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Is Tone at the Top Associated with Financial Reporting Aggressiveness?

Lorenzo Patelli · Matteo Pedrini

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Abstract The discussion about the relationship between tone at the top and financial reporting practices has been primarily focused on the oversight role played by the board of directors and other structural elements of corporate governance. Another relevant determinant of tone at the top is the corporate narrative language, since it is a fundamental way in which the chief executive officer (CEO) enacts leadership. In this study, we empirically explore the association between financial reporting aggressiveness and five thematic indicators capturing different traits of ethical leadership from 535 annual letters to shareholders. We find that aggressive financial reporting is positively associated with CEO letters using a language which is resolute, complex, and not engaging. Our empirical findings highlight the importance of examining discretionary corporate narratives for the auditing process and the role of tone at the top in influencing accounting practices.

Keywords Financial reporting · Accounting restatements · Tone at the top · Ethical leadership · DICTION

L. Patelli (✉)
School of Accountancy, Daniels College of Business, University of Denver, 2101 S University Blvd., Suite #360, Denver, CO 80208, USA
e-mail: lorenzo.patelli@du.edu

M. Pedrini
ALTIS-Postgraduate School Business and Society, Università Cattolica del Sacro Cuore, Via San Vittore 18, 20123 Milan, Italy
e-mail: matteo.pedrini@unicatt.it

Introduction

Tone at the top has been defined in various ways, and its measurement is not unequivocal. Amernic et al. (2010) discuss several definitions of this construct, including the one by Mahadeo (2006, p. 1) who conceives tone at the top as an "atmosphere." As noted by Hunton et al. (2011), this atmosphere is primarily created by the board of directors and leadership of the chief executive officer (CEO). The oversight function of the board of directors exercised through policies and committees has attracted ample attention from researchers and has been found to play a crucial role in preserving integrity of accounting practices (e.g., Lamberton et al. 2005; Merchant and Rockness 1994). Prior empirical research has primarily focused on structural elements of the board of directors (e.g., gender diversity and CEO age) and examined their effect on organizational practices, including financial reporting (Abbott et al. 2012; Huang et al. 2012).

According to Amernic et al. (2010), a more fundamental and direct manifestation of tone at the top is the narrative language of the CEO. Discursive narration is a critical element for the enactment of leadership as it enables CEOs to construct organizational identity (Heracleous and Barrett 2001), enhance their role as sensemakers (Weick et al. 2005), manage consent (Kuhn 2008), and sharpen their charisma (Den Hartog and Verburg 1997).

The research objective of the present study is to test whether an association exists between financial reporting aggressiveness and leadership traits captured through a lexical analysis of CEOs' annual letters to shareholders (hereafter, CEO letters). With their letters, CEOs communicate with the external environment and provide a representation of firm performance. Such a representation is also offered by the accounting metrics reported in the financial statements prepared according to financial reporting standards. Financial reporting aggressiveness refers to the level of engagement in financial reporting choices that lead to earnings revisions, financial restatements, and accounting frauds (e.g., Dechow et al. 2011). Many prior research studies consider these aggressive financial reporting choices to be driven by self-interest and unethical motives (e.g., Kaplan et al. 2007; Kaplan 2001; Merchant and Rockness 1994). Consistent with upper echelons theory (Hambrick and Mason 1984) and recent studies on literature on ethical leadership (e.g., Schaubroeck et al. 2012), we argue that the ethical attentiveness throughout the organization is instilled by its leaders. Hence, leadership traits can craft an environment characterized by either integrity or unethical practices. Moreover, several accounting fraud cases provide anecdotal evidence suggesting that leadership has a strong impact on unethical financial reporting (e.g., Mihajlov and Miller 2012; Tourish and Vatcha 2005). By examining the language used in CEO letters and financial reporting aggressiveness, we test whether specific leadership traits are associated with unethical accounting practices.

In particular, we hypothesized that a programmatic, optimistic, resolute, complex, and non-engaging language in CEO letters captures leadership traits that are likely to be associated with financial reporting aggressiveness. To test our hypotheses, our empirical analysis measures thematic indicators in 535 CEO letters from a sample of Fortune 500 firms over the course of two years corresponding to the wake of the global economic crisis. Several reasons motivate the choice of CEO letters as a fundamental vehicle of leadership. Since they reflect CEOs' priorities, mindset, perceived charisma (Amernic et al. 2010), and moral reasoning (Weber 2010), lexical features of CEO letters reveal important aspects of leadership and organizational values (e.g., Merkl-Davies and Brennan 2007). Indeed, in these documents, CEOs express their business vision, stress their firms' competitive advantage, highlight strategic priorities, interpret financial results and other achievements, and identify threats and opportunities. According to Segars and Kogut (2001), CEO letters show CEOs' credibility, efficacy, commitment, and responsibility. Prior empirical research supports that investors rely on explanations and interpretations presented in the CEO letters to make investment decisions (e.g., Abrahamson and Amir 1996; Feldman et al. 2010; Henry 2008; Kaplan et al. 1990). Finally, certain CEO letters, such as those of Berkshire Hathaway, General Electric, and Amazon.com, greatly influence the market sentiment and economic forecasts of the investment community, and Courtis (1998) points out that CEO letters are the most read section of corporate annual reports.

To measure thematic indicators of CEO letters, we use the computerized analysis of DICTION and to measure financial reporting aggressiveness, we use the F-score developed by Dechow et al. (2011). Empirical findings show that financial reporting aggressiveness is associated with a resolute, complex, and non-engaging language in CEO letters that reflect authoritative (Giessner and van Quaquebeke 2010), deceptive (Bligh and Hess 2007), and neurotic (Brown and Treviño 2006a) leadership.

Our study differs from prior literature on ethical leadership because it uses corporate narratives to measure leadership traits associated with unethical accounting practices. Our lexical analysis is based on CEO letters instead of sections of the corporate annual reports that are less likely to be direct expressions of tone at the top (e.g., Li 2008). Moreover, we investigate thematic indicators that capture the meaning of words instead of mere syntactic features. Finally, our methodology relies on a computerized procedure which favors comparability and shows the validity of automated techniques to measure leadership traits and detect unethical accounting practices.

The remainder of the paper is organized as follows. In the next two sections, we present the theoretical background and formulate five hypotheses. Next, we explain the empirical framework and discuss our empirical analysis and findings. In the final section, we draw conclusions and offer implications for practice and future research.

Tone at the Top and Accounting Practices

According to the upper echelons theory of Hambrick and Mason (1984), tone at the top determined by managers' characteristics exercises a significant influence on organizational practices. This proposition of upper echelons theory is in contrast with neoclassical theories that dismiss any effect of non-economic factors on organizational practices (Weintraub 2002). The arguments by Hambrick and Mason (1984) imply that leadership and governance that constitute tone at the top affect a firm's strategic choices and organizational outcomes. In particular, several studies show that tone at the top is a crucial determinant of ethical practices within business organizations (e.g., Bannon et al. 2010; Berson et al. 2008; Merchant 1990; Rotemberg and Saloner 2000; Schaubroeck et al. 2012; Weber 2010). Schaubroeck et al. (2012) present various ways in which ethical leadership is translated into unethical behaviors of subordinates, including the trickle-down mechanism through which traits of ethical leadership at the top influence ethical conduct in the lower levels of organizations.

In the last decade, high profile accounting scandals and the collapse of the financial system in 2008 have increased the attention devoted by accounting studies to tone at the top and its consequences. Two recent accounting studies adopt upper echelons theory to test the effect of leadership on accounting practices. In order to test the effect of leadership, both studies examine whether the presence of a certain manager (i.e., manager-specific fixed effect) is associated with specific accounting practices. Bamber et al. (2010) test the significance of a manager-specific fixed effect on corporate discretionary disclosure. The authors provide compelling empirical evidence that leadership significantly affects fundamental elements of financial disclosure, including the number of earnings forecast, forecast bias, precision, and accuracy (Bamber et al. 2010). Similarly, Ge et al. (2011) find a significant manager-specific fixed effect on accounting choices, including accruals quality and financial reporting aggressiveness. Although they provide empirical support to the relationship between tone at the top and accounting practices, these studies do not explain what aspects of tone at the top are associated with unethical accounting practices.

To gauge how tone at the top affects accounting practices, the accounting literature has generally focused on the oversight role of the board of directors. The stream of research concerned with corporate governance has found a significant effect of certain characteristics of the board of directors on organizational performance and accounting practices (e.g., Grove et al. 2011; Larcker et al. 2007). For example, recent studies have shown that the presence of at least one woman on the board of directors (Abbott et al. 2012) and CEO age (Huang et al. 2012) decreases the likelihood of financial restatements.

However, as pointed out by the International Federation of Accountants (IFAC 2007), tone at the top goes beyond written policies and governance structures. According to a growing number of studies within the literature on leadership, not only governance structures but also corporate language embeds fundamental elements of tone at the top (Tourish 2008). Fairhurst (2007) argues that leadership is a discursive language-based phenomenon, and the CEO enacts leadership through language. Barry and Elmes (1997) present a narrative view of corporate strategy and argue that language is used by top management to construct meaning. Martens et al. (2007) show that corporate narratives convey the entrepreneur's identity and are designed to communicate leadership styles (e.g., Shaw et al. 1998). Finally, Weber (2010) finds CEOs' language reveals elements of their moral reasoning.

Following the increasing emphasis on language within the literature on leadership, recent accounting studies have paid more attention to the usefulness of corporate language for understanding how tone at the top influences accounting practices (e.g., Li 2010). Most prior studies focus on the language contained in the 10-K documents filed by firms listed on the US stock markets. For example, Li (2008) reports that text readability of 10-Ks (measured by text length, the number of words per sentence, and the number of syllables per word) is positively correlated with accounting return and earnings persistence. Similarly, Henry (2008) shows that tone and length of earnings press releases affect market reaction. In a large sample of 10-Ks filed between 1994 and 2008, Loughran and McDonald (2011a) find that certain financial phrases identified by the business press as equivocal are associated with instances of lawsuits triggered by accounting violations, in addition to abnormal stock returns, volatility, and analyst earnings forecast dispersion. In a different study based on the same sample, the authors also provide word lists that they find to be empirically related to accounting malpractices such as frauds, material weaknesses, and unexpected earnings (Loughran and McDonald 2011b). Finally, a working paper by Purda and Skillicorn (2012) uses a large sample of Management Discussion and Analysis sections of the 10-Ks to test the predictive validity of three alternative fraud-detection indicators, namely accounting measures (e.g., F-score), predefined word lists, and data-generated word lists.

The empirical evidence offered by these accounting studies suggests deceptive language is a significant indicator of unethical accounting practices, especially financial reporting irregularities (Humpherys et al. 2011). However, these studies rely on financial documents (i.e., 10-Ks) whose content is for the most part mandated and relatively uniform over time (e.g., Larcker and Zakolyukina 2012). Moreover, as pointed out by Larcker and Zakolyukina (2012), accountants and legal counselors are typically the authors of these documents. The analysis of the language adopted in the 10-Ks is extremely valuable to provide investors, auditors, and regulators with verbal cues which can be used as sources of differential information about firm performance. However, limiting the analysis to 10-Ks prevents a more direct investigation of tone at the top, which depends on the leadership of the CEO (Amernic et al. 2010).[1]

We retrieved four studies in the accounting literature which examine the language used by the CEO, namely Smith and Taffler (2000), Keusch et al. (2012), Hobson et al. (2012), and Larcker and Zakolyukina (2012). The lexical analysis by Smith and Taffler (2000) relies on subjective assessments and examines the thematic structure

[1] According to Amernic and Craig (2006), it is incorrect to assume CEOs are not the actual authors of CEO letters. Although they could be crafted by professional writers, CEO letters are perceived by stakeholders as expressions of CEOs' leadership. Moreover, Geppert and Lawrence (2008) show that CEOs employ CEO letters as a reputation management tool and many empirical studies confirm that investors' decisions rely on narrative corporate disclosure (e.g., Baginski et al. 2004; Henry 2008; Hutton et al. 2003; Matsumoto and Chen 2006).

of CEO letters in relation to firm financial health. Their results based on a sample comprising 66 manufacturing and construction firms listed on the London Stock Exchange confirm that examining the language of CEO letters leads to accurate classification of firms based on their financial condition. The Keusch et al. (2012) study is based on European firms that through content analysis compares the rhetorical features of CEO letters of 125 firms in 2006 versus 2008, and argue that the economic crisis exacerbates self-serving bias in CEO rhetorical style. Finally, Hobson et al. (2012) and Larcker and Zakolyukina (2012) investigate rhetorical features of earnings conference calls. The former study employs vocal emotion analysis software to catch non-verbal cues in the CEO's voice. The latter study is based on ad-hoc word lists aimed at capturing deceptive language by making adjustments to psychological dictionaries. Both studies find a significant association between rhetorical features (either verbal or nonverbal) and financial reporting irregularities.

In this study, we further develop this stream of accounting research by focusing on the association between financial reporting aggressiveness and leadership traits captured through thematic indicators in CEO letters. In the following section, we present testable hypotheses regarding specific thematic indicators. In order to generate our hypotheses, we refer to various theories and studies in the literature on ethical leadership and ethical discourse.

Hypotheses

Two types of lexical analyses can be performed in order to capture leadership traits based on language. Syntactic analyses examine the organization of a text, whereas thematic analyses examine the content of a text (Sydserff and Weetman 2002). Most prior accounting studies are based on syntactic analyses considering only text readability (e.g., Subramanian et al. 1993) and frequency of positive terms (e.g., Abrahamson and Amir 1996).

In order to operationalize leadership traits based on the language of CEO letters, we rely on the thematic analysis of DICTION, which is a Windows-based language-analysis program that uses a series of dictionaries comprising 10,000 search words assigned to 35 linguistic categories (Sydserff and Weetman 2002).[2] Based on a semantic structure proposed by Hart (2000) and inspired by seminal semantic studies (e.g., Johnson 1946; Osgood et al. 1957), DICTION is designed to generate five thematic indicators. Consistent with a discursive language-based view of CEO leadership (e.g., Fairhurst 2007), we rely on the five thematic indicators to capture leadership traits. Appendix 1 provides quotes from CEO letters exemplifying the five thematic indicators.

Activity is the thematic indicator capturing movement, change, the implementation of an idea, and the avoidance of inertia (Hart 2000). It increases with the frequent use of terms related to forceful actions and personal triumph. It decreases with words ranging from neutrality to inactivity. Hence, a programmatic language that emphasizes accomplishments and conveys narcissistic self-confidence is characterized by *Activity*. Specifically, *Activity* in the language of CEO letters indicates overconfidence in the ability to implement change and deliver positive performance results. It follows that *Activity* denotes leadership traits of heroism (Badaracco 2001), transformational change (Brown and Treviño 2006), and self-confidence (Bénabou and Tirole 2002). According to Badaracco (2001), ethical leaders do not seek heroic representations of their actions and decisions. Yet, they undertake change patiently, carefully, and incrementally. Brown and Treviño (2006) explain that leaders who promote transformational change are unethical when they are driven by self-confidence. Self-confidence has a positive impact on organizational practices, but it is self-defeating when it becomes overconfidence (Bénabou and Tirole 2002). Schrand and Zechman (2012) show that overconfidence of CEOs is strongly correlated with financial restatements. In the literature on ethical leadership, overconfidence is typically associated with narcissism that leads CEOs to search for attention by undertaking bold actions that would be considered unfeasible by most people (Kets de Vries 2003). Chen (2010) shows that narcissist leaders are more likely to carry out unethical acts, such as accounting scams. Heroism, emphasis on transformational change, and overconfidence indicated by *Activity* in CEO letters undermine credibility that is a fundamental element of both ethical leadership and the quality of financial reporting. Therefore, our first hypothesis is formulated as follows:

Hypothesis 1 Activity in CEO letters is positively associated with financial reporting aggressiveness.

Optimism refers to the words endorsing some person, group, concept, or event, or highlighting their positive

[2] Dictionaries are consistently rooted in semantic theory and avoid inter-rater reliability problems caused by the use of subjective coding (Davis et al. 2012). Based on multiple linguistic dictionaries (Short and Palmer 2008), DICTION overcomes the synonymy issue affecting most syntactic analyses, especially readability scores (Henry 2008). The synonymy issue affects textual-analysis instruments based on term frequency counts as they fail to capture similarity of terms which are, however, captured by lexical analysis instruments based on dictionaries. This theoretical rigor and objectivity allow for application on large samples and enhance empirical comparability of results.

Footnote 2 continued
Finally, DICTION leads to interdisciplinary research by bridging the gap between linguistic and business literature (Sydserff and Weetman 2002). Patelli and Pedrini (2013), Bligh and Hess (2007), and Yuthas et al. (2002) offer further explanations of the application of DICTION to corporate narratives.

entailments (Hart 2000). It is based on positive terms conveying a sense of praise and satisfaction. Conversely, a negative language that emphasizes hardships decreases *Optimism*. In accounting literature, optimistic tone in corporate narratives has been considered as a form of impression management (Hooghiemstra 2000). Schlenker (1980) describes impression management as the conscious or unconscious attempt to manipulate representations and interpretations. According to impression management theory, corporate narratives are used by CEOs to strategically influence investors' expectations rather than faithfully communicate performance results (e.g., Bowen et al. 2005). Similarly, aggressive financial reporting aims at distorting accounting numbers to depict a more favorable financial situation. Clatworthy and Jones (2003) explain that impression management in corporate narratives is achieved through an optimistic tone that obfuscates failures and emphasizes successes. In their review of corporate disclosure strategies, Merkl-Davies and Brennan (2007) confirm that several prior studies have used an optimistic tone as a proxy for impression management. For example, Loughran and McDonald (2011a) find that an optimistic tone in annual reports is significantly correlated with material weaknesses of financial statements. Yuthas et al. (2002) discusses the relationship between DICTION indicators and principles of discourse ethics. In their framework, *Optimism* is particularly relevant to assess truth and sincerity that are fundamental accounting principles jeopardized by aggressive reporting. The authors argue that *Optimism* could signal ethical lapses. Contrary to most prior studies, Patelli and Pedrini (2013) conclude that an optimistic tone in CEO letters published during the economic crisis is sincere based on its congruence with current and future financial performance. However, their empirical test does not consider the influence of financial reporting aggressiveness on the findings. Consistent with the expectation of impression management theory that *Optimism* is a rhetorical manipulation aimed at distorting the interpretation of financial results, our second hypothesis is formulated as follows.

Hypothesis 2 Optimism in CEO letters is positively associated with financial reporting aggressiveness.

Certainty indicates resoluteness, inflexibility, completeness, and a tendency to speak authoritatively (Hart 2000). It denotes a language that emphasizes precision and avoids hesitation. It conveys tenacity and insistence, and minimizes ambivalence. *Certainty* in CEO letters communicates an authoritative leadership unwilling to compromise and a sense of assurance that seeks approval and persuasion. According to Giessner and van Quaquebeke (2010), authoritative leaders demand obedience and loyalty through resolute management style. The literature on leadership identifies resoluteness as a common trait of transactional leaders who are focused on contingent rewards and management by exception (Burns 1978). Transactional leaders employ tight control mechanisms that favor self-interest rather than inspire ethical behavior (Bass 1985). Conversely, leaders who value goals beyond self-interest are more likely to promote ethical leadership (Turner et al. 2002). Sama and Shoaf (2008) argue that by focusing on transactions and profitability, transactional leadership is more likely to generate unethical behaviors. Therefore, the resoluteness of the language used in CEO letters as captured by *Certainty* could indicate poor ethical leadership. Moreover, Yuthas et al. (2002) discuss *Certainty* in light of the legitimacy principle of discourse ethics. Legitimacy refers to the appropriateness of language relative to the external context (Forester 1985). Hence, the assessment of legitimacy cannot be universal. Yet, it must depend on the specific context examined. Patelli and Pedrini (2013) discuss the peculiarities of the economic context in the period examined by this study (i.e., the worldwide economic downturn of 2008 and 2009) in relation with discourse ethics. They suggest that resoluteness and a sense of certainty seem inappropriate for an economic context shaped by high financial instability. In uncertain environments, a flexible language seems to be more legitimate in order to seek understanding rather than approval (Yuthas et al. 2002). Therefore, in the context of this study, *Certainty* appears to violate the legitimacy principle of discourse ethics. Based on the association of *Certainty* with transactional leadership and its inconsistency with the legitimacy principle, we formulate our third hypothesis as follows:

Hypothesis 3 Certainty in CEO letters is positively associated with financial reporting aggressiveness.

Realism focuses on language describing tangible, immediate, recognizable matters that affect everyday life (Hart 2000). It increases with a frequent use of concrete and familiar terms expressing a present concern. It decreases with complex words, long sentences, and uncommon terminology. Therefore, *Realism* captures the ease of reading that is an area of possible rhetorical manipulation, according to impression management theory (e.g., Merkl-Davies and Brennan 2007). Through the use of complex language, corporate narratives can deceive investors (Li 2008). Consistent with impression management theory, prior accounting studies have investigated the relationship between readability of annual reports and firm performance (e.g., Li 2008), analyst following (Lehavy et al. 2011), financial press coverage (Courtis 1998), and corporate risk (Courtis 1986). Their findings suggest that ease of reading is manipulated in order to divert attention from unfavorable performance results. Hence, complex language in CEO letters as captured by low *Realism* indicates unfaithful representation of financial results. Moreover, Yuthas et al. (2002) argue that complex lexicons in corporate narratives violate the comprehensibility principle of discourse ethics (Forester 1985). In order to promote mutual understanding and ethical leadership, CEOs' communication should be comprehensible and transparent. Lack of comprehensibility and transparency in CEO letters can signal ethical lapses in CEOs' leadership with negative consequences for financial reporting practices (Schaubroeck et al. 2012). Consistent with the comprehensibility principles of discourse ethics and empirical findings of prior accounting studies regarding readability of annual reports, we formulate our fourth hypothesis as follows:

Hypothesis 4 Realism in CEO letters is negatively associated with financial reporting aggressiveness.

Commonality measures the emphasis on the agreed-upon values of a group and the rejection of idiosyncratic modes of engagement (Hart 2000). It is based on terms designating interaction and cooperation. The language of *Commonality* seeks to establish mutual understanding and rapport with the target audience by underlining common values. Conversely, *Commonality* decreases as communication rejects social conventions and stresses differences from norms. Therefore, *Commonality* in CEO letters denotes a language aimed at engaging with shareholders in order to create a sense of community and stimulating commitment toward common goals. According to Marsh (2013), engagement is a fundamental value of ethical leadership. Ethical leaders strive to build relationships by engaging with stakeholders (Marsh 2013). Similarly, Reed et al. (2011) point out those ethical leaders take into considerations the effects of their decisions and actions on others by listening to the various organizational members. Spears (1995) describes ethical leaders as builders of community and stewards of shareholder resources. It follows that poor ethical leadership fails to facilitate rapport with shareholders and leads to focusing on self-interest. According to Brown and Treviño (2006), one of the fundamental personality traits that define unethical leaders is neuroticism. Neuroticism focuses on self-perceptions and belittles common views. Walumbwa and Schaubroeck (2009) argue that neurotic leaders are likely to become negative role-models within their organizations. They show that neuroticism is uninspiring, unstimulating, and more prone to interpersonal conflicts. *Commonality* indicates a language that is not affected by neuroticism, and it is more consistent with values of ethical leadership. In contrast, financial reporting aggressiveness is driven by managers' self-interest and implies deviation from commonly-used accounting principles. Moreover, aggressive financial reporting is obtained through unusual accounting methodologies that are adopted to pursue individual goals rather than the value of the entire organization. As a consequence, financial reporting aggressiveness is likely to cause financial restatements and litigations (Dechow et al. 2011). Consistent with the literature on ethical leadership that emphasizes the value of engagement, our fifth hypothesis is formulated as follows:

Hypothesis 5 Commonality in CEO letters is negatively associated with financial reporting aggressiveness.

Empirical Framework

Sample

Since CEO letters are not mandatory, and voluntary disclosure has been found to be higher in large firms (e.g., Ahmed and Courtis 1999), we compiled our sample starting from the largest US publicly traded firms. We focused on CEO letters published in fiscal year 2008 and 2009, in the wake of the global economic crisis. The focus on a very uncertain and unfavorable macroeconomic environment offers several advantages for our research objective. First, facing tough economic challenges and future uncertainty, CEOs are forced to fully exploit their leadership skills, and tone at the top becomes more critical (e.g., Keusch et al. 2012; Patelli and Pedrini 2013). Second, economic crises cause a higher variety of responses captured by more variation in narrative themes as shown by D'Aveni and MacMillan (1990). Third, negative financial results and unfavorable economic forecasts represent important incentives to engage in aggressive financial reporting (e.g., Merchant and Rockness 1994). Finally, the eruption of the global economic crisis, especially due to bad ethical practices within the financial industry, generated more scrutiny of tone at the top and more pressure for more transparent disclosure (e.g., Grove et al. 2011). Consistent with these arguments, Keusch et al. (2012) find that the global economic crisis has exacerbated the deceptive features of the language in CEO letters of large European firms.

Table 1 reports the sampling procedure. To perform our thematic analysis, we downloaded CEO letters from corporate websites of firms ranked in the Fortune 500 lists of 2009 and 2010. We matched each CEO letter with firm financial information obtained from COMPUSTAT. Sixteen observations were considered outliers and excluded from our analysis, because the values of either the thematic indicators measured by DICTION or the accounting numbers in COMPUSTAT were significantly different than those of the other observations. Replacing these outliers with the sample averages does not change our results nor affect the representativeness of our sample. The final unbalanced sample contains 535 firm-year observations (269 observations in 2008 and 266 observations in 2009); whereas, the balanced sample contains 522 firm-year observations.

Table 1 Sampling

	Years		Total firm-years
	2008	2009	
Fortune 500	500	500	1,000
Missing CEO letters	147	152	299
Financial firms	53	54	107
Missing values	24	19	43
Outliers	7	9	16
Total unbalanced sample	269	266	535
Firms in only in one of the 2 years	8	5	13
Total balanced sample	261	261	522

Table 2 Industry composition (unbalanced sample)

Industries	Sample		Population	
	Firm-year	Percentage	Firm-year	Percentage
Construction	8	1.5	18	1.8
Manufacturing	252	47.1	452	45.2
Mining	17	3.2	24	2.4
Retail trade	77	14.4	200	20.0
Services	50	9.3	112	11.2
Transportation, communications, electric, gas and sanitary services	89	16.6	144	14.4
Whole trade	42	7.9	50	5.0
Total	535	100	1,000	100

Table 2 reports the industry composition of our final sample in comparison to that of the initial population. Results (not reported) of an analysis comparing the financial characteristics of firms included in our sample, and those of firms in the initial population of Fortune 500 show no statistically significant difference. Our sample is much larger than most prior studies using CEO letters, and unlike Smith and Taffler (2000) and Keusch et al. (2012), contains US firms.

Regression Model

To test out hypothesis, we use a regression model in the following form:

$$\text{FINANCIAL REPORTING AGGRESSIVENESS} = \alpha + \sum_{i=1}^{5} \beta_i \, \mathit{THEMATIC\ INDICATOR} + \sum_{j=1}^{n} \beta_j, \mathit{CONTROLS} + \varepsilon, \quad (1)$$

where financial reporting aggressiveness is measured by the F-score computed according to Dechow et al. (2011); five thematic indicators are obtained through DICTION 5.0; and different control variables measure firm characteristics, in addition to the readability index proposed by Li (2008).

Specifically, we estimate equation (1) by computing the F-score according to Model 1 in Dechow et al. (2011), consistent with the approach by Veenman et al. (2011). The F-score developed by Dechow et al. (2011) measures the likelihood of accounting restatements, and its computation is described in detail in Appendix 2. In the accounting literature, there are many indicators used to capture the likelihood of financial restatements (e.g., Beneish 1997; Dechow and Dichev 2002; Jones 1991; Sloan 1996), but the F-score has several advantages for our research purpose. First, validity tests performed by Dechow et al. (2011) are based on the largest sample (i.e., 2,190) of accounting violations reported by the US Securities and Exchange Commission (SEC) in the Accounting and Auditing Enforcement Releases (AAERs) from 1982 to 2005. Second, to construct the F-score, Dechow et al. (2011) considered a very comprehensive list of potential factors determining financial reporting aggressiveness, including accruals quality, accounting performance, non-financial measures, off-balance sheet items, and market-related incentives. Whereas measures used in prior research are typically limited to the level of accruals (e.g., Sloan 1996), the F-score is a function of the change in receivables, changes in inventory, percentage of soft assets, change in cash sales, change in earnings, and issuance of securities in addition to the level of accruals. Third, several studies provide evidence of the predictive validity of the F-score. In particular, Larcker and Zakolyukina (2012) report that when used to predict AAERs, the F-score performs better than Beneish's (1997) model and the modified-Jones model (Dechow et al. 1995). Finally, most prior research is concerned with predicting the occurrence of restatements associated with SEC enforcement actions. By relying on the F-score, we want to emphasize the degree of engagement with financial reporting aggressiveness, which may underlie earnings manipulation, accounting violations, and frauds.

Although the F-score is a recent development, many published studies have fruitfully employed it as an indicator of financial reporting aggressiveness. Ge et al. (2011) report a significant effect of a Chief Financial Officer's operating style on the F-score of the firm. Hobson et al. (2012), Purda and Skillicorn (2012), Price et al. (2011), and Bollen and Pool (2012) discuss the fraud-detection ability of the F-score and find it superior to other accounting indicators. Cao et al. (2012), McGuire et al. (2012), and

Veenman et al. (2011) use the F-score as a dependent variable measuring the likelihood of financial restatements and show a significant effect of corporate reputation, religiosity, and abnormal insider share purchasing on the F-score. Finally, Bens et al. (2012) and Hobson et al. (2011) use the F-score as a control variable to measure earnings manipulation.

We explained the meaning of the five thematic indicators produced by DICTION (i.e., *Activity*, *Optimism*, *Certainty*, *Realism*, and *Commonality*) in a previous section. Within the empirical accounting research on corporate narratives, Merkl-Davies and Brennan (2007) identify four studies using DICTION, namely Davis et al. (2012), Henry (2008), Sydserff and Weetman (2002), and Yuthas et al. (2002). In addition, Cho et al. (2010) recently relied on DICTION to analyze the association between verbal tone and environmental performance. However, only two studies (i.e., Sydserff and Weetman 2002; Yuthas et al. 2002) use the complete set of indicators produced by DICTION. Moreover, both Sydserff and Weetman (2002) and Yuthas et al. (2002) use the thematic indicators for illustrative methodological purposes based on very small corpora.[3] Notwithstanding the limited amount of prior research relying on DICTION to examine CEO letters, DICTION enjoys robust empirical validity assessed in several prior studies conducted in different fields (Alexa and Zuell 2000; Short and Palmer 2008). In particular, prior studies on leadership and discourse ethics discuss the benefits of adopting DICTION to examine corporate narratives (e.g., Patelli and Pedrini 2013; Bligh and Hess 2007; Yuthas et al. 2002).

Our regression model tests the association between the five DICTION master variables and the F-score, controlling for the readability of CEO letters and incentives of aggressive financial reporting. According to prior literature on impression management, readability is a rhetorical feature that can be strategically manipulated and has been found to be associated to financial reporting practices. Following Li (2008), we computed the variable LENGTH which measures the length of the CEO letters as the natural logarithm of the total number of words contained in the CEO letters. According to Li (2008), LENGTH captures the lack of readability of CEO letters, and consistent with the obfuscation hypothesis of impression management theory, we expect to observe a positive association between the F-score and LENGTH.

Prior literature presents firm size, growth, accounting return, leverage, and profitability as proxies for the incentives of financial reporting aggressiveness measured by the F-score (Cao et al. 2012; McGuire et al. 2012; Veenman et al. 2011). Larger, growing, leveraged, and loss-making firms are expected to have higher incentives to engage in more aggressive financial reporting. We include the natural logarithm of market capitalization (LNMKTVAL) to control for firm size, as in Veenman et al. (2011). The same proxy is included in the regression model by Loughran and McDonald (2011a) which predicts lawsuits due to accounting violations. Both Cao et al. (2012) and Veenman et al. (2011) used market-to-book ratio (MTB*)* to control for future growth. Thus, we include MTB which is determined as the ratio between the firm market value and book value of assets. As a proxy for profitability and financial leverage, we include return on assets (ROA) and leverage (LEV) to measure firm return on assets and equity-to-assets ratio, as in both Cao et al. (2012) and McGuire et al. (2012). In addition, McGuire et al. (2012) include a dummy variable to control for loss-making firms. Likewise, our dummy variable LOSS is equal to 1 if a firm's net income is negative and 0 otherwise. Finally, we include fixed effects for industry as in Cao et al. (2012) and McGuire et al. (2012) to control for systematic differences in accounting policies, and for year as in Cao et al. (2012) to control that results are not driven by one of the two years considered in our sample. Table 3 reports descriptive statistics of all our variables for the two years (i.e., 2008 and 2009) considered in our sample.

Results

Table 4 reports the results of two OLS regressions that estimate model (1) with F-score as dependent variable on two different samples. The unbalanced sample contains all the firm-years as described in Table 1. To obtain the balanced sample, we excluded firms which are not represented in both 2008 and 2009, as shown in Table 1.

Results reported in Table 4 show that the regression coefficients of *Certainty*, *Realism*, and *Commonality* are statistically significant (p-value < 0.05; p-value < 0.01; p-value < 0.05, respectively). Results do not depend on the sample (i.e., unbalanced or balanced) used. Hypotheses 3, 4, and 5 are supported by these results.

The statistically significant (p-value < 0.05) and positive correlation between *Certainty* and the F-score indicates that a resolute language used in CEO letters is associated with more aggressive financial reporting. This empirical result supports Hypothesis 3 and implies that aggressive accounting practices are reflected in resolute language that indicates traits of authoritative and transactional leadership. Due to their inflexibility and focus on self-interest, transactional leaders set a tone at the top

[3] Specifically, Sydserff and Weetman (2002) used the Chairmen's statements and managers' reports of 26 small UK investment trusts, whereas Yuthas et al. (2002) used the CEO letters and Management Discussion & Analysis sections in the annual reports of seven pairs of US publicly traded firms reporting a very bad or very good earnings surprise.

Table 3 Descriptive statistics

Variable	Year	Max	Min	Mean	Median	Std. Dev.
Activity	2008	56.86	23.20	49.23	49.71	4.05
	2009	70.58	13.79	49.55	49.97	3.89
Optimism	2008	62.56	41.63	53.65	53.54	2.32
	2009	60.62	48.58	53.72	53.65	2.01
Certainty	2008	52.29	29.50	45.88	46.24	2.86
	2009	52.49	11.96	45.10	45.66	4.13
Realism	2008	53.72	32.73	45.80	45.99	2.44
	2009	51.27	37.30	45.80	45.87	2.34
Commonality	2008	58.41	44.77	51.10	51.01	1.95
	2009	60.14	45.69	51.15	51.05	1.96
LENGTH	2008	8.41	5.04	7.19	7.22	0.51
	2009	8.84	5.46	7.22	7.25	0.54
LNMKTVAL	2008	12.89	4.30	8.76	8.71	1.48
	2009	12.68	4.39	9.12	9.00	1.34
MTB	2008	35.61	189.15	0.84	1.71	15.02
	2009	357.21	1,409.14	0.73	2.04	92.36
ROA	2008	0.29	−0.85	0.05	0.05	0.10
	2009	0.34	−0.23	0.04	0.04	0.07
LEV	2008	0.89	−0.51	0.35	0.35	0.20
	2009	0.89	−0.43	0.36	0.37	0.20
FSCORE	2008	3.54	0.20	1.21	1.12	0.58
	2009	3.00	0.34	1.35	1.29	0.43

Table 4 OLS regressions on financial reporting aggressiveness (*FSCORE*)

Dependent variables	Unbalanced sample			Balanced sample		
	β	t	Sig.	β	t	Sig.
Intercept	2.21	2.11	**	2.08	1.97	**
DICTION variables						
Activity	0.00	−0.38		0.00	−0.33	
Optimism	0.01	1.15		0.01	1.19	
Certainty	0.01	2.15	**	0.01	2.12	**
Realism	−0.02	−2.57	***	−0.02	−2.45	***
Commonality	−0.02	−2.01	**	−0.02	−2.03	**
Control variables						
LENGTH	0.12	2.92	***	0.12	2.83	***
LNMKTVAL	−0.02	−0.92		−0.01	−0.47	
MTB	0.00	−0.18		0.00	−0.17	
ROA	−0.37	−0.92		−0.40	−0.98	
LEV	0.03	0.28		0.01	0.09	
LOSS	−0.18	−2.29	**	−0.17	−2.19	**
Fixed effects						
INDUSTRY	Yes			Yes		
YEAR	Yes			Yes		
Firm-years	535			522		
Adjusted R^2	0.13			0.12		
F-stat	5.20	***		4.89	***	

* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01

associated with unethical accounting practices. Moreover, from a discourse ethics perspective, *Certainty* indicates an illegitimate language relative to the external context. Our results show that this ethical lapse of tone at the top is accompanied by financial reporting aggressiveness.

As explained in a previous section, *Realism* is an inverse measure of the complexity of the language. Lower values of *Realism* indicate higher lexical complexity. In Table 4, the coefficient of *Realism* is negative and statistically significant (p-value < 0.01). This result indicates that controlling for other rhetorical features and firm characteristics, CEO letters characterized by complex lexicons are more likely to be related to firms engaging in aggressive financial reporting. Specifically, a higher frequency of common pronouns that help readers to relate with CEO letters and avoidance of complex words increases *Realism*. Therefore, the significant correlation between *Realism* and the F-score implies that financial reporting aggressiveness is associated with less comprehensible language in CEO letters. This result supports Hypothesis 4 and is consistent with prior research on impression management according to which readability can be manipulated to deceive shareholders' interpretation of performance. Our results show that this unethical manipulation is a significant predictor of financial reporting aggressiveness.

Finally, *Commonality* is another thematic indicator that is significantly correlated with the F-score. In Table 4, the regression coefficient of *Commonality* is statistically significant (p-value < 0.05) and negative. This result means that CEO letters characterized by a language in CEO letters which conveys isolation (instead of engagement) and rejection of social conventions (instead of common values), is associated with higher financial reporting aggressiveness. This result supports Hypothesis 5. Lower *Commonality* indicates neuroticism that is expected to lead to unethical practices as argued by the literature on ethical leadership and confirmed by our empirical findings.

Results reported in Table 4 show that the coefficients of *Activity* and *Optimism* are not statistically significant (p-value > 0.10). Thus, we do not find support for Hypotheses 1 and 2. These results mean that in our sample and under our model specifications, neither *Activity* nor *Optimism* is a significant predictor of financial reporting aggressiveness, while controlling for other thematic indicators of CEO letters. The insignificance of *Optimism* is noteworthy, since prior studies emphasize the importance of analyzing tone (e.g., Feldman et al. 2010). Our results highlight the importance of a comprehensive approach (such as the one offered by the thematic analysis of DICTION) to measure rhetorical features of corporate narratives in order to detect aspects of tone at the top significantly associated with accounting practices.

The positive and statistically significant (p-value < 0.01) correlation coefficient of LENGTH in Table 4 indicates that CEO letters from firms that are more likely to engage in financial reporting aggressiveness are longer and, hence, more difficult to read. According to Li (2008), LENGTH is an inverse indicator of readability. Specifically, the more wordy (i.e., high LENGTH) the document, the lower is its readability. Our results reveal that readability measured by LENGTH remains a significant predictor of financial reporting aggressiveness, even after controlling for thematic indicators.

Among the proxies of the incentives for financial reporting aggressiveness measured by our control variables, incurring a loss (measured by LOSS) is the only characteristic significantly (p-value < 0.01) associated with the F-score, after controlling for the fixed effect of industry and year. Specifically, the year fixed effect is significant (p-value < 0.01) and indicates financial reporting was more aggressive in 2009 than in 2008.

Sensitivity Analysis

In order to analyze the sensitivity of our results to our regression model specifications, we performed additional tests.

First, we constructed a dummy variable to measure financial reporting aggressiveness coded as 1 for firm-years with an F-score greater than 1 and 0 otherwise. If the F-score is greater than 1, it means that the probability of financial restatement is higher than the unconditional expectation (Dechow et al. 2011). By using this dummy as dependent variable in the regression model (1), the coefficients of *Certainty*, *Realism*, and *Commonality* remain statistically significant. Second, we used the natural logarithm of total assets as a proxy for firm size instead of the natural logarithm of market value (i.e., LNMKTVAL). We also measured readability based on the number of characters contained in each CEO letter instead of the number of words (i.e., LENGTH). Results (not reported) show that using these alternative control variables does not change our results. Third, to test the influence of the industry and year fixed effects on our results, we estimated equation (1) without fixed effects. For reasons of brevity, Table 5 presents only the results obtained on the unbalanced sample. Results regarding *Realism*, *Commonality*, LENGTH, and LOSS remain unchanged. Relative to the results reported in Table 4, the regression coefficient of *Certainty* loses statistical significance (p-value > 0.10) to predict the F-score if no fixed effect is included in the regression equation; whereas, the regression coefficient of *Optimism* gains statistical significance if industry effect or both industry and year effect are excluded from the regression equation (p-value < 0.10; p-value < 0.05, respectively). Overall, these results do not reduce the evidence provided by our empirical findings, which suggest a strong association between financial reporting aggressiveness and leadership traits.

Finally, as pointed out in our theoretical framework, prior research has devoted great attention to the oversight role of the board of directors in order to capture tone at the top. We were able to collect data on CEO duality (i.e., position of Chairman of the board of directors held by the CEO) from Datastream for 450 firm-years included in the unbalanced sample, and 443 firm-years included in the balanced sample. Based on this smaller dataset, we estimated equation (1) including CEODUALITY as an additional independent variable equals to 1 if the CEO is also the Chairman of the board of directors, 0 otherwise. Results reported in Table 6 show CEODUALITY is not significantly associated with the F-score (p-value > 0.10) and does not affect our main results. *Certainty*, *Realism*, and *Commonality* remain thematic indicators significantly associated with financial reporting aggressiveness.

Summary and Conclusion

In this study, we discussed the relationship between tone at the top and accounting practices by empirically investigating the association between leadership traits and aggressive financial reporting. Specifically, we examined thematic indicators in CEO letters to capture leadership traits, consistent with a discursive language-based view of leadership (Bligh and Hess 2007; Fairhurst 2007; Weber 2010). After controlling for readability and firm characteristics, we found evidence that three indicators obtained through a thematic analysis performed by DICTION (i.e., *Certainty*, *Realism*, and *Commonality*) are associated with the financial reporting aggressiveness measured by F-score developed by Dechow et al. (2011). In developing our hypotheses, we argue that these thematic indicators capture different traits of leadership.

In particular, *Certainty* measures a resolute language in CEO letters that reflects an authoritative leadership. Moreover, it indicates illegitimacy of the corporate discourse. *Realism* measures complexity in language that reflects a deceptive leadership. *Commonality* measures a non-engaging language that reflects neurotic leadership. Our empirical findings suggest that these leadership traits that shape tone at the top are associated with unethical accounting practices.

Our conclusions contribute to the literature regarding tone at the top and its influence on organizational practices (e.g., Bamber et al. 2010; Berson et al. 2008; Ge et al. 2011; Weber 2010). Our findings complement the study by Hunton et al. (2011) who show a significant association

Table 5 The effect of industry and year fixed effect on financial reporting aggressiveness (*FSCORE*)

Dependent variables	Industry fixed effect			Year fixed effect			Industry and year fixed effect		
	β	t	Sig.	β	t	Sig.	β	t	Sig.
Intercept	1.53	1.45		1.91	1.78	*	1.19	1.12	
DICTION variables									
Activity	0.00	0.33		0.00	−0.09		0.00	0.53	
Optimism	0.02	1.88	*	0.01	1.33		0.02	2.04	**
Certainty	0.01	1.98	**	0.01	1.63	*	0.01	1.54	
Realism	−0.02	−2.53	***	−0.02	−2.33	**	−0.02	−2.26	**
Commonality	−0.03	−2.43	**	−0.02	−2.00	**	−0.03	−2.36	**
Control variables									
LENGTH	0.13	2.98	***	0.13	2.89	***	0.13	2.96	***
LNMKTVAL	−0.04	−2.26	**	−0.01	−0.48		−0.03	−1.80	*
MTB	0.00	−0.27		0.00	−0.23		0.00	−0.34	
ROA	−0.03	−0.07		−0.46	−1.13		−0.11	−0.28	
LEV	0.13	1.05		0.03	0.25		0.13	1.04	
LOSS	−0.16	−1.98	**	−0.18	−2.25	***	−0.16	−1.92	**
Fixed effects									
INDUSTRY	No			Yes			No		
YEAR	Yes			No			No		
Firm-years	535			535			535		
Adjusted R^2	0.06			0.10			0.04		
F-stat	3.71	***		4.26	***		2.79	***	

* *p*-value < 0.1; ** *p*-value < 0.05; *** *p*-value < 0.01

between perceived tone at the top and earnings quality. Instead of relying on perceptual survey instruments, we captured tone at the top through a publicly available disclosure vehicle (i.e., CEO letters). Hence, our thematic analysis of CEO letters based on DICTION master variables corroborates the empirical evidence by Hunton et al. (2011). As shown in prior research (e.g., Dechow et al. 2011), aggressive financial reporting can lead to accounting frauds. Therefore, our findings contribute to the research on fraud detection by revealing predictors of financial reporting aggressiveness. Finally, we extend prior research on discourse ethics in business (e.g., Amernic et al. 2010; Patelli and Pedrini 2013; Weber 2010; Yuthas et al. 2002) by showing that lexical analysis of corporate narratives can unveil ethical lapses of tone at the top which have a negative influence on accounting practices.

Our conclusions have relevant practical implications for investors and auditors. Similar to several prior accounting studies (Merkl-Davies and Brennan 2007), our findings show that thematic indicators based on discretionary narrative disclosure provide differential information regarding accounting outcomes that can enhance investors' strategies. Based on a large archival study, our findings also provide strong empirical evidence supporting recommendations by Amernic et al. (2010) for financial auditing. We reinforce their recommendations advocating the use of DICTION and other lexical methodologies to enhance the auditing process and sophisticate the scrutiny of discretionary narrative disclosure. The availability of computerized techniques facilitates a rigorous analysis of tone at the top with promising consequences for the detection of unethical accounting practices. Consistent with assertions by the Committee of Sponsoring Organizations (COSO 1992, 1994), our findings show the pervasive influence of tone at the top on financial reporting. Moreover, they support the emphasis put by the COSO Internal Control Framework (COSO 2011) on the commitment to integrity as a primary object of auditors' scrutiny. They also support the recent move by the SEC toward the employment of lexical software to enhance its enforcement activity (Eaglesham 2013).

Our empirical methodology has limitations. First, DICTION is limited to a predefined set of thematic indicators. The use of different textual analyses could lead to discovering more indicators associated with financial reporting. Second, given the various formats of CEO letters which make data collection and textual analysis very time consuming, we limited our analysis to two years. Third, we only consider financial reporting aggressiveness, while it could be argued that other unethical accounting practices are influenced by tone at the top.

Table 6 The effect of CEO duality on financial reporting aggressiveness (*FSCORE*)

Dependent variables	Unbalanced sample			Balanced sample		
	β	*t*	Sig.	*β*	*t*	Sig.
Intercept	2.32	2.12	**	2.42	2.21	**
DICTION variables						
Activity	0.00	−0.79		0.00	−0.79	
Optimism	0.01	1.22		0.01	1.14	
Certainty	0.01	1.63	*	0.01	1.63	*
Realism	−0.02	−2.17	**	−0.02	−1.95	**
Commonality	−0.03	−2.21	**	−0.03	−2.52	***
Control variable						
CEODUALITY	−0.01	−0.17		−0.01	−0.12	
LENGTH	0.10	2.28	**	0.09	2.18	**
LNMKTVAL	0.00	−0.21		0.01	0.39	
MTB	0.00	−0.11		0.00	−0.10	
ROA	−0.53	−1.37		−0.59	−1.52	
LEV	−0.01	−0.07		−0.03	−0.20	
LOSS	−0.21	−2.72	***	−0.21	−2.68	***
Fixed effects						
INDUSTRY	Yes			Yes		
YEAR	Yes			Yes		
Firm-years	450			443		
Adjusted R^2	0.13			0.14		
F-stat	4.59	***		4.71	***	

* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01

Future research could overcome these limitations and explore new avenues, which would further develop our conclusions. While prior research on tone at the top mainly focuses on the oversight role of the board of directors, we emphasize leadership traits. Future research could investigate how the interaction between the board of directors and CEO leadership shapes tone at the top and influence financial reporting. Further, more empirical research on discourse ethics in corporate narratives could offer a more general framework to examine discretionary narrative disclosure and its relationship with accounting outcomes.

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Appendix 1. Example of Quotes from CEO Letters Related to DICTION Master Variables

Activity

«We are demonstrating to the marketplace that Pitney Bowes is broadening its value proposition, from simply making customers more productive to also helping them drive revenue growth. We are moving to establish ourselves as the one company that integrates every customer touch point: mail, the Web, mobile devices, even retail locations. By doing so, we are creating new opportunities for ourselves and our customers»

[Pitney Bowes—Annual Report 2009]

«In addressing these matters, we have taken strong action to bolster our program management processes and functional oversight, applied additional resources and technical expertise and made leadership changes where we believed it was necessary to drive better performance from our teams»

[Boeing Company—Annual Report 2008]

«Another big area of change. We want to make not just this quarter, but this quarter next year, the year after, and 5 years from now. That means always thinking about the future today. That head-set was in short supply last time for a variety of reasons»

[Honeywell International Inc.—Annual Report 2008]

«The major changes taking place in the industry and the Company's own transformation have not distracted the Lear team from keeping its focus on efficiently managing the business. In all respects, Lear is operating as lean as possible, but we are mindful that the present pace of industry sales and production does not reflect the longer-term run rate»

[Lear Corporation—Annual Report 2009]

Optimism

«We remained focused, disciplined and on point to operate and develop the natural gas infrastructure vitally needed in North America—infrastructure that provides significant, ongoing value to our customers and investors. We delivered on the commitments we made to you last year. More importantly, we set a forward course that will allow us to manage through the chaos and thrive when the clouds clear»

[Spectra Energy Corp.—Annual Report 2008]

«Although we are not immune to the recession, we continued to enjoy strong growth in 2008. Total revenues rose 14.6 percent to $87.5 billion. Driven in part by record operating margins, net earnings increased 21.8 percent. A number of factors fueled our margin gains, with continued growth in generic drugs leading the way. Along with our strong free cash flow generation, I'm happy to report that we faced virtually none of the liquidity issues that sent shockwaves across so much of the business landscape in 2008. CVS Caremark has a solid balance sheet and an investment grade credit rating, and we maintain a commercial paper program currently backed by $4 billion in committed bank facilities»

[CVS Caremark Corp.—Annual Report 2008]

«We look back at 2009 with sincere thanks for all that they accomplished and ahead with great anticipation for what they will achieve. We are well positioned to stay, happy and produce long-lasting results and sustained shareholder value»

[Petsmart Inc.—Annual Report 2009]

«While the challenges of operating a business on a global scale are great, I am confident that our opportunities are even greater, and that we are well positioned to make the most of those opportunities»

[Lauder (Estee) Companies Inc.—Annual Report 2008]

Realism

«I am particularly pleased to report that, despite these challenges, we again delivered strong growth in fiscal 2008, with adjusted results at the high end of our long-term targets for sales and earnings. Sales increased 8 percent 1 to $7.998 billion, and adjusted net earnings per share rose 7 percent to $2.09.2 Our US Soup, Sauces and Beverages business delivered increased sales of 5 percent; our Baking and Snacking business delivered increased sales of 11 percent (6 percent excluding the impact of currency); and our International Soup, Sauces and Beverages business delivered increased sales of 15 percent (4 percent excluding the impact of currency)»

[Campbell Soup Corp.—Annual Report 2008]

«We have reduced our net debt position significantly and have focused our debt prepayments on loans with the highest interest rates and nearest maturities. As a result, all meaningful debt maturities have been satisfied until 2013. Positive free cash flow from operations, primarily generated from our aggressive management of working capital during 2009, along with proceeds from the settlements mentioned above, have enabled us to continue paying our full dividend»

[Huntsman Corp.—Annual Report 2008]

«It will come as no surprise to you that 2009 was a challenging year for businesses around the world. Xerox was no exception. As the recession took its toll, customers pulled back from making new investments in technology, used their current technology less and sought to reduce spending wherever they could. As a consequence, total revenue for the year was $15.2 billion, down 14 percent from the previous year. To help offset this recessionary impact on revenue, we focused intently on reducing costs and generating cash—taking tough actions to weather the storm while prioritizing investments to accelerate growth»

[Xerox Corp.—Annual Report 2009]

«These volatile external headwinds also impacted our operating margin results. For the first three quarters of the year, we tracked ahead of our full-year operating margin goal to approach 2005's level of 14 %. However, the negative impact of foreign currency exchange and slowing local currency revenue growth significantly affected fourth-quarter profits. As a result, we achieved a full-year 2008 operating margin of 12.5 %, below our original expectation but still a full 370-basis point improvement over 2007's operating margin of 8.8 %»

[Avon Products Inc.—Annual Report 2008]

Commonality

«In the process, we've created a new operating culture—a new environment based on open lines of communication and more effective, analytically-based decision making. This new dynamic contributed significantly to our success in 2009 as we led the publicly traded hospital industry in same hospital admission growth»

[Health Management Associates Inc.—Annual Report 2009]

«We were able to do so because our employees remained focused and executed on our mission. They are to be commended. This year will be challenging as well. We will remain focused on operating excellence, innovative but conservative commercial execution, environmental leadership and customer satisfaction, while continuing to deliver shareholder value»

[Calpine Corp.—Annual Report 2009]

«In closing, I would like to acknowledge the hard work and enthusiastic support of our 197,000 employees. They are the primary reason we have been successful in the past, and they are the key to our future. On behalf of the Safeway team, I can assure you that we are committed to enhancing the customer experience and will work hard to deliver stockholder value in 2009 and beyond»

[Safeway Inc.—Annual Report 2008]

«We thank our 238,000 employees for their hard work and commitment to serving our customers well. And to you, our shareholders, we thank you for your continued interest in Walgreens and for your belief in the Company's ongoing success»

[Walgreen Corp.—Annual Report 2009]

Certainty

«By capitalizing on our core strengths, we regularly exceed the expectations of our clients. As one of the few "true" large national civil and building general contractors, we rely most on our human capital to lead us through the daily challenges of project execution. We are rich in talent and are ready and able to tackle any project put in front of us»

[Tutor Perini Corp.—Annual Report 2009]

«We believe that we continue to have very exciting growth opportunities in Canada. We operate successfully in six countries and are one of the few American retailers to have expanded profitably internationally. In Europe, where our growth potential is vast, we plan to net 54 additional stores in 2010. Accelerating Store Growth With over 2,700 stores today, we believe we have the potential to ultimately grow to over 4,200 stores with just our current portfolio, in just our current markets»

[TJX Companies Inc.—Annual Report 2009]

«This new digital world is an enormous opportunity, and we continue to change News Corporation to take advantage of it. As we work to provide our customers with the quality they expect from our brands, we are fortunate to have a terrific management team. This team has been strengthened with the return of Chase Carey as president and chief operating officer»

[News Corp.—Annual Report 2009]

«Despite the recession, we achieved year-over-year profit improvement for the last two quarters of 2009, and we generated over $170 million of incremental revenue from new products and services. While the full effects of the global recession are not behind us in 2010, Hertz is a much more efficient company poised for significant growth from new revenue-generating initiatives in the car and equipment rental businesses»

[Hertz Global Holdings Inc.—Annual Report 2009]

Appendix 2. Description of F-Score

F-score is a measure of the likelihood of accounting restatements developed by Dechow et al. (2011). The authors used a sample of Accounting and Audit Enforcement Releases (AAERs) to generate a model that expresses the probability of fraud as a function of changes in the fundamentals and accounting attributes of the firm. F-scores greater than one indicate higher probabilities of misstatement than the unconditional expectation. Based on the study the authors pointed out the below formula to assess the probability of restatements.

$$F - \text{score} = \frac{e^{(\text{Predicted value})}}{(1 + e^{(\text{Predicted value})})}$$

In the formula the predicted value, on the basis of a sample of 2.190 observation, is the results of seven accounting attributes (RSST accruals, change in receivables, change in inventory, percentage of soft assets, change in cash sales, change in return on assets and actual issuance). Below is the final formula to compute the predicted value.

$$\begin{aligned}\text{Predicted value} = & -7.893 + 0.790 \times (\text{rsst\_acc}) + 2.518 \\ & \times (\text{ch\_rec}) + 1.191 \times (\text{ch\_inv}) \\ & + 1.979 \times (\text{soft\_assets}) + 0.171 \\ & \times (\text{ch\_cs}) + (-0.932) \times (\text{ch\_roa}) \\ & + 1.029 \times (\text{issue})\end{aligned}$$

The following table summarizes the variable definitions and the abbreviations used in the formula.

Variable	Abbreviation	Calculation
RSST accruals	rsst_acc	(Δ WC + Δ NCO + Δ FIN)/Average total assets Where: WC = [Current assets − Cash and short-term investments] – [Current liabilities − Debt in current liabilities] NCO = [Total assets − Current assets − Investments and advances] − [Total liabilities − Current liabilities – Long-term debt] FIN = [Short-term investments + Long-term investments] – [Long-term debt + debt in current liabilities + Preferred stock]
Change in receivables	ch_rec	Δ Accounts receivable/Average total assets
Change in inventory	ch_inv	Δ Inventory/Average total assets
Percentage of soft assets	soft_assets	(Total assets − PP&E − Cash and cash equivalent)/Total assets
Change in cash sales	ch_cs	[Sales − Δ Accounts receivable]
Change in return on assets	ch_roa	[Earnings_t/Average total assets_t] − [Earnings_{t-1}/Average total assets_{t-1}]
Actual issuance	issue	An indicator variable coded 1 if the firm issued securities during year t.

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