a firm, the CEO plays an important role in merger or acquisition decisions (Adams et al., 2005; Chikh and Filbien, 2011), potentially increasing CEO benefits from these decisions as the size of the firm increases. This is especially true in the case of CEO compensation (Abernethy et al., 2014). Finkelstein and Hambrick (1996) provide evidence that managerial ego, biases, and experiences affect firm behaviour because of the ambiguity and complexity that characterize the task of top managers.

Media have the potential to influence the level of executive compensation (Finkelstein et al., 2009). Powerful CEOs are able to gain significant influence and control power over the board, its committees, and the decisions the board makes, including their own compensation (Garvey and Milbourn, 2006; Morse et al., 2011; Van Essen et al., 2015). Prior literature has examined the potential effects of media coverage on CEO compensation (Core et al., 2008; Chen et al., 2013). Executive compensation is generally viewed as a signal of management control. CEOs are assumed to try to extract as much compensation as possible (Gomez-Mejia et al., 1987). Under the entrenchment hypothesis of Bebchuk and Fried (2005), entrenched managers have too much power over their boards and consequently can set their own compensation to the detriment of their own shareholders. This suggests that CEO power is strongly associated with CEO compensation (Bebchuk et al., 2002; Bebchuk and Fried, 2003; Grinstein and Hribar, 2004).

In our study, we follow Bebchuk et al. (2011) in constructing the CPS measure based on CEO compensation. In this framework, Bebchuk et al. (2011) present CPS as a measure of the board's perception of the importance or power of the CEO. CPS measures the total compensation that the CEO gets relative to the compensation of the top five executives (including the CEO). The measure is supported by a large body of literature that uses CPS as a

proxy of CEO power (Bebchuk et al., 2011; Jiraporn and Chintrakarn, 2013). This leads to our first hypothesis:

Hypothesis 1: The more negative the negative tone in the prior year, the smaller the CPS.

Although we conjecture that the negative tone will have direct negative effect on CEO power, the effect may be moderated by a firm's internal governance mechanisms. Internal governance mechanisms, in particular, are used to monitor management and to align the incentives of managers and principals (Jensen, 1979; Daily et al., 2003). In addition, the internal governance mechanism is required for the external mechanism to function, which leads to a complementary relation between these mechanisms (Cremers and Nair, 2005).

We first look at the corporate internal governance to assess the power of the CEO relative to the board. The board of directors performs the dual function of monitoring the firm's management and advising the CEO on key decisions (Baldenius et al., 2014). The board of directors is a key monitoring mechanism to ensure that managers focus on increasing shareholders' value. Board size, defined as the number of directors on the board, can affect CEO power. Prior literature finds support for larger boards being more efficient in constraining CEO power and generating cohesive decisions (Jensen, 1979; Yermack, 1996).

We also consider independent directors as an internal governance mechanism to monitor CEO power. Independent directors, composed of outsider directors without family and business ties with the firm, play a particularly strong role to evaluate the management team and are less likely to be controlled by the CEO (Fama and Jensen, 1983). In contrast, boards with more insiders may have a biased evaluation of management due to their interactions with the CEO and other managers (Baysinger and Hoskisson, 1990; Bednar et al., 2013).

We further consider the role of the CEO on the board as a proxy for the relative importance of the CEO to the firm (Adams et al., 2005). A CEO chairman creates a concentration of decision-making on the board of directors, increasing the CEO's power and ability to influence

key decisions (Finkelstein, 1992; Finkelstein and Hambrick, 1996). A CEO chairman can use his/her power to threaten directors' independent judgment in management (Haynes and Hillman, 2010). CEOs can also control the decision-making process to avoid even greater sanctions when they receive more negative press (Bednar et al., 2013). CEO power can influence a CEO's incentives to disclose information (Jiraporn et al., 2014). Hence, a firm where the CEO is also the board chairman may experience a lower level of internal governance, with the CEO influencing information disclosure.

Institutional investors are more active in monitoring CEOs' behaviour, constraining CEO influence and power by exerting their best effort to maintain investment stakes and improve investment returns. Institutional investors have a greater incentive to take measures that can improve internal governance (Chung and Zhang, 2011). Institutional blockholders are often seen as the primary internal monitoring mechanism. We follow Cremers and Nair (2005) by using institutional blockholding rather than institutional holdings to mitigate the problem that institutions with minor stakes may have little incentive to monitor. Additionally, blockholders can pressure management through voting control (Shleifer and Vishny, 1986). Hence, firms with institutional blockholders are a good indication of corporate governance quality.

Media can function as a type of corporate governance mechanism or watchdog that acts as a check on CEO misbehaviour (Miller, 2006; Dyck et al., 2008). Media can be an external control mechanism, helping the board to monitor CEO behaviour in corporate governance. Bednar et al. (2013) argue that negative media coverage can help to overcome the information asymmetry with management and is likely to be viewed as a credible source of information. Directors rely on external public information in the decision-making process and boards are influenced by analyst reports when evaluating managers (Wiersema and Zhang, 2011). For example, outsider directors are more likely to gather information from independent external sources because it is credible and unbiased (Menon and Pfeffer, 2003). In addition, when a

CEO is a chairman, this creates a concentration of decision-making rights in the CEO and increases individual power in the board (Finkelstein, 1992; Finkelstein and Hambrick, 1996). Although directors may find it hard to change a board decision because of a powerful CEO, the media can cause embarrassment to the CEO (Skeel, 2001; Bednar et al., 2013) and damage his/her reputation. Institutional investors are more likely to gather additional external and credible information that prompts corporate internal governance. Thus, negative coverage gives a public voice to shareholders' concerns and puts pressure on firms to respond (Bednar et al., 2013). Therefore, when firms have an efficient internal monitoring system, we expect the media to be an effective external monitoring mechanism, scrutinizing CEO behaviour and constraining CEO power. This is consistent with Cremers and Nair (2005), who document a complementary relation between internal and external corporate governance mechanisms. This leads to our second hypothesis:

Hypothesis 2: The negative relation between negative tone and CEO power is more pronounced when the firm has a good internal corporate governance mechanism.

3. Sample selection and methods

3.1. Sample selection

Our sample consists of the CEO and the other top four highest-paid executives for all S&P 500 companies over the 19-year period from 1996 to 2014, as identified in the ExecuComp database. We consider calendar years rather than fiscal years to simplify the search. Although most of the S&P 500 firms have December year-ends, the difference between calendar and fiscal years is minimal in our sample (Francis et al., 2008). Negative tone data are obtained from articles in the Factiva database. We gather data on CEO characteristics and compensation for the five highest-paid managers from the ExecuComp database. Information on firm characteristics is sourced from Compustat and the Center for Research in Security Prices

(CRSP). Governance variables are obtained from RiskMetrics, ExecuComp, and the Compustat databases.

3.2. Variables

3.2.1. Media variables

To construct the negative tone measures, we rely on four major newspapers and one magazine: (1) *The Wall Street Journal*, (2) *The Washington Post*, (3) *The New York Times*, (4) *USA Today*, and (5) *Forbes* (Core et al., 2008; Francis et al., 2008; Bednar, 2012; Bednar et al., 2013). Media data are obtained from news articles in the Factiva database by searching for the name of the CEO and the firm collectively as reported in ExecuComp database. To ensure that we capture all relevant articles regarding the CEO and the firm, we also search for shortened names (e.g., Dan for Daniel) and common nicknames (e.g., Chuck for Charles). In addition, we also consider the name of the firm managed by the CEO and the stock ticker symbol (e.g., BLL for Ball Corporation) as search criteria.

We calculate the percentage of negative words using the Loughran and McDonald (2011) financial dictionary relative to the total number of words in each article. Negative tone (Negtone) is equal to the mean score for the negative words category from all articles about a particular firm in a given year. In addition, we also consider the number of articles for each CEO in a given year.

To measure negative tone, we develop a PERL program to analyse the text of each article for negative words. This program counts the number of negative words as defined in the financial dictionary that occur in a given text. Furthermore, we impose certain criteria to eliminate irrelevant articles which provide no valid information (e.g. a firm or a CEO included in a list or table). Articles containing fewer than 50 words are not included in our sample. We impose one further requirement that the news articles contain the CEO's family name and the

firm name at least twice. Finally, our sample does not include articles that have irrelevant titles.[2] We identify these titles via a random reading of approximately 500 articles from the sample.

3.2.2. CEO power

Following Bebchuk et al. (2011), we compute CPS based on total compensation as presented in equation (1) below.

$$CPS_{i,t} = \frac{CEO\ \ Compensation_{i,t}}{\sum Top\ Five\ Executive\ Compensations_{i,t}} \quad (1)$$

CPS is defined as the ratio of the CEO's total compensation relative to the sum of the compensation paid to the top five executives (including the CEO).[3] Total compensation includes salary, bonus, other annual pay, the total value of restricted stock granted during the year, the Black and Scholes value of stock options granted during the year, long-term incentive payouts, and all other total compensation (as reported in ExecuComp item TDC1). Following the change in executive compensation reporting requirements due to FAS123R in 2006, ExecuComp compensation data are not comparable before and after 2006 (Coles et al., 2007; Brockman et al., 2016). We follow the approach proposed by Coles et al. (2014) and applied by Brockman et al. (2016) to adjust ExecuComp's total compensation (TDC1) data in the pre-2006 period. Appendix A shows additional details on the calculation of this variable. We restrict our sample to those observations where the CEO was in office for two consecutive years. The intuition behind using the CPS is to capture the observable and unobservable dimensions of the firm's top executives' compensation model. Moreover, we argue that the

[2] We exclude some articles with contents unrelated to the firms and CEOs, such as a list or table. For example, an article entitled "Top 100 CEOs" which reports a ranking list of CEOs with the highest compensation. In addition, we also do not consider articles including combined and compounded news, such as "Business and Finance", "What's on Friday", and "Insider on Time". These articles consist of more than 10 news sections and only one of the sections relates to the firm and CEO that are of interest to us.

[3] Firms are required to report the compensation for anyone holding office, which includes the CEO and all other executives. Following Bebchuk et al. (2011), we restrict the sample to firms that report compensation for only five executives. We exclude those firms that report compensation for fewer than five executives.

CPS captures dimensions of the CEO's role in the top team beyond the measure of board involvement.

3.2.3. Control variables

Following prior literature, we construct firm and CEO characteristics as the control variables (Bebchuk et al., 2011; Bednar et al., 2013). CPS has a rich set of relations with firm performance, value, and firm behaviour (Bebchuk et al., 2011). We control for industry-adjusted Tobin's Q as a measure of firm value, following a substantial literature on the association between firm value and various corporate arrangements (Yermack, 1997; Gompers et al., 2001). We also control for firm size using the natural log of book value,[4] Leverage, ROA, Capex/Assets, R&D, Company age and Diversified using data from the Compustat and CRSP databases.

We employ CEO characteristics controls referred to in Bebchuk et al. (2011), including Relative equity, CEO age, CEO tenure, and CEO outsider. Firms with an insider CEO may be more heterogeneous in nature, implying CEO talent is hard to replicate in the firm (Parrino, 1997). However, an outsider CEO can receive more compensation attributed to a unique individual skill set (Murphy and Zabojnik, 2007).

We also consider governance characteristics in our empirical model. We control for a number of board characteristics that may affect CEO power (Combs et al., 2007; Pathan, 2009; Baldenius et al., 2014). Media coverage may influence changes in board structure (Bednar, 2012; Liu et al., 2017). Prior studies show that negative attributes or scandals tend to carry more weight when forming an impression and have greater influence on the corporate

[4] The empirical results reported in this paper use the natural log of total assets to control for firm size, which is consistent with the control measure used by Bebchuk et al. (2011). However, we also estimate the models using the natural log of market capitalization and the natural log of revenue (Core et al., 2008), respectively, as separate controls for firm size. The results from these unreported estimations are consistent with those reported throughout the paper.

governance structure (Baumeister et al., 2001). In addition, structural features of boards of directors can constrain or enable managerial power (Van Essen et al., 2015). Based on agency theory, Combs et al. (2007) argue that board structure is of greatest concern to shareholders when the CEO is powerful.

Numerous board governance variables are obtained through the ExecuComp and CRSP databases. This includes CEO ownership, Number of vice presidents (VPs) and Insider ownership following Bebchuk et al. (2011). We also consider the roles of the Chairman and the Founder as control variables. The CEO as a chairman is able to control the information provided to the board of directors, and this consequently increases the CEO's influence (Pearce and Zahra, 1991; Bebchuk and Fried, 2005). Adams et al. (2005) argue that the CEO is more influential and powerful if he or she is one of the firm's founders. In addition, the level of compensation is higher when the CEO is involved in the nomination process for new directors. Outsider directors should be more likely to view information gathered from independent external sources as credible and unbiased (Menon and Pfeffer, 2003). The size of the board is also likely to enable or constrain managerial power. We also obtain commonly-used measures of corporate governance quality from the RiskMetrics database, including the percentage of appointed directors (Appointed), percentage of independent directors (Independent), board interlocking, and board size.

Table 1 presents the descriptive statistics for our dependent and independent variables. We present the variable definitions in Appendix B. We find that the mean CPS for total compensation is 0.4, which is consistent with the number (i.e. 0.357) reported by Bebchuk et al. (2011). As shown in the media variables section, the average Negtone is approximately 0.968%. Thus, on average, 0.968% of the words in the articles about the CEO and the firm have a negative tone in a financial context. The summary statistics for firm and CEO characteristics are also reported in Table 1. The average measures for industry-adjusted Tobin's

Q and Leverage are similar to those reported by Bhagat and Bolton (2008). The mean of CEO tenure is approximately 7.2, which is consistent with the variable reported in Bebchuk et al. (2011). The summary statistics for the other variables show that the average CEO age, Chairman, and Board size are around 56, 0.65, and 10.33, respectively. These values are comparable to the ones reported in Brockman et al. (2016).

< Insert Table 1 here >

Table 2 presents a matrix of estimated correlation coefficients for media measures and control variables. Consistent with our expectation, the Negtone and CPS variables are negatively correlated at 0.79%. While the rank order correlation is slightly higher for some variables (notably, Insider ownership and CEO ownership = 46.3%; Company age and Log book value = 45.5%; Number of VPs and CEO ownership = 40.4%), the variance inflation factors from the empirical estimations are all below 3 (not reported), which indicates that multicollinearity is not a concern for the regression analysis.

< Insert Table 2 here >

3.3. Methodology

To investigate the relation between negative tone and CEO power, we employ the following regression model as presented in equation (2) below.

$$CPS_{i.t} = \beta_0 + \beta_1\, Negtone_{i,t-1} + \gamma' Control\ Variables_{i,t-1} + \varepsilon_{i,t-1.}, \qquad (2)$$

where $CPS_{i.t}$ is the CEO power for firm i in year t. This equation models CEO power as a function of negative tone after controlling for firm-specific and CEO-specific variables. $Negtone_{i,t}$ is the average negative tone for all articles for firm i in year $t-1$. We cluster standard errors by firm and introduce year fixed effects to correct for the standard errors and to alleviate the concern about potential time-scale in the panel dataset.

4. Empirical results

4.1. Impact of negative tone on the CPS

In this section, we discuss our empirical results concerning the association between negative tone and CEO power. As discussed above, we measure CEO power by relying on total compensation following Bebchuk et al. (2011) in year t. All standard errors are clustered at the firm level to account for correlations within firm observations. The control variables include Industry-adjusted Tobin's Q, Log book value, Leverage, ROA, Capex/Assets, R&D, Company age, Diversified, Relative equity compensation, CEO tenure, and CEO Outsider, along with firm and year fixed effects. We also include governance control variables as a subsequent robustness test. The full descriptions of the control variables are provided in Appendix B. The results of these estimations are presented in Table 3.

< Insert Table 3 here >

The pooled panel regression results, displayed in Columns 1 and 2 of Table 3, indicate a strong negative association between negative tone and CPS. Negtone reports a negative and statistically significant coefficient with and without governance control variables. In Column 1, Negtone has strong economic significance: a one standard deviation increase in negative tone (equal to 0.948) decreases CPS by 0.76%.[5] Similarly, in Column 2, a one standard deviation increase in the negative tone of media coverage translates into a decrease in CPS of 0.66%.[6] Using the median measures of CEO compensation, these changes correspond to decreases of $9,113.255 ($7,974.895) for a 10% increase in negative tone.[7] The findings imply that the power of a CEO as measured by CPS is diminished when media coverage has a more negative tone. Thus, the more bad press a CEO and his/her firm is exposed to, the greater the

[5] 0.008 × 0.948 = 0.76%

[6] 0.007 × 0.948 = 0. 66%

[7] We use $\frac{(\beta \cdot 10\%)Top\ 4}{1-\beta \cdot 10\%}$ to calculate the dollar value of the change in the median level of CEO pay using the median pay for the top four paid executives. β is the estimated coefficient of Negtone. Top 4 is the median value of the top four executives' compensation.

subsequent decrease in CPS. The findings are consistent with Hypothesis 1 and provide some evidence that media tone plays an important governance role in influencing CEO power.

4.2. Negative tone and corporate governance

Media can be an external governance mechanism to help the board of directors and the firm to monitor top managers (Bednar, 2012; Liu et al., 2017). We further examine the association between negative tone and CPS by taking into consideration the role of a firm's internal corporate governance mechanism. We conduct our analysis of the relationship between CPS and negative media tone using the subsamples of firms with good and poor internal corporate governance. This is to take into account the complementary relation between the internal and external corporate governance mechanism as documented by Cremers and Nair (2005). To do this, we construct governance proxies using the measures for board size, independent directors, CEO duality, institutional blockholders, and a governance index. The results are reported in Table 4.

< Insert Table 4 here >

The subsample analysis of the association between negative tone and CPS in Panel A sorts firms by small and large board size as reported in Columns 1 to 4. Firms are defined as having small (or large) boards if the number of directors on the board is less (or greater) than the sample median in a given year. Similarly, firms are classified into subsamples according to low and high proportions of independent directors in Columns 5 to 8, respectively.[8] From Column 1, firms with smaller boards report a negative association between negative tone and CPS ($p < 0.1$); however, the significance disappears after governance controls are included as shown in Column 2. Negtone is negative and statistically significant with and without governance control

[8] Firms are defined as having low (high) board independence if the proportion of independent directors is less (greater) than the median board independence in a given year.

variables (-0.007, $p<0.01$) for the subsample of firms with larger boards as shown in Columns 3 and 4. This means that the negative effect of negative tone on the extent of CEO power is stronger when the board size is large. The coefficient of Negtone is negative and insignificant for the subsample of low-board-independence firms as reported in Column 5 and 6. However, the coefficient is negative and statistically significant for the subsample of firms with high board independence shown in Columns 7 and 8. This suggests that media act as an effective external corporate governance mechanism when firms have a strong internal corporate governance mechanism. These finding are consistent with Hypothesis 2 and supports the role of media in mediating CEO power.

Panel B reports the results for subsamples of firms classified by CEO duality and institutional blockholders, respectively. In Columns 1 to 4, CEO duality is a dummy variable equal to one if the CEO is also chairman of the board. Negtone is negative and statistically significant for each model; however, the association is statistically stronger when the CEO is not the board chairman. Columns 5 to 8 examine the impact of institutional blockholders based on its being lower or greater than 5% of firms' ownership in a given year. Columns 7 and 8 report the results that Negtone is negatively associated with CPS for the models estimated over the subsample of shareholders with equity ownership greater than 5%. In both cases, the regression coefficient of Negtone is negative and statistically significant in explaining CEO power. The results suggest that the impact of the media is stronger in firms where there is a stronger presence of the internal corporate governance mechanism.

Panel C reports the subsample analysis after separating the firms according to a governance index that classifies firms as being poorly or well governed. The governance index is defined as the average of the four internal governance metrics, board size, percentage of independent

directors, CEO duality, and Block.[9] The governance index ranges from zero to one, where higher values indicate stronger internal corporate governance and less entrenched management. We find strong evidence that negative tone significantly decreases CEO power for firms with good internal governance. Negtone is negative and statistically significant (-0.008, $p<0.01$ and -0.007, $p<0.01$, respectively) as reported in Columns 3 and 4 of Panel C. Overall, the findings support Hypothesis 2. The effect of media on CEO power is stronger for firms with good internal governance.

5. Robustness tests

5.1 Endogeneity

A concern with our empirical analysis is that CEOs with higher compensation experience more negative media coverage (Core et al., 2008). This association may lead to a reverse causality problem. To address this concern, we use an instrumental variable approach and estimate our model using a 2SLS framework. For media, we consider an instrument along the lines proposed by Gurun and Butler (2012). When the local media report news about local companies, negative media coverage is avoided because it is suppressed by local government in response to political incentives (Gurun and Butler, 2012; You et al., 2017). We consider a dummy variable, local firm, that equals one if both the firms and the headquarters of media outlets are located in the same state. Reporting by local media contains fewer negative words compared with the reports about the same nonlocal companies. Therefore, consistent with 2SLS methodology, our instrumental variable is negatively related to the negative tone measure. The instrumental variable is, however, not correlated with the CPS.

[9] Board size indicator equal to one if board size is greater than median value in a given year and zero otherwise. Independent director indicator equal to one when the percentage of independent directors is greater than the median value in a given year and zero otherwise. CEO duality indicator equal to zero if CEO is a chairman and one otherwise. Block set to one if the institutional blockholders are shareholders with greater than 5% ownership of firms' shares outstanding in a given year and zero otherwise. The governance index is based on the average of the sum of four indicators. A higher index score indicates better internal governance.

The results of the first-stage pooled ordinary least square (OLS) regression in which Negtone is the dependent variable are reported in Columns 1 and 2 of Table 5. The models in Column 1 exclude governance variables and the model in Column 2 includes these control variables. We find local firm to be negatively related to Negtone and statistically significant as shown in Columns 1 and 2, respectively. This is consistent with prior research that a firm located further away from the media source is more likely to receive negative coverage (Engelberg and Parsons, 2011; Gurun and Butler, 2012; You et al., 2017). These results indicate that our instrument is valid and strong (Staiger and Stock, 1994).

< Insert Table 5 here >

In Columns 3 and 4 of Table 5, we report the results of the second-stage regression in which we use CPS as the dependent variable and the predicted variables for Negtone together with the other control variables used in Table 3. The coefficient on Negtone is negative and statistically significant when excluding and controlling for governance control variables (-0.604, $p<0.01$ and -0.632, $p<0.01$, respectively). Specifically, a one standard deviation increase in Negtone is associated with a 0.576 (0.602) decrease in the CPS. Using the median measures of CEO compensation corresponds to a decrease of $649,378.718 ($677,692.911) when negative tone increases by 10%. These findings are consistent with the view that CEOs will experience a decrease in CPS after exposure to media coverage with a negative tone in the prior year. Overall, the results reported in Table 5 support Hypothesis 1; that is, media tone plays an important monitoring role in influencing CEO power.

5.2 Pre-2006 vs post-2006 periods

In 2006, the vast majority of firms switched to new reporting requirements (FAS123R) making the disclosure of executives' compensation relative to pre-2006 directly incomparable (Coles et al., 2014). In Table 6, given this significant change in executive compensation

disclosure, we examine the role of negative tone on CEO power in the 1996–2005 period (Columns 1 and 2) and the 2007–2014 period (Columns 3 and 4), respectively. We find that the coefficient of Negtone is negative and statistically significant during the post-2006 period. The robustness test suggests that the effect of negative tone on CPS is prevalent in more recent years. The importance of more recent observations is consistent with the influence and prominence of the media and its role in society as a disseminator of information during the latter part of the study. Therefore, it makes intuitive sense that we find greater association in the post-2006 period compared with the pre-2006 period. This result is also consistent with the technological and cultural change in the role and impact of the media concerning the communication of information. Our results on negative tone in the post-2006 period are consistent with the main findings presented in Table 3.

< *Insert Table 6 here* >

5.3 Media tone and change in CPS

To the extent that the role of the media as a governance mechanism is used to influence CEO power and behaviours, we would expect that the monitoring role of media is strongly related to the change in CEO power. To examine this relationship, we compute the change in CPS as presented in equation (3) below.

$$\Delta\, CPS_{i,t} = ln\left(\frac{CPS_{i,t}}{CPS_{i,t-1}}\right) \tag{3}$$

The change in CPS for each firm-year is a measure of the incremental change in CEO power between $t-1$ and t. Table 7 reports the estimated models in examining the association between negative tone and the change in CEO power. Negtone is negative and statistically significant as reported in Columns 1 and 2 ($p<0.01$). The finding shows that negative tone constrains the expansion of CEO power. When CEOs receive more negative press coverage, they recognize that their value in the labour market is reduced greatly and their position

threatened. Therefore, CEOs will be likely to change their attitude and restrain themselves in order to avoid more losses. These results support the monitoring role of media on changes in CEO power. We find that the change in CPS is smaller for those firms where the CEO received more negative attention.

< Insert Table 7 here >

As a further robustness test, we also re-estimate the results reported in Tables 4 to 6 using change in CPS as the dependent variable. These unreported results are consistent with our main findings, thereby providing support to the monitoring role of media in constraining CEO influence and power.

6. Conclusion

Media play a powerful role for public discourse in shaping the public's perceptions of various issues (Rogers et al., 1993). Media also continue to be an extremely controversial topic for corporate governance. Prior literature views the media as an information intermediary (Bushee et al., 2010), and scholars believe that the media are an important communication tool. Our findings support the role of media tone as an external corporate governance mechanism on the firm and the CEO. Public attention can also drive CEOs to 'do the right thing' rather than compromising firm value.

This study makes an important distinction with prior work on corporate governance by examining the relationship between negative tone and CEO power. We contribute to the literature by examining the governance effect of the media's news dissemination role in disciplining powerful CEOs from extracting excessive compensation. The empirical analysis highlights the responsiveness of CEO power to negative media tone. That is, the more negative the media tone that the CEO and the firm face, the greater the constraint imposed on CEO

power. This effect impacts the CEOs' ability to control information and the extraction of personal benefits that are associated with their position.

In addition, this paper seeks to examine a missing link between negative tone and CEO power by taking into consideration the firm's internal corporate governance mechanism. It is possible that CEOs are more sensitive to media in firms with good internal governance, and, as a consequence, the media can and do play a monitoring role in corporate governance (Cheng et al., 2017). We report that the negative relation between negative tone and CEO power is concentrated among firms with (1) larger board size, (2) more independent directors, (3) CEOs not being the chairman on the board, and (4) institutional blockholders with equity ownership greater than 5%. In well-governed firms, we argue that media act as an effective external monitor that may drive CEOs to be more efficient. We also create a governance index to perform subsample analysis and find largely consistent results.

Overall, our findings show that media are an effective external tool in mediating CEO power and that this is particularly more pronounced for firms with good internal corporate governance mechanisms. This suggests that external corporate governance mechanisms act as a complement to a firm's internal corporate governance mechanism. Future work may build on this research and investigate whether the current results extend to different contexts (i.e. similar effects on CEO power in different countries or cultures). One could look at different types of media, such as website news. In summary, we hope that this study can help to further a behavioural view on the role of the media on corporate governance.

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Appendix A. Adjusted CEO compensation

The annual compensation pre-2006 and post-2006 is not strictly comparable because following FAS 123R, ExecuComp changed the format used to compute compensation data in 2006. We elaborate pre-2006 equations on TDC1, cash, equity, and option as below.

$$TDC1 = SALARY + BONUS + RSTKGRNT + Performance\ based\ stock\ award + OPTION\_AWARDS\_BLK\_VALUE + Performance\ based\ option\ award + OTHANN + ALLOTHTOT \quad (A1)$$

$$CASH = SALARY + BONUS \quad (A2)$$

$$EQUITY = RSTKGRNT + Performance\ based\ stock\ award \quad (A3)$$

$$OPTION = OPTION\_AWARDS\_BLK\_VALUE + Performance\ based\ option\ award \quad (A4)$$

We subtract long-term incentive plans (LTIP) from TDC1 and then add the performance-based stock awards (SHRTARG × PRCC_F) and the performance-based option awards to TDC1 (LTIP and SHRTARG as reported in ExecuComp and PRCC_F reported in Compustat).[1] Cash compensation includes salary and bonus in our data. Equity compensation includes the value of stock grant and option grant. We adjust the pre-2006 data that are from options granted using Black-Scholes methodology (item OPTION_AWARDS_BLK_ VALUE), restricted stock grant (item RSTKGRNT), the performance-based stock awards, and the performance-based option awards, respectively. This measure is based on the grant-date fair value of option awards and stock awards after 2006 (item OPTION_AWARDS_FV and STOCK_AWARDS_FV, separately). Option compensation is from options granted using Black-Scholes methodology before 2006 and the grant-date fair value of option awards after 2006.

[1] Following Coles et al. (2014), we estimate performance-based option awards using the target number of options, the reported exercise price, time-to-maturity, and other variables needed for the Black-Scholes value.

Appendix B. Variable definitions

CEO power measures	
CPS_t	The ratio of CEO total compensation (ExecuComp item TDC1) relative to the sum paid to the top five paid executives including the CEO
Media variables	
Negtone (%)	The average ratio of negative toned words to total words based on financial dictionary following Loughran and McDonald (2011)
Number of articles	The number of articles for each firm in a given year
Firm-specific variables	
Industry-adjusted Tobin's Q	Tobin's Q is defined as the book value of assets plus market value of equity minus the sum of book value of common stock and deferred taxes, all divided by book value of assets. The industry measure is calculated based upon the four-digit SIC industry codes
Log book value	The natural logarithm of the book value of assets
Leverage	The ratio of long-term debt to assets
ROA	Return on assets, the operating income divided by book value of assets
Industry-adjusted ROA	Defined as operating income divided by the book value of assets, industry-adjusted using the median ROA based upon the four-digit SIC industry codes
Stock return	Annual stock return for the calendar year, based on the CRSP monthly stock file to calculate one-year compound returns
Capex/assets	The ratio of capital expenditures to assets
R&D	The ratio of research and development expense to sales
Company age	The current year minus the year in which the company was first listed on the center for research in security prices (CRSP) database
Diversified	A dummy variable equal to one if the firm reports more than one segment
CEO-specific variables	
Relative equity	The ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives
CEO age	The age of CEO in years
CEO tenure	Number of years the CEO is in office
CEO outsider	A dummy equal to one if the CEO was working at the firm for less than one year before becoming CEO
Governance-specific variables	
CEO ownership	A dummy equal to one if the CEO holds at least 20% of outstanding shares
Chairman	A dummy variable equal to one if the CEO is the chairman of board, zero otherwise
Founder	A dummy variable equal to one if the CEO is a founder of the firm, zero otherwise
Number of VPs	Number of vice presidents
Insider ownership	The fraction of shares held by all insiders
Appointed	The percentage of new directors appointed during the CEO's tenure
Independent	The percentage of outsider directors sitting on the board of directors
Board interlock	A dummy variable equal to one if the firm has at least one director who serves on board of another firm, zero otherwise
Board size	The number of directors
Instrumental variable	
Local firm	A dummy variable equal to one if both the firms and the headquarters of media outlets are located in the same state, zero otherwise

Table 1: Descriptive statistics

This table reports the number of observations, mean, median, standard deviation, minimum, and maximum for each variable in the sample. The variables are grouped according to the following classifications: CEO power, media, firm-specific, CEO-specific, and governance-specific. The sample contains 4,534 observations for all S&P 500 firms in ExecuComp from 1996 to 2014. Definitions for all variables are provided in Appendix B.

Variable	Obs.	Mean	Median	Std Dev.	Min	Max
CEO power measures						
CPS_t	4,295	0.400	0.411	0.118	0.000	0.987
Media variables						
Negtone (%)	4,534	0.968	0.953	0.948	0.000	7.099
Number of articles	4,534	6.973	1.000	20.948	0.000	367.000
Firm-specific variables						
Industry-adjusted Tobin's Q	4,529	2.307	1.948	1.456	0.702	27.087
Log book value	4,533	8.847	8.792	1.371	3.871	13.589
Leverage	4,521	0.314	0.193	0.436	0.000	9.109
ROA	4,533	0.168	0.162	0.088	-0.641	0.897
Capex/assets	4,505	0.057	0.041	0.053	0.000	0.804
R&D	4,534	0.052	0.006	0.181	0.000	5.682
Company age (years)	4,348	32.783	31.917	17.930	1.417	64.417
Diversified	4,532	0.921	1.000	0.270	0.000	1.000
CEO-specific variables						
Relative equity	4,319	1.144	1.123	0.610	0.000	21.673
CEO age (years)	4,301	55.673	56.000	6.523	27.000	83.000
CEO tenure (years)	4,534	7.247	5.417	6.345	1.000	51.000
CEO outsider	4,534	0.146	0.000	0.353	0.000	1.000
Governance-specific variables						
CEO ownership	4,534	0.227	0.000	0.419	0.000	1.000
Chairman	4,534	0.645	1.000	0.479	0.000	1.000
Founder	4,534	0.066	0.000	0.249	0.000	1.000
Number of VPs	4,534	1.423	1.000	1.459	0.000	5.000
Insider ownership	4,534	0.009	0.000	0.033	0.000	0.377
Appointed (%)	3,497	56.741	46.154	42.843	0.000	100.000
Independent (%)	3,497	74.358	77.778	15.847	0.000	94.737
Board interlock	3,497	0.051	0.000	0.268	0.000	3.000
Board size	3,497	10.326	10.000	2.297	4.000	19.000

Table 2: Correlation

This table reports the correlation coefficients for the independent variables used in this study. The table reports the Pearson correlation coefficients for CEO power, media, firm, CEO, and governance control variables. Definitions for all variables are provided in Appendix B.

	Variables	1	2	3	4	5	6	7	8	9	10	11	12
1	CPS	1.000											
2	Negtone	-0.008	1.000										
3	Number of articles	-0.122	0.233	1.000									
4	Industry-adjusted Tobin's Q	-0.088	-0.064	0.005	1.000								
5	Log book value	0.116	0.366	0.371	-0.287	1.000							
6	Leverage	0.006	0.020	0.025	-0.189	0.106	1.000						
7	ROA	-0.007	-0.073	-0.037	0.285	-0.143	-0.329	1.000					
8	Capex/assets	-0.048	-0.070	-0.029	-0.033	-0.048	0.094	0.170	1.000				
9	R&D	-0.067	0.005	0.003	0.170	-0.174	0.337	-0.292	-0.085	1.000			
10	Company age	0.199	0.178	0.074	-0.214	0.455	-0.075	-0.069	-0.128	-0.137	1.000		
11	Diversified	0.003	0.021	0.048	0.028	0.076	-0.058	0.006	-0.150	-0.001	0.101	1.000	
12	Relative equity	0.137	-0.015	-0.092	-0.061	0.009	-0.003	0.007	0.001	-0.036	0.100	0.006	1.000
13	CEO age	0.040	-0.023	-0.075	-0.158	0.157	0.021	0.017	0.004	-0.104	0.108	0.042	0.013
14	CEO tenure	-0.121	-0.042	-0.011	0.020	-0.078	0.065	0.016	0.095	0.041	-0.135	-0.011	-0.106
15	CEO outsider	-0.027	0.012	0.025	0.071	-0.102	0.000	-0.037	0.019	0.138	-0.090	-0.020	-0.037
16	CEO ownership	0.029	-0.025	-0.034	-0.074	-0.024	0.038	-0.018	-0.046	-0.004	-0.038	-0.047	-0.031
17	Chairman	0.012	-0.053	-0.047	-0.012	0.017	-0.061	0.063	0.094	-0.106	0.101	0.022	-0.010
18	Founder	-0.145	-0.012	0.055	0.086	-0.132	0.091	-0.092	0.139	0.226	-0.241	-0.050	-0.055
19	Number of VPs	0.153	0.020	-0.031	-0.136	0.146	0.075	-0.048	-0.096	0.044	0.094	-0.027	0.007
20	Insider ownership	-0.126	-0.010	0.052	-0.003	-0.061	0.003	0.010	-0.014	-0.016	-0.102	0.013	-0.068
21	Appointed	0.029	0.102	0.069	-0.010	0.175	0.045	-0.014	-0.075	-0.023	0.083	-0.014	0.004
22	Independent	0.197	0.118	-0.018	-0.123	0.268	0.025	-0.076	-0.061	0.012	0.269	0.052	0.043
23	Board interlock	-0.017	-0.038	0.004	0.001	-0.029	-0.039	0.024	0.012	-0.034	0.011	0.018	0.038
24	Board size	0.025	0.169	0.136	-0.189	0.507	0.042	-0.066	-0.014	-0.109	0.422	0.077	0.060

Table 2 (Continued)

	Variables	13	14	15	16	17	18	19	20	21	22	23	24
13	CEO age	1.000											
14	CEO tenure	0.356	1.000										
15	CEO outsider	-0.010	0.137	1.000									
16	CEO ownership	0.080	0.233	-0.006	1.000								
17	Chairman	0.063	0.111	-0.049	0.088	1.000							
18	Founder	0.047	0.392	0.131	0.126	0.026	1.000						
19	Number of VPs	-0.009	0.001	-0.044	0.404	0.060	0.009	1.000					
20	Insider ownership	0.016	0.242	0.002	0.463	0.061	0.268	0.097	1.000				
21	Appointed	0.021	0.041	-0.046	0.295	-0.001	-0.037	0.367	0.116	1.000			
22	Independent	0.031	-0.088	0.015	0.180	0.075	-0.049	0.359	-0.009	0.169	1.000		
23	Board interlock	0.049	0.021	0.010	-0.087	0.024	-0.044	-0.146	-0.048	-0.068	-0.231	1.000	
24	Board size	0.119	-0.114	-0.134	-0.119	0.038	-0.127	-0.070	-0.077	0.038	0.065	0.101	1.000

Table 3: Media tone and CPS

This table reports the panel regression of CPS on negative tone. The table presents regression for the model given by Equation 2.

$$CPS_{i.t} = \beta_0 + \beta_1\, Negtone_{i,t-1} + \gamma'\, Control\, Variables_{i,t-1}$$
$$(+\mu' Governance\ Control\, Variables_{i.t-1}) + \varepsilon_{i,t-1}.$$

Following Loughran and McDonald (2011), Negtone is defined as the negative tone computed as the average ratio of negative toned words to total words. Control variables include Number of articles, firm-specific and CEO-specific variables. Firm-specific variables include Industry-adjusted Tobin's Q, Log book value, Leverage, ROA, Company age, and Diversified. CEO-specific variables include Relative equity, CEO age, CEO tenure, and CEO outsider. Governance control variables include CEO ownership, Chairman, Founder, Number of VPs, insider ownership, Appointed, Independent, Board interlock, and Board size. All control variables are measured at time $t-1$. The models are fitted using firm fixed effects regressions based on robust standard errors clustered at the firm level. The variables are as defined in Appendix B. All regressions include year fixed effects. ***, ** and * represent significance at the 1%, 5%, and 10% level, respectively. T-statistics are reported in parentheses.

Variables	(1)	(2)
	CPS_t	
Negtone	-0.008***	-0.007***
	(-3.893)	(-3.259)
Number of articles	-0.000	-0.000
	(-0.887)	(-1.037)
Industry-adjusted Tobin's Q	0.001	0.001
	(0.253)	(0.308)
Log book value	-0.006	-0.008
	(-0.853)	(-0.905)
Leverage	-0.014	-0.011
	(-1.344)	(-0.999)
ROA	0.043	0.030
	(0.930)	(0.577)
Capex/assets	0.057	-0.003
	(0.775)	(-0.044)
R&D	0.025	0.019
	(1.199)	(0.797)
Company age	0.004***	0.002*
	(4.688)	(1.768)
Diversified	0.012	0.010
	(1.008)	(0.747)
Relative equity	0.005	0.004
	(1.002)	(0.745)
CEO age	-0.001	-0.001
	(-1.319)	(-1.183)
CEO tenure	-0.001	-0.001
	(-0.995)	(-1.153)
CEO outsider	-0.004	-0.005
	(-0.282)	(-0.340)
Constant	0.347***	0.431***
	(5.244)	(5.091)
Observations	3,690	3,038

R-squared	0.055	0.054
Firm fixed effects	YES	YES
Year fixed effects	YES	YES
Governance control variables	NO	YES

Table 4: Media tone and CPS: subsample analysis

This table reports the panel regression of the CPS on negative tone based on subsample analysis of firms with varying degree of internal corporate governance mechanisms. The table presents regression for the model given by equation 2. The subsample analysis on the association between negative tone and CPS in Panel A sorts firms into small and large board size and lower and higher percentage of independent directors, respectively. Columns 1 to 4 show small or larger board size which is less or greater than the median of the sample of board in a given year. Columns 2 and 4 include governance variables as additional controls but exclude board size. As shown in columns 5 to 8, lower (or higher) independent is defined as firm with independent directors less (or greater) than the median of independent directors in a given year. Columns 6 and 8 include governance variables as additional controls but exclude %Independent. Panel B sorts firms into whether CEO is a chairman, and whether ownership of institutional blockholders is greater than 5% ownership of the firm's outstanding shares, respectively. In columns 1 to 4, CEO duality is a dummy equal to one if the CEO is a chairman on the board. Columns 2 and 4 include governance variables but exclude Chairman. Columns 5 to 8 shows that Block is dummy equal to one if institutional blockholders are shareholders with greater than 5% ownership of firm's outstanding shares in a given year. Panel C reports subsample analysis which sorts into well and poorly corporate governance. Governance index consists of four governance indicators (including board size, independent directors, CEO duality, and Block) that are related with internal corporate governance mechanism. Columns 2 and 4 include governance variables but exclude Chairman, Independent, and board size. All independent variables and control variables are measured at time $t-1$. The models are fitted using firm fixed effects regressions based on robust standard errors clustered at the firm level. The variables are as defined in Appendix B. All regressions include year fixed effects. ***, ** and * represent significance at the 1%, 5%, and 10% level, respectively. T-statistics are reported in parentheses.

Panel A. Subsample analysis: the association between negative tone and CPS basing on board size and independent director								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CPS_t				CPS_t			
	Small board size		Large board size		Lower independent		Higher independent	
Negtone	-0.006*	-0.006	-0.007***	-0.007**	-0.005	-0.004	-0.010***	-0.009***
	(-1.805)	(-1.510)	(-2.850)	(-2.414)	(-1.334)	(-1.176)	(-3.942)	(-3.423)
Number of articles	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.000
	(-0.289)	(-0.363)	(-0.906)	(-0.900)	(-1.096)	(-1.167)	(0.392)	(0.417)
Industry-adjusted Tobin's Q	-0.008*	-0.005	0.006*	0.007*	-0.000	-0.001	-0.002	-0.001
	(-1.888)	(-1.148)	(1.884)	(1.789)	(-0.055)	(-0.118)	(-0.488)	(-0.368)
Log book value	-0.015	-0.016	-0.004	-0.009	-0.014	-0.007	-0.000	-0.005
	(-0.849)	(-0.890)	(-0.451)	(-0.934)	(-0.943)	(-0.466)	(-0.054)	(-0.466)
Leverage	-0.012	-0.008	-0.014	-0.020	-0.018	-0.009	-0.010	-0.011
	(-0.960)	(-0.706)	(-0.760)	(-0.884)	(-0.873)	(-0.504)	(-0.713)	(-0.629)
ROA	0.025	-0.023	0.007	-0.029	0.012	-0.011	0.071	0.065

	(0.343)	(-0.355)	(0.113)	(-0.398)	(0.154)	(-0.133)	(1.294)	(1.500)
Capex/assets	0.048	0.064	0.087	-0.052	-0.165	-0.158	0.161*	0.130
	(0.483)	(0.617)	(0.946)	(-0.387)	(-1.115)	(-1.055)	(1.966)	(1.027)
R&D	0.010	-0.003	0.033	0.040	0.031	0.017	0.037	0.017
	(0.395)	(-0.101)	(0.976)	(1.045)	(0.747)	(0.441)	(1.152)	(0.525)
Company age	0.006***	0.004	0.003***	0.001	0.006***	0.002	0.004***	0.003*
	(2.786)	(1.348)	(3.298)	(0.864)	(2.700)	(0.942)	(3.343)	(1.696)
Diversified	0.014	0.010	0.017	0.011	0.002	0.001	0.018	0.016
	(0.718)	(0.473)	(1.179)	(0.612)	(0.096)	(0.067)	(1.020)	(0.781)
Relative equity	0.004	0.004	0.007	0.006	0.010	0.007	0.001	0.000
	(0.561)	(0.605)	(1.267)	(0.950)	(1.416)	(0.968)	(0.248)	(0.019)
CEO age	-0.001	-0.001	-0.000	-0.000	0.000	0.001	-0.001	-0.001
	(-1.027)	(-0.783)	(-0.479)	(-0.348)	(0.097)	(0.412)	(-0.812)	(-0.635)
CEO tenure	-0.002	-0.002*	-0.001	-0.001	-0.002	-0.002	0.000	-0.000
	(-1.296)	(-1.791)	(-0.696)	(-0.890)	(-1.361)	(-1.420)	(0.112)	(-0.205)
CEO outsider	0.011	0.014	-0.012	-0.026	-0.010	-0.028	-0.003	-0.004
	(0.541)	(0.667)	(-0.828)	(-1.412)	(-0.365)	(-0.898)	(-0.241)	(-0.235)
Constant	0.428***	0.460***	0.299***	0.414***	0.354***	0.374***	0.298***	0.366***
	(3.169)	(3.273)	(3.780)	(4.065)	(2.855)	(2.824)	(3.594)	(3.671)
Observations	1,242	1,171	2,448	1,867	1,477	1,382	2,213	1,656
R-squared	0.093	0.097	0.057	0.065	0.068	0.074	0.064	0.074
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Governance control variables	NO	YES	NO	YES	NO	YES	NO	YES

Panel B. Subsample analysis: the association between negative tone and CPS basing on CEO duality and institutional blockholders

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CPS_t				CPS_t			
	CEO duality=1		CEO Duality=0		Block=0		Block=1	
Negtone	-0.005**	-0.005*	-0.009***	-0.008**	-0.010	-0.012	-0.008***	-0.007***
	(-2.257)	(-1.941)	(-2.859)	(-2.185)	(-0.904)	(-0.875)	(-3.492)	(-3.007)
Number of articles	0.000	0.000	-0.000	-0.000	-0.000	0.000	0.001	0.001
	(0.901)	(1.650)	(-0.569)	(-0.259)	(-0.319)	(0.107)	(1.485)	(1.129)
Industry-adjusted Tobin's Q	0.005	0.006	-0.005	-0.004	0.009**	0.008*	-0.002	-0.003
	(0.877)	(0.940)	(-0.880)	(-0.635)	(1.993)	(1.741)	(-0.517)	(-0.949)
Log book value	0.001	0.006	-0.015	-0.024	-0.027	-0.038	-0.011	-0.007

	(0.141)	(0.565)	(-1.292)	(-1.445)	(-1.116)	(-1.153)	(-1.225)	(-0.743)
Leverage	-0.003	-0.012	-0.014	-0.007	-0.156***	-0.162***	-0.013	-0.004
	(-0.141)	(-0.555)	(-1.520)	(-0.720)	(-6.476)	(-4.723)	(-1.254)	(-0.328)
ROA	0.100	0.088	-0.009	0.006	-0.108	-0.231	0.055	0.040
	(1.566)	(1.330)	(-0.131)	(0.084)	(-0.715)	(-1.317)	(1.203)	(0.879)
Capex/assets	0.077	0.065	0.007	-0.199	-0.559*	-0.378	0.023	0.030
	(0.961)	(0.747)	(0.042)	(-1.049)	(-1.776)	(-0.927)	(0.302)	(0.386)
R&D	0.014	-0.008	0.032	0.019	0.221	0.226	0.024	0.009
	(0.518)	(-0.280)	(1.566)	(0.801)	(1.231)	(1.241)	(1.118)	(0.384)
Company age	0.003***	0.001	0.005***	0.006*	0.002	0.002	0.004***	0.003*
	(3.292)	(0.956)	(2.610)	(1.893)	(0.624)	(0.354)	(4.093)	(1.952)
Diversified	0.024	0.013	0.001	0.040**	0.049	0.055	0.010	0.013
	(1.610)	(0.875)	(0.036)	(1.990)	(0.738)	(0.716)	(0.790)	(0.920)
Relative equity	0.006	0.009	-0.003	-0.003	0.005	0.001	0.009*	0.009*
	(1.011)	(1.266)	(-0.683)	(-0.914)	(0.667)	(0.193)	(1.769)	(1.854)
CEO age	0.001	0.001	-0.001	-0.002	-0.000	0.000	-0.001	-0.000
	(0.812)	(0.723)	(-1.050)	(-1.150)	(-0.089)	(0.071)	(-1.166)	(-0.637)
CEO tenure	-0.002	-0.002	-0.002*	-0.003*	0.001	0.001	-0.001	-0.001*
	(-1.551)	(-1.440)	(-1.907)	(-1.765)	(0.210)	(0.115)	(-1.256)	(-1.751)
CEO outsider	0.020	0.003	-0.031	-0.006	-0.062	-0.079	0.007	0.013
	(1.007)	(0.102)	(-1.315)	(-0.216)	(-1.154)	(-1.503)	(0.500)	(0.875)
Constant	0.177**	0.226**	0.473***	0.520***	0.578**	0.758*	0.380***	0.385***
	(2.107)	(2.090)	(3.970)	(3.144)	(2.177)	(1.908)	(4.763)	(4.415)
Observations	2,302	1,912	1,388	1,126	371	342	2,885	2,617
R-squared	0.063	0.067	0.066	0.092	0.168	0.195	0.062	0.061
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Governance control variables	NO	YES	NO	YES	NO	YES	NO	YES

Table 4 (Continued)

Panel C. Subsample analysis: the association between negative tone and CPS basing on governance index				
Variables	(1)	(2)	(3)	(4)
	CPS_t			
	Poor governance		Well governance	
Negtone	-0.011**	-0.010**	-0.008***	-0.007***
	(-2.569)	(-2.240)	(-3.656)	(-2.961)
Number of articles	0.000	0.000	-0.000	-0.000
	(0.367)	(0.393)	(-0.080)	(-0.392)
Industry-adjusted Tobin's Q	0.011	0.010	-0.001	-0.001
	(1.361)	(1.078)	(-0.176)	(-0.203)
Log book value	-0.047**	-0.057**	0.000	0.001
	(-2.227)	(-2.552)	(0.023)	(0.160)
Leverage	-0.003	-0.008	-0.010	-0.012
	(-0.141)	(-0.373)	(-0.950)	(-0.926)
ROA	0.005	-0.022	0.071	0.056
	(0.040)	(-0.152)	(1.550)	(1.165)
Capex/assets	-0.165	-0.093	0.108	0.062
	(-1.141)	(-0.594)	(1.410)	(0.656)
R&D	-0.008	-0.004	0.031	0.031
	(-0.143)	(-0.083)	(1.457)	(1.242)
Company age	0.009***	0.007	0.003***	0.002
	(2.630)	(1.556)	(3.493)	(1.503)
Diversified	-0.005	-0.009	0.016	0.009
	(-0.133)	(-0.234)	(1.242)	(0.618)
Relative equity	0.002	0.001	0.011**	0.013**
	(0.208)	(0.088)	(2.026)	(2.068)
CEO age	-0.000	0.001	-0.001	-0.001
	(-0.048)	(0.601)	(-1.137)	(-0.896)
CEO tenure	-0.002	-0.002	-0.001	-0.001
	(-1.055)	(-1.278)	(-1.071)	(-1.638)
CEO outsider	0.002	-0.011	-0.001	0.004
	(0.073)	(-0.332)	(-0.082)	(0.276)
Constant	0.547***	0.600***	0.299***	0.334***
	(3.399)	(3.599)	(4.244)	(3.975)
Observations	677	625	3,013	2,413
R-squared	0.105	0.119	0.060	0.062
Firm fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Governance control variables	NO	YES	NO	YES

Table 5: The association between media tone and CPS by instrumental variable estimations

This table presents regression results for the 2SLS analysis. Columns 1 to 2 report the results of the first-stage pooled OLS regression when using Negtone as the dependent variable.

$$Negtone_{i,t-1} = \alpha + \beta\ Local\ Firm_{i,t-1} + \gamma'\ Control\ Variables_{i,t-1}$$
$$(+\mu' Governance\ Control\ Variables_{i.t-1}) + \varepsilon_{i,t-1},$$

where local firm is a dummy variable equal to one if both the firms and the headquarters of media outlets are located in the same state, zero otherwise. Columns 3 to 4 present the second-stage regression on predicted Negtone. The regression model is presented as follows:

$$\Delta\ CPS_{i.t} = \beta_0 + \beta_1 Negtone_{i,t-1} + \gamma'\ Control\ Variables_{i,t-1}$$
$$(+\mu' Governance\ Control\ Variables_{i.t-1}) + \varepsilon_{i,t-1}$$

where control variables include Number of articles, firm-specific and CEO-specific variables. Firm-specific variables include Industry-adjusted Tobin's Q, Log book value, Leverage, ROA, Company age, and Diversified. CEO-specific variables include Relative equity, CEO age, CEO tenure and CEO outsider. Governance control variables include CEO ownership, Chairman, Founder, Number of VPs, insider ownership, Appointed, Independent, Board interlock, and Board size. T-statistics (in parentheses) are based on robust standard errors, clustered at the firm level. All independent variables and control variables are measured at time $t-1$. All variables are as defined in Appendix B. All regressions include firm and year fixed effects. ***, ** and * represent significance at the 1%, 5%, and 10% level, respectively.

Variables	First-stage		Second-stage	
	(1)	(2)	(3)	(4)
	Negtone		CPS_t	
Local firm	-0.197**	-0.185**		
	(-2.510)	(-2.086)		
Negtone			-0.604***	-0.632***
			(-14.131)	(-10.635)
Number of articles	0.008***	0.009***	0.005***	0.005***
	(4.248)	(4.328)	(10.563)	(7.944)
Industry-adjusted Tobin's Q	-0.025*	-0.021	-0.014***	-0.012**
	(-1.802)	(-1.441)	(-3.379)	(-2.324)
Log book value	0.118**	0.063	0.065***	0.031***
	(2.588)	(1.044)	(5.807)	(2.622)
Leverage	0.011	0.056	-0.007	0.024*
	(0.219)	(0.986)	(-0.688)	(1.966)
ROA	-1.144***	-1.448***	-0.639***	-0.876***
	(-3.296)	(-3.556)	(-10.518)	(-9.830)
Capex/assets	0.653	0.841	0.447***	0.523***
	(1.498)	(1.419)	(5.413)	(5.218)
R&D	0.079	-0.094	0.072***	-0.040
	(0.664)	(-0.548)	(3.384)	(-1.594)
Company age	-0.007***	-0.012***	0.014***	0.009***
	(-3.943)	(-3.556)	(20.937)	(6.208)
Diversified	-0.011	0.047	0.005	0.040***
	(-0.122)	(0.452)	(0.447)	(2.790)
Relative equity	0.004	0.006	0.008	0.008

	(0.209)	(0.266)	(1.528)	(1.485)
CEO age	-0.013***	-0.016***	-0.009***	-0.011***
	(-3.071)	(-3.028)	(-10.885)	(-9.666)
CEO tenure	0.004	0.006	0.002**	0.003***
	(0.985)	(1.100)	(2.420)	(3.101)
CEO outsider	-0.036	-0.047	-0.025*	-0.034**
	(-0.421)	(-0.473)	(-1.914)	(-2.270)
Constant	1.041**	1.336**	0.410***	0.803***
	(2.335)	(2.186)	(6.351)	(10.889)
Observations	3,905	3,212	3,690	3,038
R-squared	0.390	0.413	0.052	0.051
Firm fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Governance control variables	NO	YES	NO	YES

Table 6: Media tone and CPS: pre-2006 versus post-2006 periods

This table reports the regression of CEO power on negative tone in 1996–2005 (Columns 1 and 2) and 2007–2014 period (Columns 3 and 4), respectively. The table presents results for the regression model presented in equation 2. Control variables include Number of articles, firm-specific and CEO-specific variables. Firm-specific variables include Industry-adjusted Tobin's Q, Log book value, Leverage, ROA, Company age, and Diversified. CEO-specific variables include Relative equity, CEO age, CEO tenure and CEO outsider. Governance control variables include CEO ownership, Chairman, Founder, Number of VPs, insider ownership, Appointed, Independent, Board interlock, and Board size. All independent variables and control variables are measured at time $t-1$. The models are fitted using firm fixed effects regressions based on robust standard errors clustered at the firm level. The variables are as defined in Appendix B. All regressions include year fixed effects. ***, ** and * represent significance at the 1%, 5%, and 10% level, respectively. T-statistics are reported in parentheses.

Variables	(1)	(2)	(3)	(4)
	CPS_t			
	Year<2006		Year>2006	
Negtone	-0.007**	-0.003	-0.007***	-0.007***
	(-2.327)	(-0.963)	(-2.874)	(-2.639)
Number of articles	-0.000	-0.000	0.000	0.001
	(-0.667)	(-0.012)	(1.470)	(1.233)
Industry-adjusted Tobin's Q	-0.001	-0.000	0.000	-0.004
	(-0.470)	(-0.081)	(0.015)	(-0.713)
Log book value	-0.007	-0.010	-0.014	-0.016
	(-0.787)	(-0.644)	(-1.294)	(-1.187)
Leverage	-0.013	-0.009	-0.008	-0.008
	(-1.171)	(-0.722)	(-0.605)	(-0.572)
ROA	0.054	0.113	0.044	0.042
	(0.634)	(1.428)	(0.964)	(0.794)
Capex/assets	0.143*	0.036	-0.153	-0.081
	(1.659)	(0.311)	(-1.518)	(-0.687)
R&D	0.036	0.029	-0.009	-0.021
	(1.638)	(1.100)	(-0.385)	(-0.838)
Company age	0.008***	0.006***	0.003**	0.002
	(5.164)	(2.768)	(2.298)	(0.765)
Diversified	0.007	-0.002	0.013	0.019
	(0.369)	(-0.080)	(1.312)	(1.635)
Relative equity	0.002	-0.000	-0.003	-0.002
	(0.418)	(-0.070)	(-0.504)	(-0.298)
CEO age	-0.001	-0.001	-0.001	0.000
	(-1.273)	(-0.440)	(-1.412)	(0.065)
CEO tenure	0.000	0.000	0.001	0.000
	(0.013)	(0.062)	(0.591)	(0.183)
CEO outsider	0.029	0.042**	0.025	0.001
	(1.622)	(2.128)	(1.015)	(0.046)
Constant	0.262***	0.297**	0.500***	0.540***
	(2.850)	(2.243)	(4.387)	(3.468)
Observations	1,669	1,285	2,021	1,753
R-squared	0.045	0.047	0.028	0.038
Firm fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Governance control variables	NO	YES	NO	YES

Table 7: Media tone and change in CPS

This table reports the panel regression of change in CPS on negative tone. The table presents empirical results for the regression model presented in equation 2.

$$\Delta\, CPS_{i.t} = \beta_0 + \beta_1\, Negtone_{i,t-1} + \gamma'\, Control\, Variables_{i,t-1}$$

$$(+\mu' Governance\ Control\, Variables_{i.t-1}) + \varepsilon_{i,t-1}.$$

Control variables include Number of articles, firm-specific and CEO-specific variables. Firm-specific variables include Industry-adjusted Tobin's Q, Log book value, Leverage, ROA, Company age, and Diversified. CEO-specific variables include Relative equity, CEO age, CEO tenure and CEO outsider. Governance control variables include CEO ownership, Chairman, Founder, Number of VPs, insider ownership, Appointed, Independent, Board interlock, and Board size. All independent variables and control variables are measured at time $t-1$. The models are fitted using firm fixed effects regressions based on robust standard errors clustered at the firm level. The variables are as defined in Appendix B. All regressions include year fixed effects. ***, ** and * represent significance at the 1%, 5%, and 10% level, respectively. T-statistics are reported in parentheses.

Variables	(1)	(2)
	ΔCPS_t	
Negtone	-0.018**	-0.017**
	(-2.231)	(-2.139)
Number of articles	0.002	0.002
	(1.468)	(1.371)
Industry-adjusted Tobin's Q	-0.032	-0.048**
	(-1.544)	(-2.138)
Log book value	-0.032	-0.039
	(-0.861)	(-1.322)
Leverage	-0.011	0.009
	(-0.425)	(0.244)
ROA	-0.236	-0.298
	(-0.802)	(-1.104)
Capex/assets	0.136	-0.084
	(0.422)	(-0.230)
R&D	0.001	0.003
	(0.012)	(0.039)
Company age	0.002	-0.002
	(0.535)	(-0.490)
Diversified	-0.061	-0.123
	(-0.844)	(-1.513)
Relative equity	-0.184***	-0.153***
	(-2.938)	(-2.730)
CEO age	-0.004*	-0.004
	(-1.670)	(-1.245)
CEO tenure	-0.002	-0.004
	(-0.991)	(-1.314)
CEO outsider	-0.009	0.047
	(-0.188)	(0.895)
Constant	0.861***	1.191***
	(2.924)	(3.792)
Observations	3,485	2,867
R-squared	0.058	0.080

Firm fixed effects	YES	YES
Year fixed effects	YES	YES
Governance control variables	NO	YES