Stock Price Crash Risk and the Managerial Rhetoric Channel: Evidence from Narrative R&D Disclosure

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ABSTRACT

This study proposes a new channel leading to stock price crash risk, the *managerial rhetoric* channel, which is employed as a vital conduit through which managers disseminate information to the investment community. *Managerial rhetoric* in corporate reports featuring discussions of technology and innovation activities is positively associated with one-year ahead stock price crash risk. The robustness of the results to a battery of tests conducted to alleviate endogeneity concerns jointly corroborates previous findings. Further, we present supplementary evidence on the positive relation between *managerial rhetoric* and stock price crash risk, which appears more pronounced for firms with powerful, more able, younger CEOs and CEOs with higher industry tournament incentives. The adverse impact of managerial narrative prevails among firms that face high competition, firms with lower anti-takeover provisions and firms that are covered by analysts. Finally, this *managerial rhetoric*-crash relationship cannot be attenuated in the presence of stronger internal corporate governance.

Keywords: firm-specific stock price crashes; stock price crash channels; managerial rhetoric; managerial characteristics; managerial incentives; internal and external corporate governance

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1. Introduction

This study adds to an overwhelmingly growing corpus of research on stock price crash risk. Our analysis casts a new light upon the spirits of existing literature by proposing a potential mechanism whereby managers publicise information to external stockholders. The existence of this alternative new vital conduit, signified as the managerial rhetoric channel, enable managers to depict a more favorable outlook of the corporation's prospect exploiting the narrative dynamism during the process of storytelling. On the grounds of this concept, while managers are enabled to shape investors' expectations, they concurrently safeguard themselves against potential legal jeopardy which may have been arisen if using alternative channels for altering the actual firm's performance.

Hitherto, the field of firm-specific stock price crashes had flowed towards the paradigm of agency theory to elucidate the manifestation of stock price crashes (e.g. Hutton, Marcus, and Tehranian, 2009; Kim, Li, and Zhang, 2011a; Callen and Fang, 2013, 2015; Kim and Zhang, 2016). The vast majority of the stock price crash studies, which are built on the agency perspective, accentuate two channels through which stock price crashes may occur; opacity (Jin and Myers, 2006) and overinvestment (Benmelech, Kandel and Veronesi, 2010). Both enable managers to hoard bad news, but since the accumulation of negative information is impossible to persist for a prolonged period, when this unfavorable information comes out all at once, stock price crashes are being triggered (Baik, Farber, and Lee, 2011). Collectively, the state of art in crash literature suggests that the catalysts for the occurrence of stock price crashes are the agency problems arising from bad news hoarding activities, either because managers systematically engage in earnings management making their firms more opaque, or because they overinvest to portray a more favorable outlook by pretending that their growth opportunities are still flourishing.

Although, these channels constitute a keystone in the stock price crash literature, since they are inextricably linked with the existence of agency problems and facilitate the hoarding of bad news, the wave of severe accounting scandals raised serious issues and enforced the responsible authorities to take direct corrective actions and cope with deficiencies in the business environment. Specifically, a number of corporate scandals and collapses have surfaced, although the annual bulletins and financial statements of companies reflected a healthy and profitable depiction (such as Enron, Royal Ahold, Parmalat etc). A major regulatory change has been created by the two US senators, Paul Sarbanes and Michael Oxley, with the intention to restore the trust of the investment community in U.S. capital markets and establish their protection. Accordingly, Sarbanes-Oxley (SOX) Act of 2002, brought the new era in corporate arena (e.g. Zhang, 2007; Coates and John, 2007).

The regulatory regime imposed by the authorities to deal with deficiencies in the financial reporting has been a prominent force in dismantling the argument that traditional channels would suffice to uphold the agency paradigm of stock price crashes. As it turns out, such a claim can be supported by recent empirical evidence showing that while formerly the agency-based channels could significantly explain the sharp fall in stock prices, after SOX, the importance of agency-based channels has attenuated (Andreou, Lambertides, and Magidou, 2021). The prementioned findings regarding the weaker year-by-year strength and significance of the channels, coupled with a substantially high and increasing number of stock price crashes, paint a compelling view of a puzzling crash trend documenting that firms are less likely to be engaged either in earnings management or overinvestment due to the regulatory regime. The new wave of crash risk research that began to appear, represent an urgent call for further investigation to explore other alternative paradigms to address the existing gaps.

Our crash risk story focuses on the vital managerial role and its association with future firm-specific stock price crash risk. We extend the current state of knowledge by proposing a new channel through which managers shape investors' beliefs, the managerial rhetoric channel.

Rhetoric has its roots in philosophy and its association with ethics introduced their advocates and opponents. Specifically, its criticism arises from the fact that rhetoric may signify a value-neutral tool "that can be used by persons of virtuous or depraved character. This capacity can be used for good or bad purposes; it can cause great benefits as well as great harms." (Rapp, 2002). Nevertheless, rhetoric was, is and will be of an increasing importance, since the narratological concepts employed in qualitative texts can be, if not more, equally informative as quantitative. Rhetoric entails people persuading people, and this is exactly what business writing does when it develops confidence and engenders goodwill among the investment community (Kallendorf and Kallendorf, 1985). In the same vein, a major advance has been introduced by Shiller (2020) indicating that stories continue to exert a significant power over investors and have in fact increased in the information age.

Communication in corporate world has long been observed through the lens of storytelling and narrative. Several contributions have been made in prior literature focusing on the messages inherent in corporate narratives as well as their market impact (Davis and Tama-Sweet, 2012; Frankel, Mayew, and Sun, 2010; Huang, Teoh, and Zhang, 2014). In this context, a vast amount of literature has examined, amongst others, conference calls, apologies being offered by CEOs (Koehn and Goranova, 2018), earnings announcements (Davis, Piger, and Sedor, 2012; Demers and Vega, 2010; Francis, Schipper, and Vincent, 2002; Price, Doran, Peterson, and Bliss, 2012), press releases (Ahern and Sosyura, 2014) as well as the linguistic content of media coverage (Chan 2003; Tetlock, Saar-Tsechansky, and Macskassy 2008), as a way of measuring company-level information. However, while the story of each firm is a continuously changing narrative, adjusted by news derived from all these various sources of information, a new story may result in relatively large price changes that are not necessarily associated with value changes (Shiller, 2020).

Despite the considerable amount of research in this area, it is yet unexplored whether the powerful tool of narrative disclosures can be considered as a communication conduit for

informing the external users of information or as a mean of managerial attempts to mislead and manage the impression of external stakeholders (Merkl-Davies, Brennan, and McLeay, 2011). This ongoing debate in literature revolves around the argument that narratives are not subject to explicit disclosure rules, and accordingly, executives have a broad autonomy in their qualitative disclosure. Therefore, CEOs might be tempted to camouflage information concerning performance prospects by focusing on "fluff" news. Similarly, they might engage in "cheap talk", *i.e.*, distorting the firm's prospects with the objective to temporarily maximize short-term value (Balvers, Gaski, and McDonald, 2016). The effortless and frequently free access to various sources of information, allows managers to exploit a wide variety of communication elements to spread favorable news with qualitative content. Consequently, even if the disclosed qualitative narrations do not finally occur, the managers cannot be accused as guilty or face any legal consequences, since no quantitative information has been disclosed.

The overarching aim of this paper is to examine whether the managerial narratives woven into annual report can be exploited as a channel whereby managers convey information to the investment community. We use discussions of technology and innovation activities derived from textual analysis from Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) to operationalize the managerial rhetoric channel and investigate its association with future firm-specific stock price crash risk. There is a number of researchers who took this route investigating the relation between financial reporting quality and stock price crashes, acknowledging annual reports as a communication tool that the firm uses to convey messages to its stakeholders (Herremans and Ryans, 1995). For instance, managers can use more complex reports, both in terms of size and wording, to hide adverse information from the investment community, that results in extreme negative values in the returns' distribution (Ertugrul, Lei, Qiu, and Wan, 2017; Kim, Wang and Zhang, 2019). In the same vein, we argue that text features of annual reports can be further considered to enhance

our understanding regarding the role of textual discussions provided by managers as indicators of company's future performance.

Given that 10K filings are publicly available, they can be automatically interpreted as a mean of communication between the firm and the investment community. However, the audit is not applied to all sections of annual financial statements. Specifically, while the Securities Act Release No. 6231 (SEC, 1980) obliges the inclusion of MD&A in 10K filings, presenting it as "a discussion and analysis of a company's business as seen through the eyes of those who manage that business", the auditing standards do not require MD&A disclosures to be audited. Nevertheless, MD&A is considered as an important element that enables managers to communicate with stakeholders in a clear and straightforward manner, making this narration sections as valuable while foreseeing the firm's future prospects (Schipper, 1991).

Interestingly, the stream of literature which emanates from the intuitive recognition of an association between the textual report content and expectations of firm performance, provides evidence supporting the notion that the users of financial disclosures, instead of basing their decisions mainly on the audited financial statements, they may rely more on the MD&A (AICPA, 2010; Epstein and Palepu, 1999). However, questions have been raised about the safety of prolonged use of the narrative sections of 10K filings, especially when the information is not combined with data extracted from firm's fundamentals. In fact, the nature of management disclosures which largely offer verbal information instead of quantifiable, enables managers to intentionally tailor them to affect public impressions (Neu, Warsame, and Pedwell, 1998). Based on the argument of Merkl-Davies and Brennan (2007) we hypothesize that the rhetorical devices, may be used as a mean to self-servingly bias the narrative.

In this vein, seeking for verbal categories that can be utilized as an impression management tool, our attention is turned on research and development keywords. Particularly, the motivation for considering this verbal group of words, arises from the argument that R&D has significantly different dimensions linked to information asymmetry that makes it dissimilar

from the rest capital expenditure (Aboody and Lev, 2000). Accordingly, stakeholders are unable to derive any information regarding the value of firm's R&D and observing their peers cannot facilitate this process since every research endeavor is unparalleled. Additionally, there is empirical evidence suggesting that CEOs include more imprecise R&D disclosures when firm's performance is relatively low, which reflect a fluctuating level of disclosure "fluff", which is found to be associated with forward-looking statements (Merkley, 2014). Therefore, we hypothesize that R&D contributes to information asymmetry and can be furthered considered as a mean to shape investors' expectations.

Our empirical findings provide evidence suggesting that discussions of technology and innovation activities derived from textual analysis from MD&A (Item 7) are positively associated with one-year ahead stock price crash risk. However, the relationship is absent if we consider the full 10K filings or the Risk Factors' section (Item 1A). The results are robust when using different proxies of discussions of technology and innovation activities, in subsamples restricted only to firms with non-missing R&D expense, controlling for actual innovation activity and earnings management alternatives, to the inclusion of additional textual control variables and to the inclusion of equity-based incentives and transient institutional ownership. Overall, the empirical findings confirmed the existence of a new channel, the managerial rhetoric channel, through which managers shape investors' expectations.

To mitigate any potential endogeneity, we employ several econometric approaches. Firstly, we include firm-fixed effects and interactions of dummies for firm characteristics quintiles with time dummies to further control for unobserved time-invariant firm-specific features. Secondly, we adopt a lead-lag model and perform an additional test utilizing stock price crash risk as the explanatory variable and one year ahead rhetoric as the dependent to eliminate any concerns about reverse causality. Next, we repeat our analysis using alternative measures of our explanatory variable, to account for measurement error. Lastly, we conduct a DiD analysis, utilizing tariff cut as a quasi-natural experiment that cause an exogenous change

of managerial rhetoric. The results derived from all the additional analyses are consistent with our baseline model inferences, supporting a causal positive rhetoric-crash risk relationship.

This study documents several key contributions to the field of firm-specific stock price crashes. First, in contrast to prior literature which mainly focuses on the two agency-based channels to clarify the manifestation of stock price crashes, we propose a new channel, the managerial rhetoric channel, which is employed as a vital conduit through of which managers convey information to the investment community.

Additional analysis advocates that CEOs still have a significant impact, by showing that the positive relation between managerial rhetoric and stock price crash risk is more pronounced for firms with powerful, more able, younger CEOs and CEOs with higher industry tournament incentives. Our findings are consistent with previous crash risk studies conducted in relating CEO characteristics with the occurrence of stock price crashes. Specifically, in the spirit of Al Mamun, Balachandran, and Duong (2020), Habib and Hasan (2017), Andreou, Louca, and Petrou (2017) and Jia (2018), which predict that firms with powerful, more able, younger CEOs and CEOs with higher industry tournament incentives, respectively, are associated with higher crash risk, our findings appear to be aligned with their results suggesting that any future attempts should take into consideration the impact of CEO characteristics which can mitigate or exacerbate the stock price crash risk.

In addition, the results underscore the importance of the external mechanisms that may induce CEOs to use the managerial rhetoric channel to control the flow of information to the investors. Specifically, our findings show that the adverse impact of managerial narrative prevails among firms that face high competition, firms with lower anti-takeover provisions and firms covered by analysts. These findings are consistent with the view that a highly competitive environment exert pressure to firms facing more threats and incentivize managers to conceal negative information, which in turn make their firms more prone to stock crashes (Li and Zhan, 2019). Additionally, it was expected to observe this relation stronger among the low G-index

subsample in which managers have a relatively low power resulting from shareholders' high ability to replace directors (Gompers, Ishii, and Metrick, 2003). Moreover, the observed positive rhetoric-crash relationship among firms covered by analysts, squares with prior research exploring the role of analysts as intermediaries facilitating transmission of information (see *e.g.* Hameed, Morck, Shen and Yeung, 2015; Veldkamp, 2006). Lastly, this study shows that managerial rhetoric-crash relationship cannot be weakened in the presence of stronger internal corporate governance. Therefore, while the pressure exerted from the external environment urges managers to utilize the power of narrative, the results evince the inability of internal monitoring to detect and/or prevent the usage of the managerial rhetoric channel.

The remainder of this research is organized as follows. The next section describes the data and the construction of the study's variables. Section 3 presents the empirical findings and assess their robustness. Finally, Section 4 provides the conclusion.

2. Research design

This section designates the research design employed in this study. It provides information on how the data are collected and clarifies the concepts used to measure the dependent and explanatory variables.

2.1. Sample selection

To construct our sample, we obtain data for US-listed firms traded in NYSE, Amex or NASDAQ. The starting period of our sample is constrained by CEO-related data availability which begins in 1992. The dataset compromises of data drawn from various sources. Specifically, we merge data for stock returns from Center for Research in Security Prices (CRSP), with CEO-related data from Execucomp and firm-level data from Compustat. The intersection of these three databases is then combined with textual-related variables, which require the existence of the respective 10K filings from SEC's Edgar database and the

recognition of the specific sections of the report (FULL, ITEM 7, ITEM 1A) that is being textually analysed.

We then impose the following common selection criteria in the spirit of prior studies (Hutton, Marcus, and Tehranian, 2009; Kim, Li, and Zhang, 2011a; Andreou, Louca, and Petrou, 2017): For computing the crash risk measures, we exclude firm-years with (i) a stock price less than $2.5 at the end of fiscal year, and (ii) fewer than 26 weeks of stock returns in a fiscal year. Additionally, firm-year observations where CEOs are also founders are excluded.[1] The analysis further requires appointed CEOs to remain at their role for at least three years.[2] We then exclude financial service firms (SIC 6000-6999) and utilities (SIC 4900-4999), consistently with prior research. The above procedure yields our sample with sufficient data to estimate the main control variables, to consist of 16,202 firm-year observations, which correspond to 2,071 firms from various industries and covers the period from 1992 to 2018. The sample used in this study is comparable to those used in prior research relying on data obtained from Execucomp database. The analysis based on corporate governance measures, also combines data from Institutional Shareholder Services (ISS). In our subsequent empirical analyses, the sample varies due to the inclusion of additional variables related to CEO characteristics, incentives and textual analysis. Nevertheless, this study embraces a substantial number of observations among the various industries.

2.2. Crash risk measures

The firm-specific stock price crash risk measures employed by this study, are computed based on firm-specific weekly returns. The first measure, CRASH, is the indicator stock price crash risk measure proposed by Kim, Wang, and Zhang (2016) that has been extensively used

[1] Founder-CEO firms differ systematically from their non-founder-CEO managed entities, in terms of firm valuation, investment behavior, and stock market performance (Fahlenbrach, 2009). In particular, founder CEOs due to a longer-term perspective, perceive their company as a lifetime achievement and tend to invest more in value-creating activities, such as research and development. Further empirical evidence show that founder-CEOs are less sensitive to performance incentives and appear more entrenched (Palia, Ravid, and Wang, 2008).

[2] CEOs with tenure less than two years are excluded to avoid attributing the decisions of the previous CEO to the subsequent.

in crash literature. The second measure, PURE CRASH, which is proposed in this study, is an updated version of the first measure aiming at attenuating the misclassification of reverse reactions into stock price crashes. The rationale underpinning the selection criteria of the above measures follows in the subsequent explanation.

Following prior literature (Kim, Wang, and Zhang, 2016), the firm-specific weekly returns are estimated as the residuals from the expanded index model presented in *Eq.* (1):

$$r_i = a + b_1 r_{MKT,i-2} + b_2 r_{MKT,i-1} + b_3 r_{MKT,i} + b_4 r_{MKT,i+1} + b_5 r_{MKT,i+2} + b_6 r_{IND,i-2} + b_7 r_{IND,i-1} + b_8 r_{IND,i} + b_9 r_{IND,i+1} + b_{10} r_{IND,i+2} + e_i \quad (1)$$

where r_i is the stock return in week i, and $r_{IND,i}$ is the Fama and French value-weighted industry index and $r_{MKT,i}$ is the value-weighted market index in that week, as obtained from CRSP. The estimation of the *Eq.* (1) requires having at least 26 weekly observations. Accordingly, the sample should be restricted into those fiscal years. The choice of the 26 weeks horizon is admittedly somewhat arbitrary. However, this filtering criterion is consistently applied in crash risk studies, increasing simultaneously the comparability between them.

The inclusion of both industry and market indexes, with *two* lead and lag terms, can be considered as a more rigorous approach, which enables researcher(s) to focus on firm-specific factors rather than market or industry ones. It has been observed that the inclusion of industry returns is of an increasing importance, since one industry may be booming or collapsing, without necessarily this happening also to the whole market. Therefore, the inclusion of industry returns enables us to better isolate the idiosyncratic − firm-specific − component of the return and capture the *firm-specific* stock price crash.

The next stage of the estimation, requires the calculations of firm-specific weekly returns for firm in week i (E_i) which are measured as follows:

$$E_i = \ln(1 + e_i) \quad (2)$$

Then, we measure the likelihood of experiencing a crash, by a crash indicator variable (CRASH) set equal to one if a firm experiences at least one crash week during the fiscal year *t*, and zero otherwise, as illustrated in *Eq.* (3). We follow the approach proposed by Hutton, Marcus, and Tehranian (2009), who define a week as a "crash week", when the firm-specific weekly returns fall at least 3.09 standard deviation below the mean firm-specific weekly return value in year *t* and a "jump week", when the firm-specific weekly returns is at least 3.09 standard deviation above the mean firm-specific weekly return value in year *t*.

$$CRASH_{j,t} = \begin{cases} 1 \text{ if } \exists\, E_i < \mu_R - 3.09 * \sigma_R,\ i = 1, 2, \ldots n \\ 0, \textit{otherwise} \end{cases}, \tag{3}$$

$$JUMP_{j,t} = \begin{cases} 1 \text{ if } \exists\, E_i > \mu_R + 3.09 * \sigma_R,\ i = 1, 2, \ldots n \\ 0, \textit{otherwise} \end{cases}, \tag{4}$$

where μ_R and σ_R are, respectively, the mean value and standard deviation of the firm-specific returns as per *Eq.* (2) that fall within the fiscal year *t* for firm *j*.

In our subsequent analysis, we employ the second measure of stock price crash, namely PURE CRASH, that *de*contaminates the measure from idiosyncratic returns representing positive jumps. Accordingly, the pure crash indicator variable set equal to one only if the firm experiences at least one "crash week" and not a "jump week" within the fiscal year, as presented in *Eq.* (5)

$$PURE\,CRASH_{j,t} = \begin{cases} 1 \text{ if } CRASH_{j,t} = 1 \;\&\; JUMP_{j,t} = 0 \\ 0, \textit{otherwise} \end{cases}, \tag{5}$$

where $CRASH_{j,t}$ and $JUMP_{j,t}$ are, respectively defined in *Eq.* (3) and (4).

The idea of proposing this novel component mainly arises from the fact that some crashes can be counterbalanced by respective jumps, or *vice versa*. In such instances, one could presume that the market "reverses" its reaction and "corrects" any mistaken responses. Consequently, by eliminating the crashes which can be offset by jumps we are more confident

in the ability of this measure to be used in capturing actual firm-specific stock price crashes. Therefore, this adjustment, contributes to getting the "undiluted" information that we are expecting to retrieve from an unswerving crash measure.

We also run the baseline analysis utilizing a continuous measure, the negative coefficient of skewness (*NCSKEW*), following Chen, Hong, and Stein (2001). We calculate *NCSKEW* as the negative value of the third moment of firm-specific weekly returns divided by its standard deviation raised to the third power as follows:

$$NCSKEW_t = -(n\,(n-1)^{\frac{3}{2}}\,\sum E_i^3)\,/\,((n-1)\,(n-2)(\sum E_i^2)^{\frac{3}{2}}), \quad (6)$$

where E_i is estimated as per *Eq.* (2) and represents the sequence of stock weekly returns that fall within fiscal year *t*, whereas *n* is the number of firm-specific weekly returns during the estimation period.

In general, apart from the crash risk indicator variables, crash studies employ also continuous measures of crash risk, with the most widely used, the NCSKEW. Albeit the estimation of these measures is based on the firm-specific weekly returns, they take continuous values making them relatively different compared to the crash indicator variables. There is evidence suggesting that the continuous measures could capture even smaller or medium-sized crashes which are mainly caused by the asymmetry on the distribution of returns (Andreou, Andreou, and Lambertides, 2021; Andreou, Cooper, Louca, and Philip, 2017). As a result, positive jumps will confound the estimates of firm-specific crashes. In contrast, when measuring firm-specific crashes our primary objective is to emphasize on negative extreme values, not only returns that are negatively skewed. Therefore, our subsequent empirical analysis is conducted by utilizing the PURE CRASH indicator variable, which serves the purpose of the current study, *i.e.* to capture the firm-specific crashes as defined by Jin and Myers (2006).

2.3. Main explanatory variables

Prior studies provide supporting evidence that managers exert significant influence on the quality of financial reporting (Amernic, Craig, and Tourish, 2010). More specifically, analytical techniques of CEO letter to shareholders in annual filings can furnish a valuable understanding, since they are used by CEOs as a mean to communicate their attitudes and values. For instance, existing empirical findings suggest that CEOs adjust R&D disclosures based on earnings performance to convey information to the investors (Merkley, 2014). Furthermore, recent work on this direction provides stimulating evidence, suggesting that managerial rhetoric in firms that embrace technology and innovation in their 10K filings are attracting short-term horizon investors and are more prone to future stock price crash risk (Andreou, Drivas, Philip, and Wood, 2021).

Therefore, we quantify the managerial rhetoric by conducting textual analysis of firms' 10K filings. Our main explanatory variable, denoted as RHETORIC (FW), identifies discussions of technology and innovation activities combined with forward looking words. Particularly, SEC has highlighted the increased requirements of the investment community for forward-looking disclosures relatively to historical information (SEC 1989, 2003). Our proposed measure requires the existence of forward-looking words to recognize statements that are associated with hyping expectations. This can only be achieved by linking the R&D narrative disclosures with predictions and projections related to their future outcomes, such as growth, expansion, invention, new product development, patents etc. This measure suits our study's purpose, as we are interested in capturing a tendency for "cheap talk", and not actual R&D activities.

However, for robustness purposes, we also consider R&D narrative disclosures which are operationalized by two different proxies following Merkley's (2014) dictionary, denoted with the following abbreviations: (i) RHETORIC (FULL) is used for Merkley's dictionary, and (ii) RHETORIC (RED) is used for the reduced form of Merkley's dictionary. All three alternatives

are applied to the full 10K filing, the Item 1A and the Item 7 and measure the percentage of sentences in firms' 10K filings with R&D related keywords as described above. The "10K", "Item 1A" and "Item 7" next to the variable name, determines the source of the textual analysis.

2.4. Baseline Control variables

Research on stock price crash risk suggests a large array of control variables that are potentially associated with the crash occurrences. Following prior crash studies, within the context of our investigation, we account for LEVERAGE, estimated as the ratio of total liabilities to total assets; MARKET TO BOOK, the ratio of market value to book value of equity; ROE, estimated as the ratio of income before extraordinary items to equity; SIZE, estimated as the natural logarithm of total assets at fiscal year-end; and FIRM AGE, estimated as the number of years that the firm is covered in the Compustat universe. Consistent with Merkley (2014), we control for current earnings performance by using adjusted return on assets (ROA), measured as annual operating earnings before R&D and advertising expense scaled by total assets. Furthermore, prior literature suggests that firms with higher past returns are more likely to have a more negative skewness (Harvey and Siddique, 2000). To take this into account, we control for past returns (RETURN), estimated as the average firm-specific weekly returns during the fiscal year (Chen, Hong, and Stein, 2001). The inclusion of detrended turnover (DTURN), estimated as the detrended average weekly stock trading volume during the fiscal year, controls for time-varying impacts on skewness. The endogeneity concerns are circumvented by the inclusion of lag values of the negative coefficient of skewness (NCSKEW). To control for the tone of the text features, we include SENTIMENT which is measured as the percentage of positive words minus the percentage of negative words as defined by Loughran and McDonald's dictionary (2011). Additionally, since CEOs are appeared to act opportunistically in the years prior to their departures, by overly hiding negative news from investors, to increase their personal wealth (Andreou, Lambertides, and Magidou, 2020), we control for departing CEOs (CEO DEPART). Specifically, CEO DEPART is proxied

by an indicator variable set equal to one if there is a departure in firm's CEO, during the fiscal year *t*, and zero otherwise. We also use indicator variables set equal to one if we are one, two or three fiscal years before the year of the CEO departure, (denoted as CEO DEPART 1Y BEFORE, CEO DEPART 2Y BEFORE and CEO DEPART 3Y BEFORE, respectively), to capture the opportunistic behavior which could be more severe during this timing (Andreou, Louca and Petrou, 2017).

3. Empirical results

3.1. Summary statistics

Table 1 presents summary statistics for the variables employed in the baseline empirical analysis. The 0.214 and 0.197 average mean value of the CRASH and PURE CRASH measures suggest that approximately 20% of firm-years demonstrate at least one crash event. The means and standard deviations of the crash risk measures are comparable to those reported in prior studies (see, e.g., Kim, Li and Zhang, 2011a; 2011b; Andreou, Antoniou, Horton and Louca, 2016). With respect to the explanatory variables derived from textual analysis of the MD&A section (Item 7) the RHETORIC (FW-ITEM 7), RHETORIC (FULL-ITEM 7) and RHETORIC (RED-ITEM 7) have mean values of 0.661, 1.157, and 0.971, respectively. The values of forward looking and reduced proxies are lower relatively to the Full proxy since they constitute a subsection of the latter. In terms of SENTIMENT (ITEM 7), the mean is -0.001 indicating that the average negative tone slightly prevails the positive.

The distribution characteristics of control variables are largely consistent with those reported in prior studies. For instance, the average firm in our sample has total assets of 7045.870 million USD, firm age of 18.755 years, market to book ratio of 3.250 and an average ratio of total liabilities to total assets equal to 0.508. The sample firms have a mean return on assets of 0.088, return on equity of 0.106 and an average firm-specific weekly return of -0.126. The detrended average weekly stock trading volume is 0.001 and the mean negative coefficient

of skewness is 0.028. Finally, the mean of CEO DEPART is 0.101, indicating that approximately 10% of firm-years demonstrate a change in firm's management.

[Insert Table 1, here]

3.2. Correlations

Table 2 reports the Pearson correlation coefficients between the variables considered in the baseline analysis. The correlation coefficients of the two stock price crash risk measures are statistically significant (p-value<0.01). As expected, the crash and pure crash measures are highly correlated (0.949), since pure crash measures differ only in the recognition of stock price crashes which are not being offset by corresponding jumps during the fiscal year. However, the correlation of the continuous crash risk measure (NCSKEW) with the rest two indicator measures is approximately 0.650, highlighting the differences between the two approaches of quantifying crash risk. A high correlation is evident also between the three narrative proxies, RHETORIC (FW-ITEM 7), RHETORIC (FULL-ITEM 7) and RHETORIC (RED-ITEM 7), indicating that the three alternative measures are able to capture almost the same information. On the other hand, all other variables do not show high correlations to raise concerns over multicollinearity.

[Insert Table 2, here]

3.3. Baseline results

This section attempts to gain more insight into how managers retain investors' expectations by focusing on the investigation of alternative channels. The analysis suggests that narrative features of company's annual reports, which are publicly available, can be further considered

to enhance our understanding regarding the role of textual discussions provided by managers as indicators of company's future performance.

Accordingly, we examine the relationship between rhetoric and future stock price crashes using multivariate regression analysis. The main analysis, presented in Table 3, utilizes all three narrative proxies calculated based on ITEM 7 as explanatory variables. Specifically, Models (1), (4) and (7) utilize the main explanatory variable RHETORIC (FW-ITEM 7), while Models (2), (5) and (8) and (3), (6) and (9) utilize the two alternative measures RHETORIC (FULL-ITEM 7) and RHETORIC (RED-ITEM 7), respectively. Models (1) to (3) report regression results for CRASH, Models (4) to (6) for PURE CRASH, and Models (7) to (9) for NCSKEW. The estimates include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics. The standard errors provided in parentheses below the coefficient estimates are clustered at the firm level.

The estimates reported in Panel A of Table 3 are obtained using the full sample. Findings evince a positive statistically significant (p-value<0.01) relation between the Rhetoric channel and the stock price crash risk using all three Rhetoric alternatives. The estimates in Panel B are obtained using a sample with non missing R&D expense data. The results confirm that Rhetoric is significant and positively related to stock price crash risk, by indicating an even stronger relation. The coefficient with the greater value magnitude, is the combination of discussions of technology and innovation activities with forward looking phrases, *i.e.* RHETORIC (FW-ITEM 7) in Models (1), (4) and (7), which is consistent with prior findings on earnings guidance. For instance, Merkley (2014) provide empirical evidence suggesting that when earnings are experiencing a downward trend, firms tend to include more forward-looking words in their 10K filings, in an effort to provide information to help investors evaluate the future. Overall, the results reported in Table 3 concur to the existence of the managerial rhetoric channel.

Furthermore, all models include SENTIMENT (ITEM 7) as an additional control variable, which appears statistically significant and positively related with one-year ahead stock price crash risk. The role of this variable is important as it controls for the possibility our findings to be biased to the textual tone; positive over negative text features. Also, all control variables generally have the expected sign. For instance, younger firms and smaller firms proxied by total assets are more prone to experience a stock price crash, consistent with the findings of Chen, Hong, and Stein (2001). ROA is highly significant with a negative coefficient, suggesting that firms with better operating performance are less vulnerable to experience crashes, while the MARKET TO BOOK ratio is partially significant in predicting future crash risk, consistent with Hutton, Marcus, and Tehranian (2009). There is also a positive and statistically significant relationship between average firm-specific weekly returns, detrended turnover and negative coefficient of skewness with the occurrence of stock price crashes. Finally, the probability to experience a stock price crash is greater one (CEO DEPART 1Y BEFORE) and two years (CEO DEPART 2Y BEFORE) prior to the CEO departure.

[Insert Table 3, here]

3.4. Support of the managerial channel

One can claim that the impact of Rhetoric on future stock price crashes is driven by the information impounded in the entire filing or a specific section of the filing. However, it is not expected to observe this relation elsewhere, since prior research provides evidence that the users of financial statements base their decision making on information disclosed on MD&A (AICPA, 2010; Epstein and Palepu, 1999) instead of relying on the audited sections of financial statements.

As per SEC, the primary objective of the MD&A is to offer to the users of the disclosures an opportunity to observe the firm through a managerial eye and provided guidance to the

companies on how to disclose such information (SEC 1987, Garmong and Davidson, 2012). However, while public firms are obliged to include MD&A as an essential section of the 10K filings (SEC 1980), their content is mainly voluntary (Beyer, Cohen, Lys, and Walther, 2010). The narrative nature of MD&A enables managers to be more flexible in communicating with stakeholders and providing forward-looking information that is expected to influence materially the firm (Cole and Jones 2005). Therefore, it is expected to observe the impact of managerial Rhetoric on future stock price crash risk, when the textual analysis is derived from the MD&A section.

Accordingly, we move forward with multivariate regression analyses (Table 4) to alleviate concerns that the positive impact of Rhetoric on future stock price crash risk is also prevalent among the entire 10K Filing (10K) or the Risk Factor's section (ITEM 1A). The analysis presented in Table 4, utilizes the same three narrative proxies as in Table 3, with the difference that the source of the textual analysis is the entire 10K Filing in Models (1) to (3) and the Risk Factor's section in Models (4) to (6).

In contrast to the results of the full sample in Table 3, the relation between Rhetoric and future stock price crashes is statistically insignificant in both settings in Table 4, the entire 10K filings in Models (1) to (3) and ITEM 1A in Models (4) to (6). These findings suggest that investors place emphasis on the narrative of the Management's Discussion and Analysis section of ITEM 7, while the text included in other sections (i.e., ITEM 1A) or the entire filing does not affect investors' perceptions. Nevertheless, the results confirm our expectations for the existence of the Managerial Rhetoric channel, which is associated with the rhetorical devices that managers intentionally tailor to affect public impressions.

[Insert Table 4, here]

3.5. Robustness tests

We conduct additional analysis for robustness purposes to distinguish between the narrative effect from the actual innovation activity and efficiency. We control for actual innovation activity and efficiency by including in our baseline model five different proxies; the R&D expenditure scaled by sales in Model (1), the R&D expenditure scaled by total assets in Model (2), the number of patents granted to the firm weighted with their citations in Model (3), the patents granted scaled by R&D capital (as in Hirshleifer, Hsu, and Li, 2013) in Model (4) and patents granted weighted with their citations scaled by R&D capital in Model (5).

Table 5 reports logit regression estimates for the relationship between Rhetoric with one-year ahead stock price crashes, after controlling for the abovementioned proxies of actual innovation activity and efficiency. Overall, the results reported in Table 5, show that the coefficients of RHETORIC (FW-ITEM 7) remain statistically positive in predicting future stock price crash risk.

[Insert Table 5, here]

Next, we augment our baseline regression model by considering alternative earnings management proxies. Specifically, to assess the robustness of our results, we proceed with the inclusion of opacity, depreciation and R&D cut, to ensure that our primary finding indicating the positive Rhetoric-crash risk relationship is not driven by creative practices adopted to manipulate firm's earnings.

Prior research suggests that earnings management is usually achieved via management's use of discretionary accrual (Dechow, Sloan and Sweeney, 1995). Ongoing studies result to the modification of the Jones Model to measure the discretionary component of earnings, by assuming that all variations in credit sales arise from earnings management. The systematic accrual-based earnings management, which results in lack of transparency, i.e. opacity, enables

managers to accumulate bad news from the investors. When the hoarded negative information comes out all at once, stock price crashes are being triggered (Hutton, Marcus, and Tehranian, 2009).

Likewise, we may observe the discretionary behaviour among specific individual accounting items which enable managers to be more flexible on altering firm's profitability, such as depreciation and R&D expenditure. Specifically, prior evidence acknowledges depreciation manipulation as an earnings management tool which is useful to smooth the fluctuation of earnings (see e.g. Bartov, 1993; Brenton and Stolowy, 2004). Additionally, there is existing research supporting the pruning R&D expenditure as a mean to meet financial objectives and enhance earnings performance (Baber, Fairfield, & Haggard, 1991; Perry and Grinaker, 1994; Bange and De Bondt, 1998; Cheng, 2004).

In line with prior research, we take into consideration the alternative earnings management proxies; opacity which is measured as the prior three years' moving sum of the absolute value of discretionary accruals, where discretionary accruals are estimated based on the Modified Jones Model, in Model (1), depreciation which is measured as the depreciation expense in Model (2) and R&D cut which is measured using an indicator variable that takes the value of one when the R&D expenditure has decreased relative to the R&D expenditure of the previous accounting period, in Model (3).

Table 6 reports logit regression estimates for the relationship between Rhetoric with future stock price crashes, after controlling for the alternative earnings management measures. We observe that none of the measures is significant in predicting future stock price crashes. Our findings are consistent with studies suggesting that accrual-based earnings management has experienced a significant decline following the passage of SOX (Cohen, Dey, and Lys, 2008; Zhou, 2008). Overall, the results remain unchanged indicating that the rhetoric channel is significant and irrelevant to the role of the accrual-based earning management practices.

[Insert Table 6, here]

To alleviate concerns that any other text feature may be driving the observed relation between Rhetoric and crash, model specifications in Table 7, control for alternative textual variables proposed by prior studies.

Research investigators have examined the relation between financial reporting quality and stock price crashes. For instance, Ertugrul, Lei, Qiu and Wan (2017) investigate the impact of various characteristics related to 10K annual reports (*i.e.* the size and the written tone of the filing) on firm-specific crashes. Their empirical results suggest that larger 10K filings, which include more words related to the uncertainty and weakness are positively related to future stock price crashes. Accordingly, the analysis incorporates several textual variables as defined by Loughran and McDonald's dictionary (2011): UNCERTAINTY is measured as the percentage of words conveying uncertainty; MODAL WEAK is measured as the percentage of modal weak words; LITIGIOUS is measured as the percentage of words related to litigation; READABILITY is measured as the natural logarithm of the file size in megabytes of the SEC EDGAR "complete submission text file" for the 10K filing.

In the interest of brevity, we present only the results obtained using the main rhetoric proxy, RHETORIC (FW-ITEM 7), as the results using the other two proxies are qualitatively similar. The analysis concentrates exclusively to the MD&A section (Item 7). All model specifications include the SENTIMENT (ITEM 7) to ensure that the results are not driven by the tone. Consistent with Ertugrul, Lei, Qiu and Wan (2017), we control for words conveying uncertainty in Model (1) and for modal weak words in Model (2). Furthermore, this analysis reports results controlling for words related to litigation to eliminate the possibility that any arisen firms' legal disputes may affect the results in Model (3), and for the size of the 10K filing, which proxies for the relative readability in Model (4). Model (5) includes the full set of

these textual alternatives.[3] The results show that none of these alternatives is significant or able to affect the significance of the main rhetoric variable. Overall, these results show that our main findings are not driven by text discussions capturing uncertainty, modal weak words or keywords and phrases related to litigation. Moreover, the filing size does not affect the results. The positive and significant SENTIMENT suggests that when positive text features prevail over the negative, the firm becomes more prone to experience a stock price crash. Importantly, Table 7 confirm that the main findings are insensitive to the model specification. Specifically, the positive relation between Rhetoric and stock price crash risk is prevalent among all models and statistically significant to the inclusion of additional textual controls.

[Insert Table 7, here]

Finally, to eliminate the probability that our results are driven by equity compensation incentives or possible pressure exerted by institutional investors, we proceed with the inclusion of option incentives, stock incentives and transient institutional ownership proxies in the main model. Table 8 reports logit regression estimates for the relationship between Rhetoric and stock price crashes, after controlling for the three prementioned variables. The results show that only the transient institutional ownership is significantly positive in predicting stock price crashes. This finding is consistent with the short-termism behavior of firms in the presence of institutional investors that place more emphasis on short-term outcomes making their firms more prone to experience a crash (Callen and Fang, 2013). Overall, the rhetoric variable remains positive and statistically significant beyond these controls suggesting that the rhetoric channel is not due to the impact of compensation schemes or institutional investors.

[3] Given that both, modal weak words and words conveying uncertainty, reflect the ambiguous tone of financial disclosures and they are highly correlated, the full set of textual variables include only the latter.

[Insert Table 8, here]

3.4. Subsample analysis

The empirical analysis provided in this subsection investigates the Rhetoric-crash relationship through the lenses of several CEO characteristics, external and internal corporate governance mechanisms.

3.4.1. CEO characteristics

A substantial stream of literature on stock price crashes, examines the relationship between CEO characteristics and stock price crashes (e.g. Callen and Fang, 2015; Andreou, Louca and Petrou, 2017; Habib and Hasan, 2017; Li and Zeng, 2019). We conduct a subsample analysis to further investigate whether CEO characteristics have any impact on the relationship between Rhetoric and stock price crash risk. Specifically, we consider variables related to CEO power, managerial ability, CEO age and CEO's industry tournament incentives.

Table 9 reports logit regression estimates for the relationship between Rhetoric and stock price crashes, in various subsamples sorted by CEO characteristics. Models (1) and (2) show the results for the subsamples of powerful and non-powerful CEOs, respectively. The results evince that the relationship between the managerial rhetoric and stock crashes is prevalent among firms with powerful managers. This finding is consistent with the argument provided by Al Mamun, Balachandran, and Duong (2020) that the ability of managers to camouflage negative news is highly associated with their power to exert pressure and determine decisions. Their findings suggest a positive relationship between CEO power and stock price crash risk which is mainly driven by personal incentives.

Models (3) to (8) show the results for subsamples formed when firms are sorted in tertiles based on managerial ability, CEO age and industry tournament incentives, whereby we assume that Models (3), (5) and (7) include observations featuring the highest level of each variable,

and Models (4), (6) and (8) include observations featuring the lowest tertile of each variable in our sample.

Models (3) and (4) examine the Rhetoric-crash relationship among firms managed by more and less able CEOs. The findings support prior literature that the positive relation between managerial rhetoric and stock price crash risk is more pronounced for firms with more able managers. The evidence is in line with Habib and Hasan (2017) who examined the impact of managerial ability on stock price crash risk and document evidence suggesting that more able CEOs make suboptimal investment choices, specifically they over-invest, leading the firm more vulnerable to a stock price crash. In conformity with their conclusions, managers having financial incentives, intend to maximize their personal wealth, by allowing bad news to stockpile, leading to a sudden stock price drop.

Models (5) and (6) investigate the relationship between Rhetoric and stock price crash risk among older and younger CEOs, respectively. The results show that the Rhetoric-crash relationship is still characterized by persistent results in the subsample of younger CEOs. Our results are consistent with Andreou, Louca and Petrou (2017) who provided empirical evidence that younger managers have incentives, tied to their personal wealth, to withhold negative news in the early stages of their career and therefore firms with younger CEOs are more likely to experience stock price crashes.

Models (7) and (8) present the Rhetoric-crash relationship in the subsamples of firms managed by CEOs with higher and lower industry tournament incentives, respectively. Consistent with Jia (2018), our findings evince that the relation between the managerial rhetoric and stock price crashes is more pronounced among firms in which CEOs' have higher incentives to maximize their labour market visibility.

To sum up, considering several CEO characteristics and incentives that have been acknowledged by crash literature as important determinants of stock prices crashes, we show that the existence of the managerial rhetoric channel is prevalent among firms with powerful

and younger managers, and firms managed by more able managers and CEOs with higher industry tournament incentives. The coexistence of the prementioned characteristics with the managerial rhetoric in corporate reports featuring discussions of technology and innovation activities, make firms more vulnerable in experiencing stock price crashes.

[Insert Table 9, here]

3.4.2. External governance

Following the same line of reasoning, we perform a subsample analysis to further investigate whether the external governance has any impact on the relationship between managerial rhetoric and stock price crash risk. Specifically, we consider variables related to competitive environment, proxied by the COMPETITIVENESS, the number of anti-takeover provisions for a firm, proxied by GINDEX and whether a firm is covered by analysts or not.

The analysis in Table 10 examines the relationship between Rhetoric and stock price crashes, in higher and lower tertiles of the sample based on COMPETITIVENESS and GINDEX. Specifically, Models (1) and (2) demonstrate the Rhetoric-crash relationship in the subsamples of firms operating in high and low competitive environment, respectively. The results show that managerial rhetoric becomes more critical for firms that are facing relatively high competition. Our findings are in line with the view that a highly competitive environment exert pressure to firms facing more threats and incentivize managers to conceal negative information, which in turn make their firms more vulnerable in experiencing a stock price crash (Li and Zhan, 2019).

Models (3) and (4) examine the Rhetoric-crash relationship among firms with high (High GINDEX) and low number of anti-takeover provisions (Low GINDEX). The results show a stronger Rhetoric-crash relationship among the Low GINDEX subsample in which managers have a relatively low power, resulting from shareholders' high ability to replace directors

(Gompers, Ishii, and Metrick, 2003). The findings are according to our expectations, as a higher number of anti-takeover provisions safeguards CEOs from takeover threats and reduces the likelihood of losing their job. Therefore, in such cases, managers feel more secure and have lower incentives to utilize the power of narrative. Overall, results presented in Models (1) to (4) in Table 10 suggest that the external pressure, exerted either from a highly competitive environment or takeover threats, force managers to exploit the rhetorical devices as a mean to self-servingly bias the narrative.

Finally, Models (5) and (6) examine the Rhetoric-crash relationship among firms that are covered by at least one analyst and firms that are not covered by analysts at all. Consistent with our ex-ante expectations that analysts serve as transponders of firms' information to the investment community, we observe that the Rhetoric-crash relationship exists only among firms that are covered by analysts. This is reasonable considering that such firms are more likely to attract investors' attention.

[Insert Table 10, here]

3.4.3. Internal governance

Finally, we conduct a subsample analysis to further examine whether the internal governance has an impact on the relationship between managerial rhetoric and future stock price crashes. Specifically, we consider variables related to the composition and characteristics of the board of directors, such as the board size, whether the majority of the board consists of independent directors and the number of female, busy and not attended directors.

Table 11 reports logit regression estimates for the relationship between Rhetoric and future stock price crashes, in various subsamples based on several internal corporate governance mechanisms. Models (1) and (2) demonstrate the Rhetoric-crash relationship in the subsample where the majority of the board consists of independent directors and the subsample

where the minority of the board consists of independent directors, Models (3) and (4) in high and low percentage of independent directors, Models (5) and (6) show the results in boards with more than one female director and less, Models (7) and (8) in boards that have at least one busy director or no, and Models (7) and (8) in boards that have at least one not attended director or no. Interestingly, the results show that the relationship between managerial rhetoric and future stock price crashes is prevalent among all the subsamples, irrespective of the different characteristics and composition of the board of directors, indicating that internal corporate governance does not have an impact on the observed relationship. Accordingly, the results feature a contradiction with prior literature highlighting the importance of internal corporate governance in mitigating the adverse effect of crash determinants. Particularly, this finding anticipates and offsets risks associated with exploiting the management discussion, raises an alarm to the boards of public corporations about using effective monitoring mechanisms to identify the utilization of managerial rhetoric as a channel to self-control the flow of information to the investment community.

[Insert Table 11, here]

3.5. Endogeneity treatments

In this section, we utilize multiple approaches to show that the findings are robust to different endogeneity treatments and establish a causal relationship between managerial rhetoric and stock price crash risk. Broadly speaking, endogeneity may arise from three different types of specification changes that can violate the assumption of having a strict exogenous error term (Roberts & Whited 2011). In this context, we conduct several alternative econometric approaches to address the potential endogeneity concerns arising from these three sources, *i.e.* unobserved heterogeneity, reverse causality, and measurement error. Furthermore,

we circumvent endogeneity concerns by identifying an exogenous shock and comparing the change in rhetoric for different firms as a reaction to the shock.

3.5.1. Unobserved heterogeneity

We can achieve a relatively more powerful approach to control for time-invariant omitted variables by including firm fixed effects. The firm-fixed effect framework permits a tighter identification in the analysis by using within-firm variation to identify coefficient estimates to investigate if the relation exists. This approach is beneficial for mitigating endogeneity concerns and preventing spurious relationships. We re run the baseline model with the inclusion of firm fixed effects, to address the issue of unobserved omitted variables, other than those included in the previous analyses. The results presented in Models (1) to (3) of Table 12 confirm our previous inferences, by indicating that our results are not driven by any unknown firm fixed aspect. Moreover, the untabulated results using fixed- and year- fixed effects on the entire 10K filings sample remain unchanged to those findings in Table 4.

To account for unobserved firm heterogeneity, Gormley and Matsa (2014) advocate adding more fixed effects. Specifically, they recommend including dummies for firm quintiles and interacting these quintile dummies with time dummies. We adopt such a specification by including the interaction of dummies for SIZE, FIRM AGE, MARKET TO BOOK, LEVERAGE, ROA, ROE, RETURN, DTURN and NCSKEW, with time dummies for each quintile. The results presented in Models (4) to (6) of Table 12, which include the time-firm characteristic quintile interactions, show a positive and statistically significant rhetoric-crash relationship.

[Insert Table 12, here]

3.5.2. Reverse causality

In terms of the next source, endogeneity may occur when confounding cause for effect and vice versa. Our initial approach toward mitigating reverse causality issues consists of the most commonly used method of relying on a lead-lagged relationship, with stock price crash risk measured at *t*+1 and rhetoric measured at *t*. Moreover, we constantly include the previous NCSKEW value in the array of our main control variables to account for crash risk persistency as reported in earlier investigations. These approaches are in line with existing crash studies that attempted to propose an appropriate specification in this field (see e.g. Callen and Fang, 2013; Callen and Fang, 2015; Kim et al., 2016; Andreou et al., 2017, An et al., 2020).

Besides these, swapping the two primary variables of the current study, the explanatory with the dependent variable, is another approach to examine whether there is a reverse causality on the positive rhetoric-crash risk association. We perform several analyses by running six different model specifications, including various combinations of time, industry and firm fixed effects, to examine whether the current values of stock price crashes are related to future changes in rhetoric. Table 13 presents the outcomes of this investigation. Broadly speaking, the findings indicate that there is no association between current stock price crash risk with one year ahead rhetoric.

[Insert Table 13, here]

3.5.3. Measurement Error

We then move forward to examine the last source of endogeneity which arises when there is a discrepancy between the actual variable of interest and the proxy that we use to quantify it. To do so, we re run the baseline model after replacing the continuous explanatory variable with a categorical variable produced from 10, 5 and 3 groups of the continuous variable. The results are reported in Models (1), (2) and (3), respectively, of Table 14. These findings broadly

confirm that the crash risk forecasting power of rhetoric is not driven by any measurement since, since the results remain unaffected by the alternative explanatory variable used.

[Insert Table 14, here]

3.5.4. Tariff cuts as an exogenous shock

Finally, in this section, we aim to strengthen our inferences regarding the positive Rhetoric-crash relationship by conducting a DiD analysis utilizing tariff cut as a quasi-natural experiment that cause an exogenous change of managerial rhetoric. The exogenous event of a tariff cut, satisfies the requirements of representing an ideal framework to establish causality. Import tariffs, as per Bernard et al. (2007) and Tybout (2003), act as a significant barrier of entry for foreign competition and minimize pressure exerted from import competitors. Additionally, according to Li and Zhan (2019), tariff cuts fulfil the exclusion condition because they are not associated with firm-specific stock price crash risk, while at the same time they enhance competition by encouraging imports. We assume that a tariff cut will affect managerial rhetoric through the competition increase. This unexpected event will cause an anticipated increase on our variable of interest, as a response to the recent competitive pressure. Therefore, to further alleviate endogeneity issues, we examine how a tariff cut, an exogenous event, alters managers' narratological concepts employed, in terms of their proclivity to shape and/or retain investors' expectations through their disclosures.

We obtain annual product-level U.S. import data from the US International Trade Commission (USITC) DataWeb which are publicly available. We then aggregate the data per district, year and industry as defined by NAIC number and classify each observation into the respective state by using the district. We follow the approach proposed by Li and Zhan (2019), to identify a tariff cut in a given industry-year occurring when there is a change that leads to at least 3 times increase of imports more than the median change. Next, we employ a DiD

framework based on this exogenous event. To do so, we restrict our sample in states that have experienced a tariff cut and apply the before-after model, as suggested by Duchin, Ozbas and Sensoy (2013). Accordingly, we construct the indicator variable AFTER which takes the value of one if an industry has experienced a tariff cut over the last 3 years. This variable, along with its interaction with rhetoric, has been included in our models as presented in Table 15. The interaction term suggests that the significant variance in trade barriers, continues to show a causal relation between managerial rhetoric and the following period's incidence of stock price crashes, after the exogenous tariff cut.

[Insert Table 15, here]

4. Conclusion

A growing body of firm-specific stock price crash risk literature has only been limited to the agency-based channels of opacity and overinvestment to elucidate the manifestation of crashes. Most recent evidence highlights the impediments faced by managers in using the traditional channels after the establishment of SOX, which sets executives liable for the disclosed information in annual reports. However, while managers may be accused of using creative accounting practises to obfuscate a firm's real underlying performance, they cannot be blamed for hyping expectations through their narratives which are not eventually met.

To shed new light on this long-held, but still ongoing research stream, we provide direct evidence supporting our argument that the managerial rhetoric channel can be used as a significant conduit through which managers convey information to the investors, while simultaneously safeguard themselves against potential legal jeopardy. Consequently, when pertinent information is later released, that is inconsistent with their already shaped beliefs, investors revise their expectations by causing sudden drops in firm-specific returns.

Managers are being given the opportunity to self-servingly bias the narrative, through rhetorical devices utilized in the MD&A section of the 10K filings. Specifically, our findings imply that text features including research and development keywords, derived from MD&A are positively associated with future stock price crash risk. The results endure when using different proxies of discussions of technology and innovation activities and in subsample restricted only to firms with non-missing R&D expense. In testing our positive rhetoric-crash relationship, we control for many factors likely to affect it, such as actual innovation activity, earnings management alternatives, additional textual features, equity-based incentives and transient institutional ownership. Overall, the results withstand controls for the inclusion of several relevant covariates proposed by prior studies and confirmed the existence of an alternative new vital conduit that enables managers to portray a more favorable outlook of the corporation's prospects.

Several econometric approaches are also used to mitigate any potential endogeneity. To further account for unobserved time-invariant firm-specific variables, we include firm-fixed effects and interactions of dummies for firm characteristics quintiles with time dummies. Next, to conquer any concerns regarding reverse causality, we utilize lead-lag model and conduct an additional test using stock price crash risk as the explanatory variable and future rhetoric as the dependent. To accommodate for measurement error, we perform our analysis using alternative measures of our explanatory variable. Finally, we undertake a DiD model, using tariff cut as a quasi-natural experiment that results in an exogenous change in our variable of interest. All the supplementary analyses yielded results that are consistent with our baseline model inferences, implying a causal positive rhetoric-crash risk association.

Furthermore, we revisit our empirical findings through the lenses of the vital managerial role and its association with future firm-specific stock price crash risk. Specifically, the findings evince that the relation between the managerial rhetoric and stock crashes is more pronounced among firms with younger and powerful managers which make their firms more

vulnerable in experiencing stock price crashes. Additionally, the same stands for more ably managed firms and firms in which CEOs' have higher incentives to maximize their labour market visibility. Thus, we assert that the exploitation of the power of narrative is exacerbated by certain CEO characteristics and incentives.

Moreover, the results feature the importance of the external mechanisms that urge CEOs to utilize the managerial rhetoric channel to self-control the flow of information to the investment community. In particular, the results show that the adverse impact of managerial narrative prevails among firms that face high competition, firms with lower anti-takeover provisions and firms covered by analysts. Finally, the results demonstrate the inability of internal corporate governance to identify the utilization of the managerial rhetoric channel, and accordingly its failure to offset any risks that may be associated with exploiting the management discussion at the expense of shareholders. In summary, our findings provide a plausible reason for the utilization of the conduit for delivering self-servingly information, when external pressure put at risk the management's empire.

Appendix

Variable Definitions

Variable	Definition
Panel A: Dependent variables	
CRASH	An indicator variable set equal to one if a firm experiences at least one crash week during a fiscal year, and zero otherwise. A "crash week" is, when the firm-specific weekly returns fall at least 3.09 standard deviations below the average firm-specific weekly return value during the fiscal year. For any firm in our sample, we estimate the week w firm-specific return as $\tilde{R}_w = \ln[1 + e_w]$, where e_w is the residual from the following equation: $r_w = a + b_1 r_{m,w-2} + b_2 r_{m,w-1} + b_3 r_{m,w} + b_4 r_{m,w+1} + b_5 r_{m,w+2} + b_6 r_{i,w-2} + b_7 r_{i,w-1} + b_8 r_{i,w} + b_9 r_{i,w+1} + b_{10} r_{i,w+2} + e_w$ where $r_{m,w}$ is the value-weighted market return in week w and $r_{i,w}$ is the Fama and French value-weighted industry index. For estimating the residuals, we included all available market, industry and firm-related weekly returns, with a minimum number of 26 weeks.
PURE CRASH	An indicator variable set equal to one only if the firm experiences at least one "crash week" and not a "jump week" within the fiscal year.
Panel B: Main explanatory variables	
RHETORIC (FW)	The percentage of sentences with R&D related keywords combined with forward-looking words.
RHETORIC (FULL)	The percentage of sentences with R&D related keywords (following Merkley, 2014 dictionary).
RHETORIC (RED)	The percentage of sentences with R&D related keywords using the reduced set of 6 keywords (following Merkley, 2014 dictionary).
The "10K", "ITEM 1A" and "ITEM 7" next to the variable name, determines the source of the textual analysis.	
Panel C: Variables related to innovation activity and efficiency	
R&D SALE	The ratio of research and development expenditure to sales.
R&D ASSET	The ratio of research and development expenditure to total assets.
PATENTS CITES	Number of firm's patents granted weighted with their citations.
INNOVATION EFFICIENCY (RD-CAPITAL)	Patents granted scaled by R&D capital, whereby R&D capital is the 5-year cumulative R&D expenditure, following Hirshleifer, Hsu, and Li (2013).
INNOVATION EFFICIENCY (CITES-RD-CAPITAL)	Patents granted weighted with their citations scaled by R&D capital, whereby R&D capital is the 5-year cumulative R&D expenditure, following Hirshleifer, Hsu, and Li (2013).
Panel D: Variables related to earnings management alternatives	
OPACITY	The three-years moving sum of the absolute value of discretionary accruals (DACC), where DACC are measured as follows: $DACC_t = \frac{TA_t}{ASSETS_{t-1}} - (a_o \frac{1}{ASSETS_{t-1}} + b_1 \frac{\Delta SALES_t - \Delta RECEIVABLES_t}{ASSETS_{t-1}} + b_2 \frac{PPE_t}{ASSETS_{t-1}})$ where total accruals (TA) is estimated with the following cross-sectional regression equation using the firms in each Fama and French 48 industries for each fiscal year: $\frac{TA_t}{ASSETS_{t-1}} = a_o \frac{1}{ASSETS_{t-1}} + b_1 \frac{\Delta SALES_t}{ASSETS_{t-1}} + b_2 \frac{PPE_t}{ASSETS_{t-1}} + e_t$ where TA denotes total accruals, ASSETS denotes total assets, ΔSALES denotes change in sales, ΔRECEIVABLES denotes change in receivables and PPE denotes property, plant, and equipment, following Hutton, Marcus, and Tehranian (2009).

DEPRECIATION	The depreciation expense.
R&D CUT	An indicator variable set equal to one if a firm experiences a negative change in research and development expenditure relatively to prior year's research and development expenditure, and zero otherwise.
Panel E: Variables related to textual analysis	
UNCERTAINTY	The percentage of words conveying uncertainty (following the Loughran and McDonald, 2011 dictionary).
MODAL WEAK	The percentage of the modal weak words (following the Loughran and McDonald, 2011 dictionary).
LITIGIOUS	The percentage of the words related to litigation (following the Loughran and McDonald, 2011 dictionary).
READABILITY	The natural logarithm of the file size in megabytes of the SEC EDGAR "complete submission text file" for the 10K filing.
The "10K", "ITEM 1A" and "ITEM 7" next to the variable name, determines the source of the textual analysis.	
Panel F: Variables related to CEO incentives	
STOCK INCENTIVES	The CEO stock holdings incentives ratio estimated as in Bergstresser and Philippon (2006).
OPTION INCENTIVES	The CEO option holdings incentives ratio estimated as in Bergstresser and Philippon (2006).
Panel G: Variables related to institutional ownership	
TRANSIENT INST OWNERSHIP	The percentage of stock ownership in the firm by transient institutional investors, following Bushee (1998, 2001).
Panel H: Variables related to CEO characteristics	
CEO POWER	An indicator variable set equal to one if the CEO is also the president and the chairman of the firm, and zero otherwise.
MANAGERIAL ABILITY	The residuals from the following equation: $$Firm\ Efficiency_{j,t} = a_o + b_1 Ln(Assets_{j,t}) + b_2 Market\ Share_{j,t} + b_3\ Free\ Cash\ Flow\ Indicator_{j,t} + b_4\ Foreign\ Currency\ Indicator_{j,t} + e_{j,t}$$ where firm efficiency is the firm's return on assets minus the industry's median return on assets, market share refers to the sales of the firm over the total sales of all firms in each industry, Free Cash Flow Indicator is set equal to 1 when a firm has nonnegative free cash flow (defined as earnings before depreciation and amortization (OIBDP) less the change in working capital (RECT+INVT+ ACO−LCO−AP) less capital expenditures (CAPX)) in year t, and Foreign Currency indicator is set equal to one when a firm reports a nonzero value for foreign currency adjustment (FCA) in year t.
CEO AGE	The natural logarithm of CEO age.
CEO's INDUSTRY TOURNAMENT INCENTIVES (CITI)	The natural logarithm of the difference between the total compensation (TDC1) of the second highest paid CEO in the same size (proxied by sales) adjusted Fama-French 48 industry group and the total compensation (TDC1) of the firm's CEO, following Coles, Li, and Wang (2018).
Panel I: Variables related to CEO incentives	
COMPETITIVENESS	The industry adjusted price-cost margin (PCM), where PCM is the ratio of firm operating profit to sales. Firm operating profit is estimated by deducting from sales, the cost of goods sold and selling, general, and administrative expenses.
GINDEX	The number of anti-takeover provision proposed by Gompers, Ishii, and Metrick (2003).
ANALYSTS	The total number of analysts covering the firm.
Panel H: Variables related to board composition and characteristics	
BOARD SIZE	Total number of directors on the board.
INDEPENDENT DIRECTORS	Independent directors on the board.

FEMALE DIRECTORS	Female directors on the board.
BUSY DIRECTORS	Directors who are also members of other Major Company Boards.
NOT ATTENDED DIRECTORS	Directors who attended less than 75% of the board meetings.
Panel I: Main Control Variables	
SENTIMENT	The percentage of the difference between the positive words and the negative words (following the Loughran and McDonald, 2011 dictionary).
SIZE	The natural logarithm of total assets.
FIRM AGE	The natural logarithm of the number of years that the firm is covered in the Compustat universe.
MB	The ratio of market value to book value of equity.
LEVERAGE	The ratio of total liabilities to total assets.
ROA	The ratio of income before extraordinary items to total assets.
ROE	The ratio of income before extraordinary items to equity.
STOCK RETURN	Average firm-specific weekly returns during the fiscal year.
DTURN	The detrended average weekly stock trading volume during the fiscal year.
NCSKEW	The negative of the third moment of firm-specific weekly returns ($\tilde{R}_w$) divided by the standard deviation of firm-specific weekly returns raised to the third power, as in the following equation: $$NCSKEW = -[n(n-1)^{\frac{3}{2}} \sum w^3]/[(n-1)(n-2)(\sum w^2)^{\frac{3}{2}}]$$ where n is the number of daily stock returns in the period.
CEO DEPART	An indicator variable set equal to one if there is a CEO departure in firm's CEO, during the fiscal year *t*, and zero otherwise.

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Table 1. Summary Statistics:

This table reports summary statistics for the dependent variables, the explanatory variables, and the control variables. These statistics are obtained using a sample with sufficient data to estimate the main control variables, which consists of 2,071 firms, with 16,202 firm-year observations covering the period 1992-2018. The crash risk measures (CRASH, PURE CRASH and NCSKEW) feature measurements in fiscal year $t + 1$, whereas all the other variables feature measurements in fiscal year t. The sample compromises of data drawn from three databases: Center for Research in Security Prices (CRSP), Execucomp and Compustat combined with textual-related variables, which require the existence of the respective 10K filings from SEC's Edgar database. All continuous variables are winsorized at the 1st and 99th percentile. Detailed variable definitions are provided in the Appendix.

Variable	Mean	Std Dev	25th Pctl	Median	75th Pctl
PANEL A: Dependent Variables					
CRASH *(t+1)*	0.214	0.410	0.000	0.000	0.000
PURE CRASH *(t+1)*	0.197	0.397	0.000	0.000	0.000
NCSKEW *(t+1)*	0.037	0.732	-0.382	-0.003	0.394
PANEL B: Explanatory Variables					
RHETORIC (FW-ITEM 7)	0.661	1.943	0.000	0.000	0.671
RHETORIC (FULL-ITEM 7)	1.157	2.689	0.000	0.000	1.316
RHETORIC (RED-ITEM 7)	0.971	2.310	0.000	0.000	1.111
PANEL C: Control Variables					
SENTIMENT (ITEM 7)	-0.001	0.002	-0.002	-0.001	0.000
TOTAL ASSETS	7045.870	27552.050	514.553	1410.250	4350.900
FIRM AGE	18.755	8.723	12.000	18.000	25.000
MARKET TO BOOK	3.250	3.855	1.549	2.400	3.856
LEVERAGE	0.508	0.216	0.359	0.510	0.641
ROA	0.088	0.136	0.040	0.083	0.142
ROE	0.106	0.301	0.050	0.120	0.190
STOCK RETURN	-0.126	0.136	-0.156	-0.080	-0.042
DTURN	0.001	0.019	-0.006	0.000	0.007
NCSKEW	0.028	0.706	-0.386	-0.009	0.376
CEO DEPART	0.101	0.301	0.000	0.000	0.000

Table 2. Pearson correlation coefficients:

This table reports the Pearson correlation coefficients between all the dependent, the explanatory and the main control variables. These statistics are obtained using a sample with sufficient data to estimate the main control variables, which consists of 2,071 firms, with 16,202 firm-year observations covering the period 1992-2018. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	CRASH *(t+1)*	PURE CRASH *(t+1)*	NCSKEW *(t+1)*	RHETORIC (FW-ITEM 7)	RHETORIC (FULL-ITEM 7)	RHETORIC (RED-ITEM 7)	SENTIMENT (ITEM 7)	TOTAL ASSETS	FIRM AGE	MARKET TO BOOK	LEVERAGE	ROA	ROE	STOCK RETURN	DTURN	CEO DEPART
CRASH *(t+1)*	1															
PURE CRASH *(t+1)*	0.949***	1														
NCSKEW *(t+1)*	0.646***	0.665***	1													
RHETORIC (FW-ITEM 7)	0.039***	0.036***	0.017**	1												
RHETORIC (FULL-ITEM 7)	0.037***	0.035***	0.015*	0.937***	1											
RHETORIC (RED-ITEM 7)	0.036***	0.034***	0.015*	0.887***	0.956***	1										
SENTIMENT (ITEM 7)	0.003	0.011	0.026***	-0.040***	-0.036***	-0.030***	1									
TOTAL ASSETS	-0.020***	-0.016**	0.025***	-0.154***	-0.207***	-0.214***	-0.037***	1								
FIRM AGE	-0.012	-0.012	-0.01	-0.101***	-0.140***	-0.142***	-0.038***	0.360***	1							
MARKET TO BOOK	0.028***	0.035***	0.048***	0.093***	0.113***	0.095***	0.076***	0.023***	-0.028***	1						
LEVERAGE	-0.014*	-0.012	-0.019**	-0.154***	-0.213***	-0.232***	-0.006	0.406***	0.152***	0.040***	1					
ROA	-0.019**	-0.016**	-0.023***	0.078***	0.102***	0.106***	0.090***	-0.050***	-0.001	0.232***	-0.120***	1				
ROE	0.013*	0.018**	0.036***	-0.080***	-0.094***	-0.079***	0.121***	0.114***	0.063***	0.347***	0.043***	0.219***	1			
STOCK RETURN	0.004	0.005	0.019**	-0.150***	-0.193***	-0.191***	0.105***	0.366***	0.307***	0.046***	0.084***	0.131***	0.218***	1		
DTURN	0.012	0.01	0.014*	0.009	0.005	0.002	0.029***	-0.005	-0.012	0.034***	0.042***	-0.025***	0.021***	-0.168***	1	
CEO DEPART	0.003	0	0.012	-0.013	-0.014*	-0.015*	0	0.019**	0.004	-0.014*	0.037***	-0.056***	-0.040***	-0.017**	0.002	1

Table 3. The impact of managerial rhetoric on future stock price crash risk (ITEM 7):

This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes. The main explanatory variables consist of three narrative proxies derived from textual analysis of Item 7, denoted as ***RHETORIC (FW-ITEM 7)***, ***RHETORIC (FULL-ITEM 7)*** and ***RHETORIC (RED-ITEM 7),*** respectively. Models (1) to (3) report regression results for ***CRASH,*** Models (4) to (6) report regression results for ***PURE CRASH*** and Models (7) to (9) report OLS regression results for ***NCSKEW,*** respectively. The estimates reported in Panel A are obtained using the full sample with sufficient data to estimate the main control variables, which consists of 16,202 firm-year observations, while the estimates reported in Panel B are obtained using a sample with non missing R&D expense data, which consists of 10,567 firm-year observations. The dependent variables are measured in fiscal year t+1, whereby all independent variables are measured in fiscal year t. Detailed variable definitions are provided in the Appendix. The estimates include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

PANEL A

	CRASH			PURE CRASH			NCSKEW		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RHETORIC (FW-ITEM 7)	0.070***			0.070***			0.020***		
	(0.02)			(0.02)			(0.01)		
RHETORIC (FULL-ITEM 7)		0.059***			0.061***			0.015*	
		(0.02)			(0.02)			(0.01)	
RHETORIC (RED-ITEM 7)			0.056***			0.056***			0.015*
			(0.02)			(0.02)			(0.01)
SENTIMENT (ITEM 7)	0.066***	0.065***	0.064***	0.083***	0.082***	0.082***	0.030***	0.030***	0.030***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
LN(TOTAL ASSETS)	-0.069***	-0.069***	-0.069***	-0.056**	-0.055**	-0.056**	0.025**	0.026**	0.025**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
LN(FIRM AGE)	-0.077***	-0.076***	-0.077***	-0.070***	-0.069***	-0.070***	-0.029***	-0.029***	-0.029***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
MARKET TO BOOK	0.041**	0.041**	0.042**	0.060***	0.060***	0.061***	0.040***	0.040***	0.040***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
LEVERAGE	0.008	0.009	0.011	0.006	0.007	0.009	-0.032***	-0.032***	-0.031***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
ROA	-0.094***	-0.094***	-0.094***	-0.089***	-0.089***	-0.090***	-0.045***	-0.045***	-0.045***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
ROE	0.043*	0.042*	0.041*	0.046**	0.045**	0.043*	0.027***	0.027***	0.026***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
STOCK RETURN	0.058**	0.058**	0.058**	0.055**	0.056**	0.055**	0.041***	0.041***	0.041***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
DTURN	0.044**	0.045**	0.045**	0.036	0.036	0.036	0.018**	0.018**	0.018**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
NCSKEW	0.037*	0.037*	0.037*	0.035*	0.034*	0.034*	0.003	0.003	0.003
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
CEO DEPART 3Y BEFORE	-0.024	-0.025	-0.025	0.018	0.017	0.017	0.093***	0.093***	0.093***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.03)	(0.03)	(0.03)

CEO DEPART 2Y BEFORE	0.196***	0.194***	0.194***	0.238***	0.237***	0.237***	0.113***	0.113***	0.113***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.03)	(0.03)	(0.03)
CEO DEPART 1Y BEFORE	0.309***	0.308***	0.308***	0.306***	0.305***	0.304***	0.164***	0.164***	0.164***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.03)	(0.03)	(0.03)
CEO DEPART	0.067	0.066	0.066	0.052	0.052	0.052	0.077***	0.077***	0.077***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.03)	(0.03)	(0.03)
CEO DEPART 1Y AFTER	-0.100	-0.100	-0.101	-0.103	-0.103	-0.104	-0.030	-0.031	-0.031
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.03)	(0.03)	(0.03)
Number of Observations	16202	16202	16202	16202	16202	16202	16202	16202	16202
Pseudo Likelihood	-8181.539	-8183.542	-8183.709	-7837.715	-7839.407	-7839.836			
Pseudo R2/R2	0.026	0.026	0.026	0.024	0.024	0.024	0.025	0.025	0.0251

PANEL B	CRASH			PURE CRASH			NCSKEW		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RHETORIC (FW-ITEM 7)	0.077***			0.073***			0.020***		
	(0.02)			(0.02)			(0.01)		
RHETORIC (FULL-ITEM 7)		0.066***			0.064***			0.016*	
		(0.02)			(0.02)			(0.01)	
RHETORIC (RED-ITEM 7)			0.065***			0.060***			0.017*
			(0.02)			(0.02)			(0.01)
SENTIMENT (ITEM 7)	0.055*	0.053*	0.053*	0.072***	0.071**	0.070**	0.039***	0.039***	0.038***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
LN(TOTAL ASSETS)	-0.059*	-0.058*	-0.058*	-0.041	-0.040	-0.040	0.032***	0.032***	0.032***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
LN(FIRM AGE)	-0.064**	-0.063**	-0.064**	-0.068**	-0.067**	-0.068**	-0.043***	-0.042***	-0.042***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
MARKET TO BOOK	0.020	0.020	0.022	0.042*	0.042*	0.044*	0.033***	0.033***	0.034***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
LEVERAGE	-0.009	-0.007	-0.004	-0.017	-0.015	-0.013	-0.039***	-0.039***	-0.039***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
ROA	-0.077***	-0.077***	-0.078***	-0.076***	-0.076***	-0.077***	-0.041***	-0.041***	-0.041***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
ROE	0.051*	0.051*	0.049*	0.057**	0.057**	0.054**	0.025**	0.025**	0.024**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
STOCK RETURN	0.052	0.052*	0.052	0.052	0.052	0.052	0.043***	0.043***	0.043***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
DTURN	0.036	0.036	0.036	0.025	0.026	0.026	0.016	0.017	0.017

	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)
NCSKEW	0.036	0.036	0.036	0.030	0.029	0.029	-0.004	-0.004	-0.004
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
CEO DEPART 3Y BEFORE	-0.093	-0.094	-0.094	-0.075	-0.076	-0.075	0.083**	0.082**	0.083**
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.04)	(0.04)	(0.04)
CEO DEPART 2Y BEFORE	0.223***	0.220***	0.221***	0.285***	0.283***	0.284***	0.125***	0.125***	0.125***
	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)	(0.04)	(0.04)	(0.04)
CEO DEPART 1Y BEFORE	0.274***	0.273***	0.272***	0.297***	0.296***	0.295***	0.172***	0.171***	0.171***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.03)	(0.03)	(0.03)
CEO DEPART	0.024	0.023	0.024	0.016	0.015	0.015	0.053	0.053	0.053
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.03)	(0.03)	(0.03)
CEO DEPART 1Y AFTER	-0.128	-0.128	-0.129	-0.144*	-0.144*	-0.145*	-0.058*	-0.058*	-0.058*
	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)	(0.03)	(0.03)	(0.03)
Number of Observations	10567	10567	10567	10567	10567	10567	10567	10567	10567
Pseudo Likelihood	-5421.106	-5422.994	-5422.944	-5193.728	-5195.351	-5195.559			
Pseudo R2/R2	0.024	0.023	0.023	0.023	0.022	0.022	0.0288	0.0286	0.0286

Table 4. The impact of managerial rhetoric on future stock price crash risk (FULL 10K & ITEM 1A):
This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes ***(PURE CRASH)***. The estimates reported in Models (1) to (3) are obtained using as explanatory variables three narrative proxies derived from textual analysis of 10K filings, denoted as ***RHETORIC (FW-10K), RHETORIC (FULL-10K)*** and ***RHETORIC (RED-10K),*** respectively, while the estimates reported in Models (4) to (6) are obtained using as explanatory variables three narrative proxies derived from textual analysis of ITEM 1A, denoted as ***RHETORIC (FW-ITEM 1A), RHETORIC (FULL-ITEM 1A)*** and ***RHETORIC (RED-ITEM 1A),*** respectively. The dependent variable, ***PURE CRASH,*** is measured in fiscal year t+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH					
	10K			ITEM 1A		
	(1)	(2)	(3)	(4)	(5)	(6)
RHETORIC (FW-10K)/ (FW-ITEM 1A)	0.001			0.009		
	(0.03)			(0.02)		
RHETORIC (FULL-10K)/ (FULL-ITEM 1A)		-0.004			0.000	
		(0.03)			(0.02)	
RHETORIC (RED-10K)/ (RED-ITEM 1A)			-0.008			-0.002
			(0.03)			(0.02)
SENTIMENT (10K)/(ITEM 1A)	0.015	0.016	0.016	0.060**	0.061**	0.061**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
LN(TOTAL ASSETS)	-0.062**	-0.062**	-0.062**	-0.067**	-0.068**	-0.068**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
LN(FIRM AGE)	-0.069***	-0.070***	-0.070***	-0.074***	-0.074***	-0.074***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
MARKET TO BOOK	0.067***	0.068***	0.068***	0.066***	0.066***	0.066***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
LEVERAGE	0.002	0.002	0.001	-0.001	-0.001	-0.001
	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
ROA	-0.084***	-0.084***	-0.084***	-0.084***	-0.083***	-0.083***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ROE	0.044*	0.043*	0.043*	0.045**	0.044**	0.044**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
STOCK RETURN	0.059**	0.058**	0.058**	0.060**	0.060**	0.060**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
DTURN	0.038*	0.038*	0.037*	0.038*	0.038*	0.038*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
NCSKEW	0.036*	0.036*	0.036*	0.036*	0.036*	0.036*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
CEO DEPART 3Y BEFORE	0.016	0.016	0.016	0.016	0.016	0.016
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
CEO DEPART 2Y BEFORE	0.232***	0.232***	0.232***	0.232***	0.232***	0.232***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y BEFORE	0.299***	0.298***	0.298***	0.298***	0.298***	0.298***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART	0.049	0.049	0.049	0.048	0.048	0.048
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y AFTER	-0.108	-0.108	-0.109	-0.111	-0.110	-0.110
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Number of Observations	16202	16202	16202	16202	16202	16202
Pseudo Likelihood	-7849.870	-7849.862	-7849.822	-7847.469	-7847.554	-7847.550
Pseudo R2	0.022	0.022	0.022	0.023	0.023	0.023

Table 5. The impact of managerial rhetoric on future stock price crash risk: Inclusion of actual innovation activity:
This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes, after controlling for actual innovation activity. The main explanatory variable proxy ***RHETORIC (FW-ITEM 7)*** is derived from textual analysis of Item 7. All Models report regression results for ***PURE CRASH***. The estimates reported are obtained using the full sample with sufficient data to estimate the variables controlling for actual innovation activity. The dependent variable, ***PURE CRASH,*** is measured in fiscal year $t+1$, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include firm-fixed effects and year-fixed effects to control for time-invariant unobserved firm heterogeneity and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH				
	(1)	(2)	(3)	(4)	(5)
RHETORIC (FW-ITEM 7)	0.072***	0.072***	0.045**	0.046**	0.041**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
R&D SALE	-0.010*				
	(0.01)				
R&D ASSET		-0.010*			
		(0.01)			
PATENTS CITES			0.047		
			(0.04)		
INNOVATION EFFICIENCY (R&D-CAPITAL)				0.033	
				(0.03)	
INNOVATION EFFICIENCY (CITES-R&D-CAPITAL)					0.041*
					(0.02)
SENTIMENT (ITEM 7)	0.083***	0.083***	0.069	0.073	0.063
	(0.02)	(0.02)	(0.05)	(0.05)	(0.05)
LN(TOTAL ASSETS)	-0.056**	-0.056**	-0.129***	-0.103**	-0.122***
	(0.03)	(0.03)	(0.04)	(0.05)	(0.05)
LN(FIRM AGE)	-0.069***	-0.069***	-0.066	-0.052	-0.056
	(0.02)	(0.02)	(0.05)	(0.05)	(0.06)
MARKET TO BOOK	0.061***	0.061***	0.072**	0.071**	0.070**
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
LEVERAGE	0.005	0.005	0.047	0.030	0.048
	(0.02)	(0.02)	(0.04)	(0.04)	(0.05)
ROA	-0.092***	-0.092***	-0.077*	-0.055	-0.044
	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)
ROE	0.045*	0.045*	0.032	0.033	0.035
	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)
STOCK RETURN	0.054**	0.054**	0.060	0.021	0.039
	(0.03)	(0.03)	(0.05)	(0.05)	(0.06)
DTURN	0.035	0.035	0.033	0.037	0.034
	(0.02)	(0.02)	(0.04)	(0.04)	(0.05)
NCSKEW	0.035*	0.035*	-0.040	-0.039	-0.038
	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)
CEO DEPART 3Y BEFORE	0.019	0.019	0.002	-0.087	-0.104
	(0.08)	(0.08)	(0.14)	(0.16)	(0.16)
CEO DEPART 2Y BEFORE	0.238***	0.238***	0.255**	0.267**	0.303**
	(0.07)	(0.07)	(0.13)	(0.13)	(0.14)
CEO DEPART 1Y BEFORE	0.306***	0.306***	0.248**	0.291**	0.285**
	(0.07)	(0.07)	(0.12)	(0.12)	(0.13)
CEO DEPART	0.052	0.052	-0.042	0.042	-0.000
	(0.07)	(0.07)	(0.13)	(0.13)	(0.14)
CEO DEPART 1Y AFTER	-0.104	-0.104	-0.032	-0.032	0.021
	(0.07)	(0.07)	(0.13)	(0.14)	(0.14)
Number of Observations	16202	16202	5049	4623	4387
Pseudo Likelihood	-7836.754	-7836.754	-2402.368	-2214.725	-2099.709
Pseudo R2	0.024	0.024	0.027	0.027	0.028

Table 6. The impact of managerial rhetoric on future stock price crash risk: Inclusion of earnings management alternatives: This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes, after controlling for earnings management alternatives. The main explanatory variable proxy ***RHETORIC (FW-ITEM 7)*** is derived from textual analysis of Item 7. All Models report regression results for ***PURE CRASH***. The estimates reported are obtained using the full sample with sufficient data to estimate the main control variables, which consists of 16,202 firm-year observations. The dependent variable, ***PURE CRASH,*** is measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include firm-fixed effects and year-fixed effects to control for time-invariant unobserved firm heterogeneity and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH			
	(1)	(2)	(3)	(4)
RHETORIC (FW-ITEM 7)	0.071***	0.071***	0.071***	0.072***
	(0.02)	(0.02)	(0.02)	(0.02)
OPACITY	-0.030			-0.030
	(0.02)			(0.02)
DEPRECIATION		-0.054		-0.052
		(0.03)		(0.03)
R&D CUT			-0.065	-0.059
			(0.06)	(0.06)
SENTIMENT (ITEM 7)	0.082***	0.084***	0.082***	0.082***
	(0.02)	(0.02)	(0.02)	(0.02)
LN(TOTAL ASSETS)	-0.060**	-0.023	-0.056**	-0.028
	(0.03)	(0.03)	(0.03)	(0.03)
LN(FIRM AGE)	-0.072***	-0.068***	-0.070***	-0.070***
	(0.02)	(0.02)	(0.02)	(0.02)
MARKET TO BOOK	0.062***	0.060***	0.060***	0.061***
	(0.02)	(0.02)	(0.02)	(0.02)
LEVERAGE	0.007	0.001	0.007	0.003
	(0.02)	(0.03)	(0.02)	(0.03)
ROA	-0.090***	-0.089***	-0.089***	-0.090***
	(0.02)	(0.02)	(0.02)	(0.02)
ROE	0.044*	0.046**	0.045**	0.044*
	(0.02)	(0.02)	(0.02)	(0.02)
STOCK RETURN	0.050*	0.050*	0.054*	0.044
	(0.03)	(0.03)	(0.03)	(0.03)
DTURN	0.035	0.035	0.035	0.033
	(0.02)	(0.02)	(0.02)	(0.02)
NCSKEW	0.034*	0.034*	0.034*	0.033*
	(0.02)	(0.02)	(0.02)	(0.02)
CEO DEPART 3Y BEFORE	0.018	0.017	0.018	0.017
	(0.08)	(0.08)	(0.08)	(0.08)
CEO DEPART 2Y BEFORE	0.238***	0.237***	0.240***	0.238***
	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y BEFORE	0.308***	0.306***	0.307***	0.309***
	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART	0.054	0.054	0.055	0.058
	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y AFTER	-0.102	-0.101	-0.100	-0.096
	(0.07)	(0.07)	(0.07)	(0.07)
Number of Observations	16202	16202	16202	16202
Pseudo Likelihood	-7836.830	-7836.031	-7837.089	-7834.645
Pseudo R2	0.024	0.024	0.024	0.024

Table 7. The impact of managerial rhetoric on future stock price crash risk: Inclusion of textual control variables:
This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes, after controlling for other textual variables. The main explanatory variable proxy ***RHETORIC (FW-ITEM 7)*** is derived from textual analysis of Item 7. All Models report regression results for ***PURE CRASH***. The estimates reported are obtained using the full sample with sufficient data to estimate the main control variables, which consists of 16,202 firm-year observations. The dependent variables are measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH				
	(1)	(2)	(3)	(4)	(5)
RHETORIC (FW-ITEM 7)	0.066***	0.070***	0.071***	0.070***	0.066***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
UNCERTAINTY (ITEM 7)	0.029				0.029
	(0.02)				(0.02)
MODALWEAK (ITEM 7)		0.009			
		(0.02)			
LITIGIOUS (ITEM 7)			0.010		0.013
			(0.02)		(0.02)
READABILITY				0.096	0.095
				(0.06)	(0.06)
SENTIMENT (ITEM 7)	0.091***	0.086***	0.084***	0.083***	0.093***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
LN(TOTAL ASSETS)	-0.055**	-0.056**	-0.056**	-0.071**	-0.071**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
LN(FIRM AGE)	-0.068***	-0.070***	-0.071***	-0.068***	-0.067***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
MARKET TO BOOK	0.060***	0.060***	0.060***	0.059***	0.059***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
LEVERAGE	0.007	0.006	0.006	0.002	0.002
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
ROA	-0.089***	-0.089***	-0.089***	-0.088***	-0.088***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ROE	0.045**	0.046**	0.046**	0.046**	0.046**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
STOCK RETURN	0.056**	0.055**	0.054**	0.059**	0.058**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
DTURN	0.036	0.036	0.036	0.037*	0.037*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
NCSKEW	0.035*	0.035*	0.035*	0.034*	0.034*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
CEO DEPART 3Y BEFORE	0.018	0.018	0.018	0.017	0.016
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
CEO DEPART 2Y BEFORE	0.238***	0.238***	0.238***	0.237***	0.237***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y BEFORE	0.306***	0.306***	0.305***	0.305***	0.305***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART	0.053	0.052	0.052	0.050	0.050
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y AFTER	-0.103	-0.103	-0.104	-0.105	-0.105
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Number of Observations	16202	16202	16202	16202	16202
Pseudo Likelihood	-7836.934	-7837.633	-7837.603	-7836.437	-7835.529
Pseudo R2	0.024	0.024	0.024	0.024	0.024

Table 8. The impact of managerial rhetoric on future stock price crash risk: Inclusion of equity-based incentives and transient institutional ownership:

This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes, after controlling for option incentives, stock incentives and transient institutional ownership. The main explanatory variable proxy ***RHETORIC (FW-ITEM 7)*** is derived from textual analysis of Item 7. All Models report regression results for ***PURE CRASH***. The estimates reported are obtained using the full sample with sufficient data to estimate the variables controlling for option incentives, stock incentives and transient institutional ownership. The dependent variable, ***PURE CRASH,*** is measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include firm-fixed effects and year-fixed effects to control for time-invariant unobserved firm heterogeneity and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH			
	(1)	(2)	(3)	(4)
RHETORIC (FW-ITEM 7)	0.072***	0.075***	0.068***	0.072***
	(0.02)	(0.02)	(0.02)	(0.02)
OPTION INCENTIVES	0.014			0.008
	(0.03)			(0.03)
STOCK INCENTIVES		0.009		0.014
		(0.02)		(0.03)
TRANSIENT INST OWNERSHIP			0.153***	0.160***
			(0.02)	(0.03)
SENTIMENT (ITEM 7)	0.090***	0.084***	0.087***	0.093***
	(0.02)	(0.02)	(0.02)	(0.03)
LN(TOTAL ASSETS)	-0.058*	-0.057**	-0.060**	-0.062**
	(0.03)	(0.03)	(0.03)	(0.03)
LN(FIRM AGE)	-0.071***	-0.071***	-0.049*	-0.054**
	(0.03)	(0.03)	(0.03)	(0.03)
MARKET TO BOOK	0.058***	0.068***	0.061***	0.063***
	(0.02)	(0.02)	(0.02)	(0.02)
LEVERAGE	-0.098***	-0.095***	-0.097***	-0.111***
	(0.03)	(0.03)	(0.03)	(0.03)
ROA	0.008	-0.002	0.007	0.002
	(0.03)	(0.03)	(0.02)	(0.03)
ROE	0.044*	0.046*	0.037	0.039
	(0.02)	(0.02)	(0.02)	(0.03)
STOCK RETURN	0.059**	0.057**	0.064**	0.068**
	(0.03)	(0.03)	(0.03)	(0.03)
DTURN	0.045*	0.035	0.028	0.028
	(0.02)	(0.02)	(0.02)	(0.02)
NCSKEW	0.034	0.033*	0.037*	0.042**
	(0.02)	(0.02)	(0.02)	(0.02)
CEO DEPART 3Y BEFORE	0.026	0.044	0.022	0.064
	(0.08)	(0.08)	(0.08)	(0.09)
CEO DEPART 2Y BEFORE	0.253***	0.255***	0.247***	0.272***
	(0.07)	(0.07)	(0.07)	(0.08)
CEO DEPART 1Y BEFORE	0.296***	0.336***	0.311***	0.339***
	(0.07)	(0.07)	(0.07)	(0.07)
CEO DEPART	0.069	0.054	0.064	0.093
	(0.07)	(0.07)	(0.07)	(0.08)
CEO DEPART 1Y AFTER	-0.109	-0.058	-0.100	-0.047
	(0.08)	(0.07)	(0.07)	(0.08)
Number of Observations	14414	15595	15973	13796
Pseudo Likelihood	-6970.334	-7550.077	-7706.073	-6660.968
Pseudo R2	0.024	0.025	0.027	0.028

Table 9. The impact of managerial rhetoric on future stock price crash risk: Subsample analysis based on CEO characteristics:

This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes, in various subsamples based on CEO characteristics divisions. The main explanatory variable proxy ***RHETORIC (FW-ITEM 7)*** is derived from textual analysis of Item 7. The estimates reported are obtained using the respective sample with sufficient data to estimate the variables controlling for each CEO characteristic. The dependent variable, ***PURE CRASH,*** is measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	POWERFUL	NON-POWERFUL	ABLE	LESS ABLE	OLDER	YOUNGER	HIGH CITI	LOW CITI
RHETORIC (FW-ITEM 7)	0.083***	0.015	0.089***	0.036	0.060	0.066***	0.118***	0.083*
	(0.02)	(0.05)	(0.03)	(0.08)	(0.04)	(0.02)	(0.04)	(0.05)
Baseline Controls	YES		YES		YES		YES	
Number of Observations	11734	4417	5403	5380	4931	5940	4873	4881
Pseudo Likelihood	-5600.190	-2182.914	-2521.970	-2618.640	-2290.932	-2942.080	-2476.462	-2278.532
Pseudo R2	0.024	0.042	0.031	0.032	0.035	0.027	0.030	0.042

Table 10. The impact of managerial rhetoric on future stock price crash risk: Subsample analysis based on external governance:

This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes, in various subsamples based on external governance. The main explanatory variable proxy ***RHETORIC (FW-ITEM 7)*** is derived from textual analysis of Item 7. The estimates reported are obtained using the respective sample with sufficient data to estimate the variables controlling for each external governance proxy. The dependent variable, ***PURE CRASH,*** is measured in fiscal year $t+1$, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH					
	(1)	(2)	(3)	(4)	(5)	(6)
	HIGH COMPETITIVENESS	LOW COMPETITIVENESS	HIGH GINDEX	LOW GINDEX	ANALYSTS	NO ANALYSTS
RHETORIC (FW-ITEM 7)	0.070***	0.097	-0.032	0.134***	0.068***	0.040
	(0.02)	(0.06)	(0.10)	(0.05)	(0.02)	(0.32)
Baseline Controls	YES		YES		YES	
Number of Observations	5092	5047	2865	3873	15566	534
Pseudo Likelihood	-2407.918	-2432.863	-1440.270	-1719.936	-7564.239	-218.224
Pseudo R2	0.034	0.036	0.046	0.048	0.024	0.132

Table 11. The impact of managerial rhetoric on future stock price crash risk: Subsample analysis based on internal governance:

This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes, in various subsamples based on internal governance. The main explanatory variable proxy ***RHETORIC (FW-ITEM 7)*** is derived from textual analysis of Item 7. The estimates reported are obtained using the respective sample with sufficient data to estimate the variables controlling for each internal governance proxy. The dependent variable, ***PURE CRASH,*** is measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	CRASH									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	BOARD SIZE		PERCENTAGE OF INDEPENDENT DIRECTORS		NUMBER OF FEMALE DIRECTORS		NUMBER OF BUSY DIRECTORS		NUMBER OF NOT ATTENDED DIRECTORS	
	HIGH	LOW	MAJORITY	MINORITY	>1	<=1	AT LEAST ONE	NONE	AT LEAST ONE	NONE
RHETORIC (FW-ITEM 7)	0.148***	0.093**	0.061***	0.285***	0.066***	0.080**	0.051***	0.185***	0.130**	0.061***
	(0.05)	(0.04)	(0.02)	(0.08)	(0.02)	(0.03)	(0.02)	(0.04)	(0.06)	(0.02)
Baseline Controls	YES		YES		YES		YES			
Number of Observations	2947	4728	14800	1330	5878	10309	12963	3212	754	15409
Pseudo Likelihood	-1362.535	-2343.238	-7199.485	-576.279	-2658.605	-5135.548	-6263.895	-1529.539	-352.433	-7441.677
Pseudo R2	0.046	0.033	0.023	0.101	0.031	0.026	0.022	0.056	0.096	0.024

Table 12. Endogeneity tests: Inclusion of firm-fixed effects and high dimensional fixed effects:
This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes. The main explanatory variables consist of three narrative proxies derived from textual analysis of Item 7, denoted as ***RHETORIC (FW-ITEM 7)***, ***RHETORIC (FULL-ITEM 7)*** and ***RHETORIC (RED-ITEM 7),*** respectively. The dependent variable, ***PURE CRASH***, is measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates in Models (1) to (3) include firm-fixed effects and year-fixed effects to control for time-invariant unobserved firm heterogeneity and year characteristics, while Models (4) to (6) include high dimensional fixed effects and industry-fixed effects to further control for unobserved firm heterogeneity and for unobserved time-invariant effects pertaining to industry. The estimates reported are obtained using the full sample with sufficient data to estimate the main control variables. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH					
	(1)	(2)	(3)	(4)	(5)	(6)
RHETORIC (FW-ITEM 7)	0.116***			0.085***		
	(0.03)			(0.02)		
RHETORIC (FULL-ITEM 7)		0.110***			0.074***	
		(0.03)			(0.02)	
RHETORIC (RED-ITEM 7)			0.093***			0.067***
			(0.03)			(0.02)
SENTIMENT (ITEM 7)	0.117***	0.116***	0.114***	0.091***	0.090***	0.090***
	(0.04)	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)
LN(TOTAL ASSETS)	0.547***	0.547***	0.546***			
	(0.10)	(0.10)	(0.10)			
LN(FIRM AGE)	-0.143	-0.135	-0.137			
	(0.11)	(0.11)	(0.11)			
MARKET TO BOOK	0.121***	0.120***	0.120***			
	(0.03)	(0.03)	(0.03)			
LEVERAGE	-0.072	-0.070	-0.070			
	(0.04)	(0.04)	(0.04)			
ROA	-0.073*	-0.073*	-0.073*			
	(0.04)	(0.04)	(0.04)			
ROE	0.013	0.013	0.013			
	(0.03)	(0.03)	(0.03)			
STOCK RETURN	0.130***	0.130***	0.130***			
	(0.04)	(0.04)	(0.04)			
DTURN	0.066**	0.066**	0.066**			
	(0.03)	(0.03)	(0.03)			
NCSKEW	-0.129***	-0.129***	-0.129***			
	(0.02)	(0.02)	(0.02)			
CEO DEPART 3Y BEFORE	-0.082	-0.083	-0.083	0.040	0.039	0.038
	(0.10)	(0.10)	(0.10)	(0.09)	(0.09)	(0.09)
CEO DEPART 2Y BEFORE	0.159*	0.158*	0.158*	0.230***	0.228***	0.228***
	(0.09)	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)
CEO DEPART 1Y BEFORE	0.255***	0.255***	0.254***	0.295***	0.293***	0.292***
	(0.09)	(0.09)	(0.09)	(0.07)	(0.07)	(0.07)
CEO DEPART	0.015	0.016	0.016	0.052	0.051	0.050
	(0.09)	(0.09)	(0.09)	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y AFTER	-0.127	-0.125	-0.125	-0.095	-0.094	-0.095
	(0.09)	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)
Time Fixed Effects		YES			NO	
Industry Fixed Effects		NO			YES	
Firm Fixed Effects		YES			NO	
High dimensional Fixed Effects		NO			YES	
Number of Observations	13529	13529	13529	16196	16196	16196
Pseudo Likelihood	-6554.007	-6555.202	-6555.884	-7310.577	-7312.616	-7313.176
Pseudo R2	0.101	0.101	0.101	0.089	0.089	0.089

Table 13. Endogeneity tests: Reverse Causality:

This table reports OLS regression estimates for the relationship between ***PURE CRASH*** with one-year ahead ***RHETORIC.*** The main depended variables consist of three narrative proxies derived from textual analysis of Item 7, denoted as ***RHETORIC (FW-ITEM 7)***, ***RHETORIC (FULL-ITEM 7)*** and ***RHETORIC (RED-ITEM 7),*** respectively. The estimates reported are obtained using the full sample with sufficient data to estimate the main control variables, which consists of 16,202 firm-year observations. The dependent variables are measured in fiscal year $t+1$, whereby the independent variable (***PURE CRASH***) is measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The fixed effects included are displayed in each model separately. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	RHETORIC (FW-ITEM 7)	RHETORIC (FULL-ITEM 7)	RHETORIC (RED-ITEM 7)	RHETORIC (FW-ITEM 7)	RHETORIC (FULL-ITEM 7)	RHETORIC (RED-ITEM 7)
	(1)	(2)	(3)	(4)	(5)	(6)
PURE CRASH	0.032	0.027	0.027	0.019	0.015	0.019
	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
SENTIMENT (ITEM 7)	-0.038***	-0.030***	-0.022**	-0.029***	-0.018*	-0.005
	(0.010)	(0.011)	(0.010)	(0.009)	(0.010)	(0.010)
LN(TOTAL ASSETS)	-0.021	-0.032**	-0.032**	-0.018	-0.006	0.000
	(0.015)	(0.015)	(0.015)	(0.028)	(0.026)	(0.030)
LN(FIRM AGE)	-0.096***	-0.113***	-0.102***	-0.280**	-0.441***	-0.467***
	(0.025)	(0.029)	(0.029)	(0.116)	(0.131)	(0.132)
MARKET TO BOOK	0.078***	0.084***	0.060***	0.015*	0.020**	0.022**
	(0.027)	(0.026)	(0.015)	(0.008)	(0.009)	(0.009)
LEVERAGE	-0.034*	-0.059***	-0.080***	0.005	-0.018	-0.024
	(0.018)	(0.019)	(0.016)	(0.026)	(0.023)	(0.023)
ROA	0.036**	0.049***	0.051***	-0.013	-0.007	-0.006
	(0.015)	(0.016)	(0.015)	(0.010)	(0.010)	(0.010)
ROE	-0.069**	-0.072***	-0.049***	-0.007	-0.009	-0.007
	(0.028)	(0.026)	(0.015)	(0.011)	(0.009)	(0.009)
STOCK RETURN	-0.076***	-0.096***	-0.100***	-0.013	-0.027*	-0.035**
	(0.016)	(0.016)	(0.017)	(0.018)	(0.016)	(0.017)
DTURN	-0.002	-0.006	-0.007	0.015	0.014	0.012
	(0.013)	(0.011)	(0.012)	(0.019)	(0.014)	(0.016)
NCSKEW	-0.003	-0.000	-0.000	-0.011*	-0.006	-0.006
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
CEO DEPART 3Y BEFORE	0.007	0.010	0.004	-0.008	-0.005	-0.013
	(0.032)	(0.031)	(0.030)	(0.027)	(0.025)	(0.026)
CEO DEPART 2Y BEFORE	-0.019	-0.002	-0.019	-0.024	-0.010	-0.031
	(0.026)	(0.026)	(0.026)	(0.027)	(0.025)	(0.026)
CEO DEPART 1Y BEFORE	-0.041*	-0.041*	-0.040	-0.039	-0.038	-0.042
	(0.025)	(0.024)	(0.025)	(0.031)	(0.026)	(0.029)
CEO DEPART	-0.039*	-0.032	-0.034	-0.040	-0.036	-0.043
	(0.023)	(0.023)	(0.023)	(0.028)	(0.025)	(0.029)
CEO DEPART 1Y AFTER	-0.043**	-0.050**	-0.044**	-0.027	-0.026	-0.028
	(0.021)	(0.020)	(0.020)	(0.026)	(0.022)	(0.024)
Time Fixed Effects		YES			YES	
Industry Fixed Effects		YES			NO	
Firm Fixed Effects		NO			YES	
Number of Observations	16202	16202	16202	16202	16202	16202
Pseudo Likelihood	0.163	0.262	0.226	0.476	0.622	0.529
Pseudo R2	0.158	0.258	0.221	0.393	0.561	0.454

Table 14. Endogeneity tests: Measurement Error:

This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes. The main explanatory variables consist of three alternative categorical variables derived from ranking the narrative proxy ***RHETORIC (FW-ITEM 7)***, in 10, 5 and 3 groups, respectively. The estimates reported are obtained using the full sample with sufficient data to estimate the main control variables, which consists of 16,202 firm-year observations. The dependent variable, ***PURE CRASH***, is measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. Detailed variable definitions are provided in the Appendix. The estimates include firm-fixed effects and year-fixed effects to control for time-invariant unobserved firm heterogeneity and year characteristics, respectively. All models include a constant and baseline control variables. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH		
	(1)	(2)	(3)
RHETORIC (FW-ITEM 7)-10groups	0.026***		
	(0.01)		
RHETORIC (FW-ITEM 7)-5groups		0.053***	
		(0.02)	
RHETORIC (FW-ITEM 7)-3groups			0.084***
			(0.03)
SENTIMENT (ITEM 7)	0.092***	0.090***	0.092***
	(0.02)	(0.02)	(0.02)
LN(TOTAL ASSETS)	-0.036**	-0.037**	-0.036**
	(0.02)	(0.02)	(0.02)
LN(FIRM AGE)	-0.125***	-0.126***	-0.125***
	(0.05)	(0.05)	(0.05)
MARKET TO BOOK	0.061***	0.062***	0.062***
	(0.02)	(0.02)	(0.02)
LEVERAGE	0.009	0.007	0.008
	(0.02)	(0.02)	(0.02)
ROA	-0.091***	-0.090***	-0.091***
	(0.02)	(0.02)	(0.02)
ROE	0.043*	0.042*	0.043*
	(0.02)	(0.02)	(0.02)
STOCK RETURN	0.054**	0.053*	0.054**
	(0.03)	(0.03)	(0.03)
DTURN	0.037*	0.037*	0.037*
	(0.02)	(0.02)	(0.02)
NCSKEW	0.034*	0.034*	0.034*
	(0.02)	(0.02)	(0.02)
CEO DEPART 3Y BEFORE	0.017	0.017	0.016
	(0.08)	(0.08)	(0.08)
CEO DEPART 2Y BEFORE	0.236***	0.235***	0.235***
	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y BEFORE	0.302***	0.302***	0.301***
	(0.07)	(0.07)	(0.07)
CEO DEPART	0.049	0.049	0.048
	(0.07)	(0.07)	(0.07)
CEO DEPART 1Y AFTER	-0.106	-0.105	-0.106
	(0.07)	(0.07)	(0.07)
Number of Observations	16202	16202	16202
Pseudo Likelihood	-7839.160	-7840.548	-7839.384
Pseudo R2	0.024	0.023	0.024

Table 15. Endogeneity tests: Setting for hyping investors' expectations (before and after the tariff cut):
This table reports logit regression estimates for the relationship between ***Rhetoric*** with one-year ahead stock price crashes. The main explanatory variable consists of the narrative proxy derived from textual analysis of Item 7, denoted as ***RHETORIC (FW-ITEM 7)***. The dependent variable, ***PURE CRASH***, is measured in fiscal year *t*+1, whereby all independent variables are measured in fiscal year *t*. The estimates in Models (1) to (3) include industry-fixed effects and year-fixed effects to control for unobserved time-invariant effects pertaining to industry and year characteristics, while Models (4) to (6) include firm-fixed effects and year-fixed effects to control for time-invariant unobserved firm heterogeneity and year characteristics, respectively. All models include a constant and baseline control variables. Detailed variable definitions are provided in the Appendix. The standard errors are clustered at the firm level and provided in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles and are standardized to have a mean value of zero and variance of one. ***, ** and * indicate statistical significance at the 1, 5 and 10 percent, respectively.

	PURE CRASH					
	(1)	(2)	(3)	(4)	(5)	(6)
AFTER	-0.115	-0.125	-0.121	-0.177*	-0.181*	-0.175
	(0.08)	(0.08)	(0.08)	(0.10)	(0.11)	(0.11)
AFTER*RHETORIC (FW-ITEM 7)	0.114**	0.125**	0.134**	0.149*	0.152*	0.159*
	(0.06)	(0.06)	(0.06)	(0.08)	(0.08)	(0.09)
SENTIMENT (ITEM 7)			0.014			-0.022
			(0.07)			(0.10)
LN(TOTAL ASSETS)		-0.034	-0.038		0.411**	0.390*
		(0.04)	(0.04)		(0.20)	(0.20)
LN(FIRM AGE)		-0.033	-0.034		0.182	0.178
		(0.04)	(0.04)		(0.24)	(0.23)
MARKET TO BOOK		0.011	0.012		0.041	0.042
		(0.04)	(0.04)		(0.06)	(0.06)
LEVERAGE		-0.006	-0.008		-0.097	-0.098
		(0.04)	(0.04)		(0.09)	(0.09)
ROA		-0.069*	-0.063*		-0.021	-0.017
		(0.04)	(0.04)		(0.05)	(0.05)
ROE		0.099***	0.100***		0.092*	0.094*
		(0.04)	(0.04)		(0.05)	(0.05)
STOCK RETURN		0.086**	0.086**		0.201***	0.203***
		(0.04)	(0.04)		(0.07)	(0.07)
DTURN		0.031	0.030		0.075*	0.076*
		(0.03)	(0.03)		(0.04)	(0.04)
NCSKEW		0.037	0.035		-0.107***	-0.109***
		(0.03)	(0.03)		(0.04)	(0.04)
CEO DEPART 3Y BEFORE			0.067			0.050
			(0.12)			(0.15)
CEO DEPART 2Y BEFORE			0.193*			0.171
			(0.11)			(0.15)
CEO DEPART 1Y BEFORE			0.311***			0.319**
			(0.11)			(0.14)
CEO DEPART			0.036			0.108
			(0.11)			(0.14)
CEO DEPART 1Y AFTER			-0.084			-0.047
			(0.12)			(0.15)
Year Fixed Effects		YES			YES	
Industry Fixed Effects		YES			NO	
Firm Fixed Effects		NO			YES	
Number of Observations	5889	5874	5874	4903	4889	4889
Pseudo Likelihood	-3097.104	-3080.303	-3074.697	-2546.408	-2519.060	-2515.496
Pseudo R2	0.026	0.029	0.031	0.107	0.115	0.116