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Earnings management and annual report readability ☆

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ABSTRACT

We explore how the readability of annual reports varies with earnings management. Using the Fog Index to measure readability (Li, 2008), and focusing on the management discussion and analysis section of the annual report (MD&A), we predict and find that firms most likely to have managed earnings to beat the prior year's earnings have MD&As that are more complex. This disruption of the overall pattern of readability increasing with the level of earnings found in Li (2008) challenges the ontological explanation that good news is inherently easier to communicate, and shows that obfuscation contributes to making disclosures more complex.

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"For more than forty years, I've studied the documents that public companies file. Too often, I've been unable to decipher just what is being said or, worse yet, had to conclude that nothing was being said.

[…]

Maybe we simply don't have the technical knowledge to grasp what the writer wishes to convey. Or perhaps the writer doesn't understand what he or she is talking about. In some cases, moreover, I suspect that a less-than scrupulous issuer doesn't want us to understand a subject it feels legally obligated to touch upon."

Warren Buffett.
Preface of "A Handbook of Plain English Handbook" – SEC.

1. Introduction

In a typical corporate report, the textual narrative represents the great majority of the disclosure— an average of 80% of an annual report, for instance—versus the remainder that consists of numbers and representations of quantitative data. The clarity of this large component of mandatory disclosure is crucial to understanding and to interpreting the information contained in the report. The U.S. Securities and Exchange Commission (SEC) has been very forthright about the overly complex corporate reports. Christopher Cox, Chairman of the SEC, suggested using direct measures of narrative clarity to enforce plain English communication. SEC seems to believe that "the jargon of lawyers has taken over" and the trend towards hard-to-read disclosures is due to the fact that "the main purpose of the drafting exercise has shifted from informing investors to insuring the issuer and the underwriter against potential claims" (SEC, 2007). In this paper, we examine whether managers use of complex disclosures goes beyond the presence of "legalese", but also whether they use complex disclosure to hide information from investors.

The seminal work of Li (2008) explored the relationship between the readability of annual reports and financial performance. Borrowing the Fog Index from computation linguistics, where a higher reading on the Fog Index indicates disclosures that are more difficult to understand, Li finds a negative relationship between Fog and the level of earnings. It is unclear, however, whether this result is due to managers providing complex disclosures to obfuscate bad performance or that bad news is simply harder to be communicated (Bloomfield, 2008). To further explore these alternative explanations, obfuscation or ontology, and to better understand managers' use of complex disclosures, we look at instances in which firms are more likely to have managed earnings upwards to meet or beat an earnings target (Burgstahler and Dichev, 1997). In these cases, although firms are releasing good news about meeting a benchmark, they have incentives to hide the tools used to achieve it, as suggested by Warren Buffett. In other words, when reported performance differs from underlying fundamentals, we expect managers to try to make it harder for investors to identify such earnings management behavior and the underlying performance. Our results suggest that the readability level of financial disclosures goes beyond the one derived from the ontological explanation of good vs. bad news being disclosed. Instead, we find that managers strategically use corporate disclosure to mislead or to influence investors' understanding of firm's value.

Our study is motivated by the importance and richness of the textual component of financial disclosures. The SEC highlighted the importance of textual disclosures when it issued a set of rules requiring plain English disclosures. Christopher Cox, Chairman of the SEC, went further and suggested "just as the Black-Scholes model is commonplace when it comes to compliance with the stock option compensation rules, we may soon be looking to the Gunning-Fog and Flesch-Kincaid models to judge the level of compliance with the plain English rules." If readability is going to be used as a measure of compliance, then we should understand the factors that affect how managers choose the level of readability.

Our analysis focuses on the readability of the management discussion and analysis (MD&A) section of the annual report— a section that is required by law but also a medium in which managers have discretion over how to present an explanation of the company's business, financial conditions, and results of operation. As opposed to conference calls and press releases, the structure and content of MD&As are fixed; consequently managers are *"legally obligated to touch upon"*(Warren Buffett) subjects they likely avoid in other disclosures.

The earnings benchmark we use is the prior year's earnings (rather than earnings forecasts or zero earnings) because anecdotal evidence suggests that management's discussions in the annual report are more likely to compare and contrast performance in the current fiscal year with that in the prior year (or years). Forecasted earnings, whether by sell-side analysts or by management, are seldom referenced in annual reports. Zero and small positive earnings events are relatively infrequent, so we reserve this benchmark for supplemental analyses.[1] Moreover, small or zero earnings changes mean that performance this year was similar to that in the previous year so little explanation is expected by readers and provided by management. This idea is the basis for our null hypothesis–firms should provide disclosures that are easy to understand when their performance does not change much from previous year.

The findings are consistent with our hypotheses. Controlling for the relationship between Fog and the overall earnings level as well as other known factors, we find robust evidence that Fog is higher for firms that meet or just beat prior year's earnings (MBE). We further identified firms that are more likely to have managed earnings to meet a benchmark. We use model-free methods, and several accruals and real activities methods to identify firms that are more likely to have managed earnings. We find that firms more likely to have managed earnings to meet the benchmark by a couple of cents provide more complex disclosures than firms that either miss the benchmark or were less likely to have engaged in earnings management to exceed the benchmark; this finding holds both when the comparison group is the broad cross-section of firms as well as when the comparison group is a matched group of firms with characteristics similar to the firms with suspected earnings management.

Our conclusions remain the same when we add firm fixed effects that control for firm-specific characteristics, such as the

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[1] Three examples showing that firms focus on the zero earnings change benchmark in their MD&A are as follows (underlining added). Standard Pacific Corporation (31/12/2011): *"For the year ended December 31, 2011, we reported a net loss of $16.4 million, or $0.05 per diluted share, **compared to a net loss of $11.7 million, or $0.05 per diluted share, in 2010**."* Human Genome Sciences (31/12/2005): *"Net Income (Loss). We recorded a net loss of $239.4 million, or $1.83 per share, for the year ended December 31, 2005, **compared to a net loss of $242.9 million, or $1.87 per share, for the year ended December 31, 2004**."* TII Network Technologies (31/12/2009): *"Net income in 2009 was $73,000 or $0.01 per diluted share, **compared to net income of $578,000 or $0.04 per diluted share in 2008**."*

complexity of the firm and the industry, which may impact the complexity of the disclosure. In another specification check, we include last year's complexity (*lagFOG*) in our analysis. Both specifications account for the high persistence of FOG, and our conclusions remain the same.

In two further tests, we use firm-years with earnings that were misstated or required subsequent restatement as clear indicators of earnings management. In these smaller samples, we find that Fog is higher for firm-years with earnings that were subsequently found to be misstated or had to be restated.

We also investigate whether the higher FOG in the suspect firms is due to more information being provided. In line with Li (2008), a longer MD&A section could suggest more being explained, or more obfuscation. We find no significant change in the length of the MD&A for the group of firms that are more likely to have managed earnings to meet the benchmark. However, we find shorter MD&As for firms that meet the benchmark but with no earnings management. This is consistent with our null hypothesis that when performance is similar to previous year and no need for obfuscation, firms provide simpler disclosures. These findings are consistent with and reinforce our Fog analysis: the suspect firms do not have longer disclosures, but they do have more complex disclosures, so they are not communicating more information, but saying about the same amount in more complex ways.

Although MD&A are required disclosures that the SEC views as essential to investor understanding of firms' operations and performance, one may also argue that these disclosures are not relevant to investors because of their lack of timeliness, for instance relative to conference calls. If true, this argument also suggests that managers will care more about beating analysts' expectations than the past year's earnings number. To address this issue, we focus on firms with no analyst following because for such firms, management is unconcerned with meeting analysts' expectations and therefore last year's performance is likely to be a more important target. We find that the incremental disclosure complexity for suspect firms is three times larger for firms with no analyst following compared with firms that do have analyst following. Secondly, we split our sample based on the date when the MD&A is made available to investors. We group firm-years in which MD&As were made available in the same week as earnings were first announced. We find that the incremental level of complexity found in our previous tests is three times larger when MD&As are released within seven days of the public announcement of earnings.

Our contribution to the literature is two-fold. First, we add to our understanding of the determinants of readability. More specifically, we refine the overall relationship between readability and financial performance. While the overall pattern documented by Li (2008) is one where higher earnings associates with lower Fog, we provide evidence that this relationship is discontinuous (or at least non-monotonic) around the benchmark of the prior year's earnings, particularly for firms that are likely to have managed accruals. Second, we show that earnings management, that is, using accounting discretion with the aim of concealing underlying performance, manifests itself as more complex disclosures. Our evidence is consistent with managers strategically choosing higher reporting complexity in conjunction with earnings management in an attempt to conceal the latter, which is a new finding in the literature. Overall, we add to a more complete understanding of the relationship between financial report readability and reported performance.

Aside from Li (2008), this paper is also closely related to Larcker and Zakolyukina (2012, "LZ"). However, LZ and this paper differ in a number of important ways. First, LZ's primary interest is finding linguistic predictors for financial re-statements (i.e., restatements are the dependent variable) whereas this paper's primary interest is in understanding the determinants of readability (i.e., the Fog score is the dependent variable). Second, whereas LZ examine voluntary conference calls, we examine MD&A disclosures that are required by law. Third, LZ analyze verbal communication but we examine textual disclosures, which result in differing levels of preparation, forethought, and spontaneity. This last difference is important because our hypothesis is based upon management's deliberate attempt to obscure the financial picture to hide earnings management, whereas LZ's hypothesized effect derives in large part from inadvertent signals conveyed (e.g., use of different pronouns, hesitations, expression of anxiety). In sum, this paper differs from LZ in research question, whether the disclosure is mandatory, as well as the degree of preparation possible for the different avenues of disclosure.

The remainder of this paper is organized as follows. The next section describes our hypotheses. Section 3 contains our analyses and Section 4 concludes.

2. Hypothesis development

In computational linguistics, the Gunning Fog Index, or just Fog Index, is a function of the number of words per sentence plus the percentage of words that are complex (i.e., having three or more syllables). This sum is scaled by a constant (0.4) such that the Fog value approximates the number of years of formal education required to understand the text.

The Fog Index was first brought into the accounting literature by Li (2008), who examined how readability of annual reports varies with financial performance. Li found a negative relationship between profitability and Fog (i.e., profitable firms have less complex reports compared with firms with losses). He also found that firms with more persistent positive earnings have lower Fog.

In the discussion of Li (2008), Bloomfield (2008) provides a number of potential explanations for the observed re-lationships between readability and financial performance. Two are particularly salient here. First is obfuscation—that managers try to hide bad news by writing text that is more difficult to decipher. Second is ontology—that bad news is inherently more difficult to communicate.

Bloomfield provides two other potential explanations that could also be considered variations of ontology. He suggests that loss firms need to provide more explanation as a result of "management by exception." He also suggests that the nature of accounting conservatism—recognizing bad news in a more timely fashion than good news—requires managers to provide more explanation about the future when there are losses. In sum, the ontological explanations suggest that readability is inherently a function of the circumstances. In contrast, the obfuscation explanation requires management to intervene and affect the disclosure, manifesting in more complex disclosures. As will be seen below, our analyses will have bearing on these two explanations.

As suggested by Li (2012), we utilize the fraud triangle framework to further examine managerial use of complex disclosures. The fraud triangle suggests that fraud is more likely to occur when there is "incentive or pressure" to misreport earnings, when there is "opportunity" to do so, and management has the "attitude or rationalization" for the fraud or misreporting.

2.1. Incentive or pressure to misreport

There is a substantial literature documenting the frequency, motivations, and benefits that accrue to firms that are able to meet or beat benchmarks. In recent decades, some two-third to three-quarters of firms will meet or beat expectations in the capital market (as proxied by analyst forecasts). The rewards of doing so are higher stock returns, lower information asymmetry, and lower cost of capital (Bartov et al., 2002; Brown et al., 2009). These firm-level effects translate into personal benefits via executive compensation directly through higher stock and option value, or indirectly through discretionary bonuses. Bhojraj et al. (2009) show that firms that manage earnings via accruals or real activities to meet a benchmark gain short-term benefits over firms that missed the benchmark and chose to not manage earnings.

2.2. Opportunity

Management has the opportunity to misreport by managing accruals and real activities, as well by other means such as balance sheet or cash flow management. In this study, we focus on the first two because these activities are most directly related to meeting earnings benchmarks. Cohen and Zarowin (2010) and Zang (2012) show that firms use both accruals and real activity earnings management to achieve benchmarks, and make tradeoff between them.

2.3. Attitude or rationalization

As Li (2012, 398) suggests, management disclosures via MD&A or other means reflects the attitude of management or provides the avenue for management to rationalize its behavior. Together, our hypotheses and analyses combine the elements of the fraud triangle, by analyzing whether the complexity of MD&A disclosures (attitude/rationalization) relates to whether a firm meets or just beats an earnings benchmark (incentive or pressure) and whether the firm likely used earnings management to meet or beat that benchmark (opportunity).

Depending on the context, some benchmarks will be more salient than others. In the capital market context, the expectations in the market is the most relevant—meeting or falling short of the market's expectations is what determines changes in stock prices. In other instances, zero earnings is the relevant benchmark—maintaining a positive level of earnings is important for reasons of contractual provisions and general loss aversion, for examples. A third benchmark is the prior year's performance, which is equivalent to a benchmark of zero change in earnings.

We focus on the third benchmark for two reasons. First, our analysis of readability focuses on annual reports, and the MD&A section in particular. MD&A is a disclosure required by the Securities and Exchange Commission (SEC).[2] As a regulated disclosure, it is reasonable to expect management to discuss facts and figures that are already contained in the audited financial statements and elsewhere in the annual report rather than information from the capital markets, such as analyst forecasts, which can change frequently. Second, the requirement to comment on trends suggests that management would rather have a zero or positive earnings change rather than having to explain a decline in earnings, which could arguably be interpreted as the beginning of a downward trend. Third, we focus on the zero earnings *change* benchmark rather than the zero earnings benchmark to obtain more time-series variation in meeting/beating vs. missing the benchmark. That is, some firms are persistently profitable while others are persistently not; the number of firms at or close to zero profitability is relatively small. (Nevertheless, we provide some supplementary tests of this alternative benchmark to augment our main analyses.)

While the relationship between Fog and earnings levels documented by Li (2008) is negative overall, we expect that firms at or just above the zero earnings change benchmark will tend to show a different relationship under the obfuscation explanation. First, if the ontology explanation (our null hypothesis) holds, earnings that met or just beat the prior year should have disclosure that is less complex than for earnings that fell below the prior year's. In addition, reported results that are close to the prior year's require little explanation and is likely to reduce the complexity of the MD&A, and possibly

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[2] SEC Regulation S-K, Item 303 specifies the MD&A requirement. Among other things, it requires registrants to discuss financial condition, results of operation, and "currently known trends, events, and uncertainties …" (Securities Act Release No. 6835, May 18, 1989).

even relative to earnings that beat the prior's by a larger amount, which would prompt more complex explanations.

Some of the firms that meet or just beat prior year's earnings accomplish this outcome by engaging in upward earnings management, so it can be argued that the underlying performance that they would have otherwise reported would have been lower, which would have a commensurately higher Fog. That is, all else equal, the readability for the underlying performance is lower than for the reported performance. However, management discussion is unlikely to dwell on the underlying and unreported performance, particularly if management has engaged in earnings management to meet/beat the benchmark. Rather, management will discuss the earnings as presented, which is earnings that met or beat the past year's level. In any case, this ontological effect, if it exists in our research context, would be small because our analysis focuses on a small range of earnings (i.e., earnings changes close to zero).

Second, we expect firms that are likely to have engaged in earnings management to meet or beat prior year's earnings to actively make disclosures more difficult to understand. Within the accounting discretion available, management makes biased choices to increase earnings. Management must try to hide the deception so as not to be discovered; i.e., *earnings management cannot be transparent* for management to believe that it would have the intended effect (Lo, 2008). Since analysis of financial information, whether numerical or qualitative, is costly, we expect investors to analyze information only up to the point where marginal costs equal marginal benefits of further analysis (Grossman and Stiglitz, 1980; Bloomfield, 2002).[3] Therefore, more complex disclosures increase the cost of analysis to investors, reducing the depth of analysis, and decrease the likelihood that earnings management will be detected. We consider this to be the direct effect of obfuscation on readability.

Third, in addition to the direct effect on readability is the indirect effect that arises subconsciously. Earnings management involves degrees of untruth. Deceptive communication is linguistically more complex and also cognitively more demanding.[4] This increase in disclosure complexity is a subconscious result of cognitive dissonance between underlying and reported performance (Li, 2012).

Potentially counteracting these effects is that liars will tend to tell simpler stories because it is difficult to be untruthful. Simpler stories reduce the chance that fabricated details will conflict with each other. This tendency to tell simpler stories can counteract the tendency of lies to be linguistically more complex. Whether this effect dominates the direct and indirect effects just discussed is an empirical question.

Based on the above discussion, our central hypothesis is as follows (in alternative form):

H1. Firms that have managed earnings in a particular year have annual report disclosures in that year that are less readable, ceteris paribus.

Beyond this central hypothesis, we have three subsidiary hypotheses with increasing specificity:

H1A. Firm-years with zero or slightly positive earnings changes will have annual report disclosures that are less readable, ceteris paribus.

H1B. Firm-years with (i) zero or slightly positive earnings changes and (ii) income-increasing discretionary accruals or real activities earnings management will have annual report disclosures that are less readable, ceteris paribus.

H1C. Firm-years with (i) zero or slightly positive earnings changes and (ii) *high* income increasing discretionary accruals or real activities earnings management will have annual report disclosures that are less readable, ceteris paribus.

These three predictions relate to firm-years that we suspect of containing managed earnings. However, these classification schemes use purely quantitative data and there is likely a certain amount of misidentification (Dechow et al. 1995). Therefore, we use the superior accuracy of human investigators to identify instances of earnings management. Therefore, we also make two additional predictions using restatements and misstatements.

H1D. Firm-years with financial information that was subsequently restated will have annual report disclosures that are less readable, ceteris paribus.

H1E. Firm-years with misstatements will have annual report disclosures that are less readable, ceteris paribus.

Restatements are adjustments to financial statements as tracked by Audit Analytics; we do not examine all restatements, but only those identified by Audit Analytics as relating to fraud or SEC investigations. Misstatements are those reported in Accounting and Auditing Enforcement Releases (AAER), which may or may not subsequently result in restatements. Using restatements and misstatements is more accurate in identifying instances of earnings management, but also potentially

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[3] A number of papers show evidence consistent with this theory that complexity reduces analysis. You and Zhang (2009) show that investors underreact to information content in 10-K filings when the textual narrative is harder to read. Lehavy et al. (2011) show analysts incur more effort when the clarity of annual reports is low. They also show that investors demand more analyst services and information environment is of lower quality when 10-Ks are complex. Lawrence (2013) finds that individual investors benefit from easy to read disclosures and the information disadvantage to institutional investors is alleviated.

[4] "… from a cognitive perspective, truth tellers should be able to discuss exactly what did and did not happen because they were actually there to witness the event being discussed. Liars, on the other hand, would be forced to keep track of what they have previously said to avoid contradicting themselves later" (Hancock et al., 2007).

Table 1
Sample selection.

	Observations
All Compustat firm-years 2000–2012	109,197
Less: observations in utilities or financial services	(24,507)
Less: firm-years with insufficient data	(57, 723)
Number of firm-years used in tests of Hypothesis 1	26,967
Number of firms	4855

misses some earnings management activity that has not been the subject of regulatory action. In this regard, this identification strategy is complementary to the earlier strategy using small positive earnings changes, which likely classifies too many firms as having managed earnings.

3. Research design

To test our hypotheses, we use a sample of firm-years with available data between 2000 and 2012. We require financial data from Computat as well as MD&A disclosures on the SEC's Edgar system. Details of required financial data items are provided below. We exclude firms in the utilities and financial services industries (SIC 4400–5000 and 6000–6999) because of their different operating and financial structures. Table 1 shows the results of the sample selection procedure. The final sample consists of 26,967 firm-years and 4855 unique firms.

Generally, our hypothesis concerns the influence of earnings management on readability. Therefore, we require measures of readability, earnings management, and control variables that are known to affect readability. Therefore, the general form of equation we use to test this hypothesis is as follows:

$$Readability = \beta_0 + \beta_1 EM + \sum \beta_j Control_j + \varepsilon \tag{1}$$

where EM refers to the earnings management proxy. The follow discussion provides additional details for this equation.

3.1. Readability

We use the Gunning Fox Index to measure readability. As mentioned above, the Fog Index is computed as follows:

$$Fog = 0.4 \times (words\ per\ sentence + percent\ of\ complex\ words). \tag{2}$$

The number of words per sentence is computed as the ratio of the total number of words divided by the number of sentences in the MD&A. Complex words are those having three or more syllables. Longer sentences and a higher proportion of complex words increase Fog, meaning a reduction in readability. The Fog Index has been used widely and has seen increasing usage in the accounting literature (e.g., Miller, 2010; Lehavy et al., 2011; Rennekamp, 2012).

3.2. Earnings management

We use a number of different proxies for earnings management. Our first and simplest measure uses the approach of Burgstahler and Dichev (1997): we identify firms having a higher likelihood of managing earnings as those firms with earnings in the neighborhood of meeting or just beating past year's earnings. We conduct our main tests using earnings per share (EPS), but we also present results for earnings deflated by total assets. In either case, we measure earnings before extraordinary items. We define the variable $MBE = 1$ if ΔEPS falls in the neighborhood from zero to a small positive number; otherwise $MBE = 0$. We use a range of values to define the "small positive number" to ensure robustness of results.

The MBE measure is based on the *outcome* of earnings management, and misclassifies firms that have earnings in the neighborhood just above the MBE benchmark even in the absence of earnings management. Therefore, we also examine the *process* of earnings management, namely using discretionary accruals or real activities.

For discretionary accruals, we use the Jones (1991) model in our main tests:

$$TotAccr_t/TA_{t-1} = \alpha_0 + \alpha_1(1/TA_{t-1}) + \alpha_1(\Delta Rev_t/TA_{t-1}) + \alpha_1(PPE_t/TA_{t-1}). \tag{3}$$

where $TotAccr_t$ are total operating accruals, ΔRev_t is the change in revenues from year $t-1$ to t, PPE_t is gross property, plant, and equipment, and TA_{t-1} is total assets at the end of year $t-1$. We estimate the model in cross-section by industry and year, and require at least 15 observations. The residuals from this estimation form the discretionary accruals (DA). In supplementary tests, we also modify the Jones model as suggested by Dechow et al. (1995) with similar results as reported below. We rerun our analyses using performance-matched model of Kothari et al. (2005). In particular, we calculate expected accruals based on 1-to-1 matching on industry (using the Fama–French 48 industries), fiscal year, and closest previous-year return on assets (ROA, measured as net income divided by lagged total assets). Results remain similar to those reported below.

For real activities earnings management, we focus on discretionary expenses (Roychowdhury 2006), specifically research and development (R&D) and advertising expenses. We define real activities earnings management (RAM) as the negative sum of (ΔR&D expense + ΔAdvertising expense), deflated by beginning total assets. Larger reductions in R&D or advertising expenses result in more positive values of RAM.

Table 2
Descriptive statistics for variables used to test Hypothesis 1 ($n=26{,}967$).

Panel A – Full sample for test of H1A, H1B, and H1C.

Variable	N	Mean	S.D.	Q1	Median	Q3
Fog	26,967	18.020	1.613	16.880	17.907	19.048
ΔEPS	26,967	0.010	1.654	−0.390	0.060	0.460
Earnings	26,967	−0.009	0.257	−0.029	0.059	0.114
Loss	26,967	0.371	0.483	0	0	1
Size	26,967	5.768	2.058	4.292	5.774	7.156
MTB	26,967	1.999	1.757	1.100	1.496	2.242
Age	26,967	15.576	11.853	6.000	12.000	22.000
SpecItems	26,967	−0.032	0.248	−0.016	−0.001	0.000
EarnVol	26,967	0.063	1.045	0.001	0.002	0.010
RetVol	26,967	0.158	0.099	0.090	0.131	0.194
NBSeg	26,967	1.032	0.531	0.693	0.693	1.386
NGSeg	26,967	1.057	0.647	0.693	1.099	1.609
NItems	26,967	278.878	29.838	255.000	283.000	301.000
M&A	26,967	0.398	0.489	0.000	0.000	1.000
SEO	26,967	0.061	0.239	0.000	0.000	0.000
Delaware	26,967	0.653	0.476	0.000	1.000	1.000

Panel B – Restatement sample for test of H1D

	Restatement sample			Compustat population (excl. restatement obs.)			Restate – Compustat	
Variable	N	Mean	Median	N	Mean	Median	Diff. in means	t-stat
FOG	659	18.238	18.118	26,308	18.015	17.902	0.224	3.515
Earnings	659	0.009	0.057	26,308	−0.021	0.060	0.030	2.225
Loss	659	0.399	0	26,308	0.371	0	0.028	1.470
Size	659	6.214	6.275	26,308	5.756	5.761	0.458	5.635
MTB	659	1.944	1.466	26,308	2.000	1.497	−0.056	−0.804
Age	659	14.200	11.000	26,308	15.600	12.000	−1.366	−2.921
SpecItems	659	−0.036	−0.004	26,308	−0.032	−0.001	−0.004	−0.415
EarnVol	659	0.032	0.002	26,308	0.063	0.002	−0.032	−0.766
RetVol	659	0.166	0.137	26,308	0.157	0.131	0.009	2.201
NBSeg	659	2.483	2.000	26,308	2.237	1.000	0.245	3.394
NGSeg	659	2.801	2.000	26,308	2.522	2.000	0.279	3.065
Nitems	659	272.400	274.000	26,308	279.000	284.000	−6.657	−5.660
M&A	659	0.476	0.000	26,308	0.396	0.000	0.081	4.194
SEO	659	0.050	0.000	26,308	0.061	0.000	−0.011	−1.157
Delaware	659	0.662	1.000	26,308	0.652	1.000	0.009	0.487

Panel C – Misstatement sample for test of H1E

	Misstatement sample			Compustat population (excl. misstatement obs.)			Fraud – Compustat	
Variable	N	Mean	Median	N	Mean	Median	Diff. in means	t-stat
FOG	114	18.286	18.314	26853	18.019	17.906	0.267	1.762
Earnings	114	0.033	0.058	26853	−0.020	0.060	0.053	1.662
Loss	114	0.421	0	26853	0.371	0	0.050	1.090
Size	114	7.157	6.952	26853	5.762	5.768	1.395	5.830
MTB	114	2.214	1.661	26853	1.998	1.496	0.216	1.309
Age	114	11.600	7.500	26853	15.600	12.000	−3.970	−3.570
SpecItems	114	−0.052	−0.010	26853	-0.032	−0.001	−0.020	−0.874
EarnVol	114	0.007	0.002	26853	0.063	0.002	−0.055	−0.565
RetVol	114	0.190	0.177	26853	0.157	0.131	0.033	3.497
NBSeg	114	2.947	3.000	26853	2.240	1.000	0.707	4.112
NGSeg	114	2.947	3.000	26853	2.527	2.000	0.420	1.940
Nitems	114	258.100	259.000	26853	279.000	284.000	−20.861	−7.457
M&A	114	0.605	1.000	26853	0.397	0.000	0.209	4.544
SEO	114	0.070	0.000	26853	0.061	0.000	0.010	0.424
Delaware	114	0.649	1.000	26853	0.653	1.000	−0.004	−0.080

Note: Refer to Appendix B for variable definitions.

Discretionary accrual models have large amounts of measurement error and suffer from low power (Dechow et al., 1995), and similarly for measures of real activities earnings management. We do not simply use these measures to proxy for earnings management. Rather, we interact them with our first measure, *MBE*, to increase the power of detecting firms that have managed earnings, because together the variables capture both the process and outcome of earnings management. Furthermore, managing earnings to meet or beat past earnings presumably involves upward (not downward) earnings management, so we identify firm-years with positive earnings management using the indicator variables *PosEM(DA)* and *PosEM(RA)* for, respectively, accrual and real activities management that increases income; the complement is *NegEM( )*. Therefore, our second measure to identify firms that are likely to have managed earnings upwards is *MBE × PosEM(DA)* and *MBE × PosEM(RA)*. We also construct a composite variable to capture both types of earnings management: *PosEM(Comb)=PosEM(DA)+PosEM(RA)*.

Our third measure of earnings management refines the second one just described but uses not only the sign of the earnings management, but also the magnitude. We separate firms with positive discretionary accruals into high and low partitions using the median value, resulting in *HighPosEM(DA)* and *LowPosEM(DA)*; similarly for positive real activities earnings management. Our third measure of firms most likely to have managed earnings upwards is thus *MBE × HighPosEM(DA)*, *MBE × HighPosEM(RA)*, and *MBE × HighPosEM(Comb)*.

Our fourth proxy for earnings management is whether a firm-year's financial statements had been restated, as identified in Audit Analytics. Because some restatements result from relatively benign reasons, we focus on restatements that Audit Analytics has flagged as (i) resulting from fraud or (ii) being initiated by or resulted in an SEC investigation. Our fifth proxy is whether a firm-year's financial statements were misstated according to AAER.

3.3. Control variables

Our list of control variables derives from Li (2008). The most important of these in our context are the earnings-related variables. The first is *Earnings*, defined as operating earnings deflated by beginning total assets, which is expected to be negatively associated with Fog (i.e., firm-years with high earnings have more readable MD&A). We also control for firm-years with losses with the indicator *Loss*, which equal 1 when *Earnings* < 0, because losses require additional explanations about the viability of the business, which is likely to make disclosures less readable (Li 2008).

We include all of the 12 other control variables used in Li (2008). We provide details for these variables in Appendix A.

3.4. Descriptive statistics

Table 2 shows the sample statistics. The mean and median value of Fog is around 18, meaning that the typical MD&A requires two years beyond an undergraduate degree. This value is similar to that reported in Li (2008), where the mean and median were 18.23 and 17.98, respectively. On average, firms increase EPS by five to six cents year-over-year. Panel B and C show that, on a univariate basis, firm-years with restatements or misstatements have higher Fog on average, consistent with predictions.
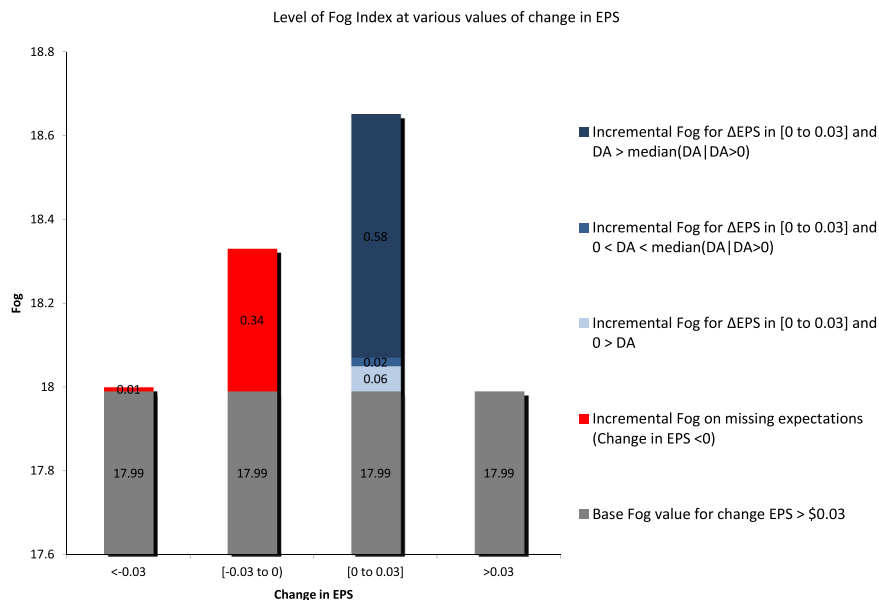

Fig. 1. Level of Fog Index at various values of change in EPS. EPS=earnings per share before extraordinary items. DA=discretionary accruals (see Appendix A for detailed definition).

Table 3

Correlation matrix with Pearson (Spearman) values above (below) the main diagonal (N=26,967).

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1)	Fog	1	0.00	−0.23	0.17	−0.10	0.12	−0.02	−0.02	0.04	0.10	−0.02	−0.09	0.01	−0.03	−0.01	0.06
(2)	ΔEPS	0.00	1	0.01	−0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(3)	Earnings	−0.22	0.20	1	−0.75	0.49	0.23	0.25	0.15	−0.40	−0.43	0.10	0.12	0.08	0.22	−0.06	−0.09
(4)	Loss	0.17	−0.27	−0.59	1	−0.42	−0.12	−0.25	−0.32	0.38	0.44	−0.11	−0.11	−0.06	−0.2	0.05	0.09
(5)	Size	−0.11	0.10	0.40	−0.42	1	0.17	0.29	0.08	−0.05	−0.40	0.13	0.26	0.28	0.34	0.07	0.08
(6)	MTB	0.09	0.15	−0.25	0.04	0.38	1	−0.12	−0.01	0.18	0.08	−0.11	−0.06	−0.01	−0.04	0.07	0.07
(7)	Age	−0.02	0.02	0.23	−0.24	0.24	−0.08	1	0.06	−0.03	−0.29	0.20	0.16	0.23	0.09	−0.09	−0.20
(8)	SpecItems	−0.02	0.27	0.18	−0.16	0.01	0.10	0.05	1	0.00	−0.11	0.01	0.01	0.01	0.00	0.01	−0.02
(9)	EarnVol	0.19	0.04	−0.14	0.05	−0.38	0.20	−0.25	−0.02	1	0.06	−0.03	−0.03	−0.01	−0.01	0.01	0.02
(10)	RetVol	0.10	−0.04	−0.40	0.41	−0.44	−0.08	−0.33	−0.13	0.43	1	−0.10	−0.09	−0.21	−0.18	0.07	0.06
(11)	NBSeg	−0.04	0.01	0.13	−0.11	0.13	−0.10	0.19	−0.04	−0.19	−0.12	1	0.14	0.02	0.11	−0.03	−0.04
(12)	NGSeg	−0.08	0.02	0.19	−0.11	0.27	0.03	0.15	−0.11	−0.09	−0.09	0.14	1	0.20	0.14	−0.04	0.02
(13)	NItems	0.00	0.02	0.07	−0.06	0.27	0.05	0.23	−0.11	−0.13	−0.19	0.03	0.20	1	0.08	0.01	0.03
(14)	M&A	−0.03	−0.02	0.20	−0.20	0.34	0.05	0.07	−0.06	−0.19	−0.20	0.12	0.14	0.08	1	0.00	0.03
(15)	SEO	−0.01	0.04	−0.08	0.05	0.08	0.09	−0.10	0.02	0.05	0.07	−0.03	−0.04	0.01	0.00	1	0.06
(16)	Delaware	0.07	0.02	−0.10	0.09	0.08	0.08	−0.21	−0.04	0.10	0.07	−0.05	0.03	0.04	0.03	0.06	1

Bolded coefficients are statistically significant at the 1% level. Refer to Appendix A for variable definitions.

Fig. 1 provides a visual depiction of the level of Fog at various values of change in EPS. The baseline value for comparison is a change in EPS exceeding $0.03 (i.e., good news), which has an average Fog value of 17.99. Compared to this base value, large negative changes in EPS ($\Delta EPS < -\$0.03$) have a negligible 0.01 higher readings of Fog. Firm-years with smaller negative change in EPS have MD&A that is on average 0.34 higher in Fog. Most importantly, MD&A for firms that have just met or slightly beat the past year's EPS have the highest Fog, specifically those observations where the firms are most likely to have managed earnings to surpass the prior year's EPS performance. The Fog value is 0.66 higher than the baseline of 17.99, and 0.32 higher than firms just missing the benchmark.

Table 3 shows the correlation matrix for the variables. Fog negatively correlates with firm size (*Size*) and number of geographic segments (*NGSeg*) and positively correlates with market-to-book (*MTB*), with magnitude around 10%. The signs of these correlations are consistent with Li (2008).[5] While there are many correlations among the variables that are statistically significant due to our large sample size, the magnitudes are mostly modest and should not pose a problem with multicollinearity.

3.5. Results – Test of Hypothesis 1A

Table 4 presents our first test of Hypothesis 1. The definition of *EM* in Eq. (1) in this analysis is whether a firm met or just beat past year's earnings. That is, we identify firms with zero or small positive earnings changes as having a higher likelihood of having managed earnings. We use three different definitions of "small positive," being one, two, or three cents of EPS before extraordinary items (Frankel et al., 2010).

The regression specification results in three groups in the analysis: (i) firm-years with earnings lower than in the previous year (identified by the indicator variable *NegEarnChg*), (ii) the group that met or just beat the past year's earnings by a small amount (identified by the indicator variable *MBE*), and (iii) firm-years that beat the past year by a greater amount (more than one cent, two cents, or three cents, depending on the regression specification). The structure of the regression results in the third group forming the baseline for comparison.

Panel A presents the results from the full sample. The key variable is *MBE*, which has a significantly positive coefficient (coefficient=0.162–0.203, t=2.39–3.74). Firms that met or just beat prior year's EPS had MD&A that were more complex to read by about a fifth or sixth of a year of formal education as compared to firms that beat the benchmark by more than [one|two|three] cents, depending on the specification. When we compare MBE firm-years against those with performance lower than prior year's, the differences ($\beta_1 - \beta_2$) are statistically significant at 5% level for all three cases ($F(1, 38)$=7.11–15.48). This analysis controls for other determinants of Fog identified in Li (2008, Table 2), including loss (*Loss*) and operating earnings scaled by total assets (*Earnings*), as well as fixed effects for (Fama–French 48) industry and year. Standard errors are clustered by industry as in Li (2008). As expected, the coefficient for *Loss* is positive and for *Earnings* is negative, meaning that more profitable firms have less complex MD&A.

While the significantly positive coefficient on *MBE* in Panel A indicates that firms that just beat expectations have MD&A that are less readable compared to a broad cross-section of firms, our analyses do not necessarily compare *MBE* firms against firms with similar characteristics. To address this ambiguity, we repeated our analyses using smaller matched samples, with results shown in Panels B and C of Table 4. For Panel B, we did 1-to-1 matching based on the Fama–French 48 industries, fiscal year, market-to-book deciles, and the closest market capitalization.

In Columns I to III, the matched sample, our baseline in this analysis, consists of firms that missed the benchmark (i.e., $\Delta EPS < 0$ or *NegEarnChg*=1). We find that even though MBE firms are disclosing better news, they provide more complex disclosures as compared to similar firms that missed the benchmark. In Columns IV–VI, the matched sample consists of firms that beat the benchmark by more than the MBE observations (i.e., $\Delta EPS > [\$0.01|\$0.02|\$0.03]$). The results are consistent with those in Panel A, with coefficients and statistical significance both of comparable magnitudes.

For Panel C, we repeat the analysis with two changes in the matching algorithm: using a matching based on industry, fiscal year, size deciles (vs. market-to-book decile above), and the closest sales growth (vs. closest market capitalization above). Again, the results remain consistent with the exception of Column I.

Overall, this first set of results—firms with relatively good news of a small positive earnings change having MD&A sections that are on average less readable than both firms disclosing worse news and firms disclosing better news—reveals a pattern different from the general pattern found in Li (2008) and is inconsistent with a purely ontological explanation.

To address the scale issue related to using EPS, we show results of measuring profitability as earnings before extraordinary items deflated by total assets. Table 5 Panel A shows the results of this analysis, with *MBE* defined to equal 1 when deflated earnings is from zero to 0.4%, 0.5% or 0.6% (Columns I–III). For brevity, we do not report the coefficients for the control variables. Similar to Table 4, we find results as predicted. The coefficient on *MBE* ranges from 0.120 to 0.132, somewhat smaller than in Table 4 but significant at the 1% level or better (t=2.63 to 3.26). When compared to firm with negative earnings changes (*NegEarnChg*), the complexity of MD&A from MBE firms is also still statistically larger ($F(1, 38)$= 5.14–7.77).

We also conduct a placebo test to confirm that the results found are not spurious due to persistent firm-specific factors.

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[5] Li (2008) did not report a correlation table. We use the multivariate regression report in Li's Table 2 to compare without bivariate correlations, even though strictly they are not comparable.

Table 4

First test of Hypothesis 1 – earnings management identified by MBE.

Panel A: Full sample.

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. Firms that just meet or beat past year's earnings by [one|two|three] cents are identified as firms that likely managed reported earnings (*MBE* = 1), otherwise *MBE* = 0. The baseline is the group of firm-years that beat past year's earnings by more than [one | two | three] cents. Firm-years with performance below prior year's are identified by *NegEarnChg* = 1. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

	Independent variable	Pred. Sign	MBE = 1 when $\Delta EPS \in$		
			[$0, $0.01] I	[$0, $0.02] II	[$0, $0.03] III
β_1	**MBE**	+	**0.162** **(2.393)**	**0.187*** ** **(3.308)**	**0.203*** ** **(3.744)**
β_2	NegEarnChg	+	−0.016 (−0.807)	−0.012 (−0.608)	−0.008 (−0.403)
	Earnings	−	−0.375*** (−2.802)	−0.375*** (−2.814)	−0.376*** (−2.826)
	Loss	+	0.253*** (6.161)	0.252*** (6.159)	0.252*** (6.163)
	Size	?	−0.031 (−1.427)	−0.031 (−1.404)	−0.030 (−1.390)
	MTB	+	0.041*** (3.317)	0.040*** (3.288)	0.040*** (3.271)
	Age	?	0.014*** (6.769)	0.014*** (6.752)	0.014*** (6.777)
	SpecItems	−	0.094*** (3.266)	0.093*** (3.263)	0.093*** (3.266)
	EarnVol	+	−0.013 (−0.851)	−0.013 (−0.852)	−0.013 (−0.847)
	RetVol	+	0.442*** (2.958)	0.444*** (2.987)	0.451*** (3.030)
	NBSeg	?	0.043 (1.153)	0.043 (1.153)	0.044 (1.157)
	NGSeg	?	−0.157*** (−3.402)	−0.156*** (−3.388)	−0.156*** (−3.382)
	NItems	?	−0.003** (−2.243)	−0.003** (−2.241)	−0.003** (−2.238)
	M&A	?	0.050* (1.736)	0.050* (1.739)	0.050* (1.729)
	SEO	−	−0.218*** (−4.831)	−0.218*** (−4.818)	−0.217*** (−4.798)
	Delaware	+	0.148*** (3.126)	0.148*** (3.119)	0.148*** (3.121)
	Constant		17.986*** (37.900)	17.974*** (38.138)	17.966*** (38.092)
	Industry fixed effects		Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes
	Obs with MBE = 1		438	679	898
	Total observations		26,967	26,967	26,967
	Adj. R-Squared		12.7%	12.8%	12.8%
	Statistical test of $\beta_1 - \beta_2 = 0$; $F(1, 38) =$		7.11**	12.35**	15.48***

Panel B: Matching Sample analysis based on Industry (Fama–French 48), Fiscal Year, MTB (deciles) and closest market capitalization

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. Firms that just meet or beat past year's earnings by [one | two | three] cents are identified as firms that likely managed reported earnings (*MBE* = 1), otherwise *MBE* = 0. In Columns I to III, firms that just meet or beat past year's earnings by [one | two | three] cents (MBE) are matched to firms that missed the benchmark, the baseline group in the analysis. In Columns IV to VI, the MBE sample is matched to firms that beat the benchmark by more than [one | two | three] cents, the baseline group in the analysis. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

Table 4 (continued)

Independent variable	Pred. Sign	Compared to firms that MISSED benchmark MBE=1 when ΔEPS ∈			Compared to firms that BEAT benchmark MBE=1 when ΔEPS ∈		
		[\$0, \$0.01] I	[\$0, \$0.02] II	[\$0, \$0.03] III	[\$0, \$0.01] IV	[\$0, \$0.02] V	[\$0, \$0.03] VI
MBE	+	**0.144*** **(1.740)**	**0.209**** **(2.698)**	**0.225***** **(2.885)**	**0.175**** **(2.149)**	**0.176**** **(2.276)**	**0.242***** **(4.434)**
Earnings	−	−0.068 (−0.178)	0.003 (0.018)	−0.109 (−0.630)	−0.394* (−1.852)	−0.139 (−1.083)	−0.157 (−1.025)
Loss	+	0.067 (−0.519)	0.235* (1.970)	0.339*** (3.467)	−0.050 (−0.421)	0.232* (1.813)	0.255** (2.226)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Total observations		844	1296	1716	846	1312	1742
Adj. R-Squared		19.2%	19.4%	18.4%	21.5%	21.3%	20.5%

Panel C: Matching Sample analysis based on Industry (Fama–French 48), Fiscal Year, Size (deciles) and closest sales growth
The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. Firms that just meet or beat past year's earnings by [one | two | three] cents are identified as firms that likely managed reported earnings (MBE=1), otherwise MBE=0. In Columns I to III, firms that just meet or beat past year's earnings by more than [one | two | three] cents (MBE) are matched to firms that missed the benchmark, the baseline group in the analysis. In Columns IV–VI, the MBE sample is matched to firms that beat the benchmark by [one|two|three] cents, the baseline group in the analysis. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The t-statistics are in parentheses.

Independent variable	Pred. Sign	Compared to firms that MISSED benchmark MBE=1 when ΔEPS ∈			Compared to firms that BEAT benchmark MBE=1 when ΔEPS ∈		
		[\$0, \$0.01] I	[\$0, \$0.02] II	[\$0, \$0.03] III	[\$0, \$0.01] IV	[\$0, \$0.02] V	[\$0, \$0.03] VI
MBE	+	**0.078** **(0.737)**	**0.191**** **(2.535)**	**0.167**** **(2.148)**	**0.132** **(1.603)**	**0.184**** **(2.768)**	**0.176**** **(2.777)**
Earnings	−	−0.340* (−1.787)	−0.198** (−2.659)	−0.252** (−2.408)	−0.082 (−0.362)	−0.060 (−0.345)	−0.116 (−0.723)
Loss	+	−0.006 (−0.042)	0.194 (1.601)	0.232** (2.445)	0.226 (1.307)	0.302* (1.763)	0.391** (2.715)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes
Total observations		838	1296	1714	846	1310	1740
Adj. R-Squared		13.4%	15.6%	16.2%	16.5%	17.3%	18.0%

In particular, we want to reduce the possibility that some unmodelled factors omitted from our analysis but correlated with the propensity to meet/beat explain the variation in MD&A readability. To this end, we identify firms that just met or beat by one, two, or three cents the benchmark *in the prior year*. We include MBE_{t-1} to see if meeting or beating in the prior year is at all associated with current MD&A readability. Finding that MBE_{t-1} firms provide at time t disclosures more complex than others in the same group would suggest the existence of persistent firm-specific factors related to readability. Table 5 Panel B shows that the coefficient on MBE_{t-1} is not significantly different from zero ($t=0.542$–1.364), while the coefficient on MBE_t continues to be significantly positive and with similar magnitudes as in Table 4. This placebo test suggests that the result on MBE found in Table 4 is unlikely to be spuriously caused by omitted variables.

A third test that we conduct to confirm our results in Table 4 is to increase the precision of the MBE variable to distinguish firms that beat the benchmark with earnings management from firms that do so without earnings management. (Later analyses in Tables 6 and 7 will also do this using models of discretionary accruals and real activities; the test here uses

Table 5

First test of Hypothesis 1 – earnings management identified by MBE – supplemental results.

Panel A: MBE defined using earnings deflated by total assets instead of EPS.

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. Firms that just meet or beat past year's earnings by less than [0.4%|0.5%|0.6%] of total assets are identified as firms that likely managed reported earnings ($MBE=1$), otherwise $MBE=0$. The baseline is the group of firms that beat past year's earnings by more than [0.4%| 0.5%|0.6%] of total assets. Firms with performance below prior year's are identified by $NegEarnChg=1$. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The t-statistics are in parentheses.

	Independent variable	Pred. Sign	$MBE=1$ when $\Delta Earnings \in [0,0.4\%]$ I	$MBE=1$ when $\Delta Earnings \in [0,0.5\%]$ II	$MBE=1$ when $\Delta Earnings \in [0,0.6\%]$ III
β_1	**MBE**	+	**0.132**** **(2.634)**	**0.130***** **(3.258)**	**0.120***** **(2.923)**
β_2	NegEarnChg	+	−0.014 (−0.754)	−0.014 (−0.739)	−0.014 (−0.721)
	Earnings	−	−0.746*** (−5.210)	−0.745*** (−5.207)	−0.745*** (−5.218)
	Loss	+	0.180*** (4.424)	0.180*** (4.431)	0.180*** (4.454)
	Controls		Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes
	Observations with $MBE=1$		1040	1321	1595
	Total observations		26,967	26,967	26,967
	Adj. R-Squared		13.1%	13.1%	13.1%
	Statistical test of $\beta_1-\beta_2=0$; $F(1, 38)=$		5.14**	7.77***	7.66***

Panel B: Placebo test with MBE in prior year

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. Firms that just meet or beat past year's earnings by [one|two|three] cents are identified as firms that likely managed reported earnings ($MBE=1$), otherwise $MBE=0$. The baseline is the group of firms that beat past year's earnings by more than [one|two| three] cents. Firms with performance below prior year's are identified by $NegEarnChg=1$. Firms that just met or beat by [one|two|three] cents the benchmark the year before are identified as $MBE_{t-1}=1$. A significant coefficient for MBE_{t-1} could be interpreted as the existence of unmodelled factors omitted from our analysis but correlated with the propensity to meet/beat explaining the variation in MD&A readability. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. Refer to Appendix A for variable definitions. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The t-statistics are in parentheses.

	Independent variable	Pred. Sign	$MBE=1$ when $\Delta EPS \in [\$0, \$0.01]$ I	$MBE=1$ when $\Delta EPS \in [\$0, \$0.02]$ II	$MBE=1$ when $\Delta EPS \in [\$0, \$0.03]$ III
β_1	**MBE_t**	+	**0.180**** **(2.698)**	**0.196***** **(3.579)**	**0.211**** **(2.748)**
β_2	**MBE_{t-1}**	**0**	**0.047** **(0.542)**	**0.072** **(1.364)**	**0.083** **(1.123)**
β_3	NegEarnChg	+	−0.010 (−0.508)	−0.006 (−0.323)	−0.003 (−0.087)
	Earnings	−	−0.392*** (−2.883)	−0.392*** (−2.895)	−0.392*** (−6.361)
	Loss	+	0.253*** (6.019)	0.253*** (6.023)	0.252*** (7.879)
	Controls		Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes
	Observations with $MBE=1$		438	679	898
	Total observations		26,967	26,967	26,967
	Adj. R-Squared		12.8%	12.8%	12.8%
	Statistical test of $\beta_1-\beta_3=0$; $F(1, 38)=$		8.34***	13.60***	6.48**

Panel C: Using performance in first 3 fiscal quarters to identify distance to MBE

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. MBE_ByQ4_t measures by how far a firm is underperforming in the first 3 fiscal quarters compared with the same period in the prior year. Specifically, it is EPS in the first 3 quarter of year $t-1$ less EPS in the first 3 quarters of year t for firms that just meet or beat past year's earnings by [one|two|three] cents, otherwise $MBE\_ByQ4_t = 0$. The baseline is the group of firms that beat past year's earnings by more than [one|two|three] cents. Firms with performance below prior year's are identified by $NegEarnChg = 1$. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The t-statistics are in parentheses.

	Independent variable	Pred. Sign	MBE=1 when $\Delta EPS \in [\$0, \$0.01]$ I	MBE=1 when $\Delta EPS \in [\$0, \$0.02]$ II	MBE=1 when $\Delta EPS \in [\$0, \$0.03]$ III
β_1	**MBE_ByQ4_t**	+	**0.223** **(2.271)**	**0.245** **(2.401)**	**0.216** **(2.187)**
β_2	NegEarnChg	+	−0.020 (−1.043)	−0.020 (−1.057)	−0.020 (−1.055)
	Earnings	−	−0.745*** (−5.085)	−0.745*** (−5.085)	−0.744*** (−5.084)
	Loss	+	0.175*** (4.452)	0.176*** (4.471)	0.176*** (4.469)
	Controls		Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes
	Average MBE_sprint		0.029	0.020	0.010
	Total observations		26,967	26,967	26,967
	Adj. R-Squared		12.8%	12.8%	12.8%
	Statistical test				
	$\beta_1 - \beta_2 = 0$; $F(1, 41) =$		5.13**	5.68**	4.96**

the properties of the earnings themselves.) We identify firms that just met or beat the past year's EPS, with the added condition of EPS in the first three fiscal quarters in the current year having fallen behind the amount in the first three quarter of the preceding year. We define this variable as $MBE\_ByQ4 = (EPS_{t-1,\ Q1} + EPS_{t-1,\ Q2} + EPS_{t-1,\ Q3}) - (EPS_{t,\ Q1} + EPS_{t,\ Q2} + EPS_{t,\ Q3})$, when part of the MBE group, and 0 otherwise. The additional condition increases the likelihood of identifying firms that managed earnings upwards in the final quarter of the fiscal year to meet or beat the annual earnings of the prior year, since they were behind in the first three quarters, but managed to meet or beat the annual figures after the fourth quarter. Panel C of Table 5 contains the results of this analysis. Again, the variable of earnings management, MBE_ByQ4, is significantly positive (coeff=0.22–0.25, t=2.19–2.40).

Overall, the adjusted R-squared values in both Tables 4 and 5 are around 13% (and higher in the matched samples), which are similar but slightly higher than the 10% reported in Li (2008). The results so far support Hypothesis 1A. We find consistent evidence that, while higher earnings is associated with more readable MD&A, losses are associated with less readable reports, but meeting or just beating is also associated with less readable reports. The ontology explanation suggests that it is possible and even likely that good news is inherently easier and bad news is inherently more difficult to explain. Our evidence suggests that the good news of meeting or just beating past earnings is also harder to explain, which is contrary to the ontological explanation. This result could arise if the good news is artificial and some amount of obfuscation is required to make the underlying performance less transparent. We investigate this possibility further in the next tests of H1B and H1C.

3.6. Results – tests of Hypotheses 1B and 1C

Considering only whether a firm met or just beat the prior year's earnings as we did in the test of H1A involves misclassifying firms that would have met or just beat prior year's earnings without any earnings management. To improve the identification of firms that are more likely to have managed earnings, we consider the process of earnings management used to achieve that earnings outcome. We estimate firms' discretionary accruals and real activity earnings management in addition to whether it met or beat prior earnings. Table 6 shows the results of regressing Fog on MBE interacted with PosEM( ), an indicator variable identifying positive earnings management, as well as the main effect for PosEM( ) and control variables. Columns I–III show the results for the case of earnings management using discretional accruals (DA). The results are as predicted: $MBE \times PosEM(DA)$ is significantly positive (coefficient=0.29–0.33, t=3.72–5.28). Firms that are likely to have used earnings-increasing discretionary accruals to meet or beat prior earnings have less readable MD&A than firms that beat the benchmark by more than [one | two | three] cents (baseline), and also less readable than firms that miss the benchmark ($\beta_2 - \beta_4$), ($F(1, 38)$=15.45–27.76). The magnitudes of the coefficient are about 1.5–2 times as large as those estimated in Table 4 for MBE alone without considering accruals.

Table 6
Second test of Hypothesis 1 – earnings management identified by MBE and sign of discretionary accruals or real earnings management.

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. *PosEM( )* identifies positive earnings management. Column I–III use accruals earnings management, Column IV to VI use real activity earnings management, and Column VII to IX use a combination of the two types of earnings management. The coefficient on $MBE \times PosEM( )$ identifies the incremental Fog for the group more likely to managed reported earnings, which comprises firms that just met or beat past year's earnings by [one ǀ two ǀ three] cents ($MBE=1$) and have positive earnings management. The coefficient on $MBE \times NegEM( )$ identifies the incremental Fog for firms that just met or beat past year's earnings by [oneǀtwoǀthree] cents ($MBE=1$) and have no suspected upwards earnings management. The baseline is the group of firms that beat past year's earnings by more than [one ǀ two ǀ three] cents. Firms with performance below prior year's are identified by $NegEarnChg=1$. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. Refer to Appendix A for variable definitions. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

	Independent variable	Pred. Sign	Accruals earnings management $PosEM(DA)=1$ if $DA > 0$; 0 otherwise MBE when $\Delta EPS \in$			Real activities management $PosEM(RA)=1$ if $RAM > 0$; 0 otherwise MBE when $\Delta EPS \in$			Combined $PosEM(Comb)=PosEM(DA)+PosEM(RA)$ MBE when $\Delta EPS \in$		
			[$0, $0.01]	[$0, $0.02]	[$0, $0.03]	[$0, $0.01]	[$0, $0.02]	[$0, $0.03]	[$0, $0.01]	[$0, $0.02]	[$0, $0.03]
			I	II	III	IV	V	VI	VII	VIII	IX
β_1	*PosEM( )*	?	0.037	0.038	0.037	0.003	0.003	0.003	0.021	0.021	0.020
			(1.294)	(1.289)	(1.289)	(0.072)	(0.067)	(0.090)	(1.530)	(1.520)	(1.468)
β_2	**$MBE \times PosEM( )$**	+	**0.329***	**0.294***	**0.294***	**0.303***	**0.315***	**0.287***	**0.237***	**0.225***	**0.220***
			(3.715)	**(4.826)**	**(5.279)**	**(3.696)**	**(3.260)**	**(3.524)**	**(4.479)**	**(5.314)**	**(6.188)**
β_3	$MBE \times NegEM( )$	0	−0.038	0.065	0.097	0.144*	0.164**	0.190***	−0.130	−0.023	0.015
			(−0.298)	(0.560)	(0.960)	(1.961)	(2.543)	(3.210)	(−1.136)	(−0.190)	(0.142)
β_4	*NegEarnChg*	+	−0.009	−0.005	−0.001	−0.010	−0.006	−0.001	−0.008	−0.004	−0.001
			(−0.427)	(−0.231)	(−0.028)	(−0.518)	(−0.301)	(−0.072)	(−0.417)	(−0.228)	(−0.048)
	Earnings	−	−0.393***	−0.393***	−0.393***	−0.391***	−0.390***	−0.391***	−0.390***	−0.389***	−0.389***
			(−2.899)	(−2.900)	(−2.912)	(−2.924)	(−2.936)	(−2.947)	(−2.902)	(−2.897)	(−2.908)
	Loss	+	0.257***	0.257***	0.257***	0.252***	0.252***	0.251***	0.253***	0.253***	0.252***
			(5.948)	(5.931)	(5.945)	(5.792)	(5.785)	(5.787)	(6.024)	(5.998)	(6.005)
	Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Observations		26,143	26,143	26,143	26,143	26,143	26,143	26,143	26,143	26,143
	Adj. R-Squared		12.8%	12.8%	12.8%	12.8%	12.8%	12.8%	12.8%	12.8%	12.8%
	Statistical test of										
	$\beta_2 - \beta_3$; $F(1, 38) =$		5.49**	2.85*	2.90*	2.91*	1.74	1.06	8.95***	4.26**	3.77*
	$\beta_2 - \beta_4$; $F(1, 38) =$		15.45***	22.13***	27.76***	13.56***	11.63***	12.09***	21.03***	26.49***	31.39***

Consistent with this larger magnitude, we find the coefficient for $MBE \times NegEM(DA)$ to be insignificant; firms that met or just beat prior earnings but have negative discretionary accruals do not exhibit more complex MD&A than firms that beat the benchmark by more than [oneǀtwoǀthree] cents (baseline). A comparison between the MBE firms with negative earnings management against MBE firms with positive earnings management ($\beta_2 - \beta_3$; *coefficient on $MBE \times PosEM(DA)$–coefficient on $MBE \times NegEM(DA)$*) shows statistical significance at the 10% level in all three specifications ($F(1, 38)=2.85$–5.49). Thus, the effect found in Table 4 is concentrated in the subset with positive discretionary accruals. This evidence supports Hypothesis 1B.

The results for real activities earnings management are similar, shown in Columns IV–VI in Table 6. The coefficients on $MBE \times PosEM(RA)$ are similar to those for accruals management. We find that MBE firms exhibit more complex MD&As than firms that beat by more than the [one ǀ two ǀ three] cents, and more than firms with negative earnings change ($\beta_2 - \beta_4$; coefficient on $MBE \times PosEM(DA)$–coefficient on *NegEarnChg*) at a significance level of 1% ($F(1, 38)=11.63$–13.56). The magnitudes of the coefficient of $MBE \times Pos(RA)$ are about 1.5–2 times as large as those of $MBE \times Neg(RA)$, however, the difference is statistically significant only in Column IV ($F(1, 38)=2.91$).

Combining the two sources of earnings management, Columns VII–IX show similar results with significantly positive coefficients on $MBE \times PosEM(Comb)$. Note that the coefficient value is somewhat smaller (0.22–0.24), but factoring in the variable's range of 0–2 (instead of 0–1), the magnitude of the effect is actually higher than that shown in Columns I–VI. Conclusions remain similar when we compare MBE firms against firms with negative earnings changes ($\beta_2 - \beta_4$; coefficient on $MBE \times PosEM(DA)$–coefficient on *NegEarnChg*) ($F(1, 38)=21.03$–31.39) and against MBE firms with no suspected upwards earnings management ($MBE \times NegEM(Comb)$)($F(1, 38)=3.77$–8.95).

Next, we test if the level of complexity in the MD&A is increasing in the magnitude of positive earnings management (H1C). To do so, we further refine the definition of earnings management by identifying firms that have highly positive vs. less positive earnings management by splitting at the median value of *PosEM( )*, resulting in *HighPosEM( )* and *LowPosEM( )*. In Table 7, coefficients for $MBE \times HighPosEM(DA)$ are significantly positive (coeff=0.39–0.42, $t=3.18$–6.33), indicating higher

complexity as compared to firms that beat the benchmark by more than [one | two | three] cents, supporting H1C. Coefficients for $MBE \times HighPosEM(DA)$ are also significantly larger than those of firms that missed the benchmark (β_2–β_5, $F(1, 38) = 11.72$–46.76), than those of firms that meet or just beat the benchmark with no suspected accruals earnings management (β_2–β_4, $F(1, 38) = 5.95$–6.62), and than those of firms that meet or just beat the benchmark with low-level of accruals earnings management (β_2–β_3, $F(1, 38) = 5.82$ and 6.84), with the exception of the one in Column I ($F(1, 38) = 1.73$). The magnitudes are larger than the corresponding coefficients from Table 6 by about one-third, and about twice as large as that reported in Table 4, consistent with our expectations. The coefficients for $MBE \times LowPosEM(DA)$ are also significantly positive in two of the three specifications, but with magnitudes only about half as large as for the firms with high positive discretionary accruals.

Columns IV–VI repeat the analysis with real activities earnings management. The coefficients for $MBE \times HighPosEM(RA)$ are significantly positive (coefficient=0.50–0.72, t=2.82–3.95) and statistically larger than those of any other group. Columns VII to IX combine the two sources of earnings management, with comparable results (coefficient=0.36–0.41, t=5.10–

Table 7

Third test of Hypothesis 1 – earnings management identified by MBE and magnitude of upward earnings announcement.

Panel A: The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The dependent variable is the FOG index of the MD&A section of current annual report. *PosEM( )* identifies positive earnings management. Column I–III use accruals earnings management, Column IV–VI use real activity earnings management, and Column VII–IX use a combination of the two processes of earnings management. $MBE \times HighPosEM( )$ identifies the group more likely to managed reported earnings, which comprises firms that just met or beat past year's earnings by [one|two|three] cents (MBE=1) and have above-median positive earnings management. $MBE \times LowPosEM( )$ identifies firms that meet or beat past year's earnings by [one|two|three] cents (MBE=1) and have below-median positive earnings management. Specifically,

.$HighPosEM(DA)$=1 if DA > median($DA|DA \geq 0$); $LowPosEM(DA)$=1 if $DA \leq$ median($DA|DA \geq 0$).
$HighPosEM(RA)$=1 if DA > median($RAM|RAM \geq 0$); $LowPosEM(RA)$=1 if $RAM \leq$ median($RAM|RAM \geq 0$).
$HighPosEM(Comb)$=$HighPosEM(DA)$+$HighPosEM(RA)$; $LowPosEM(Comb)$=1 if $LowPosEM(DA)$=1 and $LowPosEM(RA)$=1.

$MBE \times NegEM( )$ comprises firms that just meet or beat past year's earnings by [one|two|three] cents (MBE=1) and have no suspected upwards earnings management. The baseline is the group of firms that beat past year's earnings by more than [one|two|three] cents. Firms with performance below prior year's are identified by NegEarnChg=1. The control variables are the Li (2008) controls listed in Appendix A.

Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The t-statistics are in parentheses.

	Independent variable	Pred. Sign	Accruals earnings management $PosEM(DA)$=1 if DA > 0; 0 otherwise MBE when $\Delta EPS \in$			Real activities management $PosEM$ (RA)=1 if RAM > 0; 0 otherwise MBE when $\Delta EPS \in$			Combined $PosEM(Comb)$=$PosEM$ (DA)+$PosEM(RA)$ MBE when $\Delta EPS \in$		
			[$0, $0.01]	[$0, $0.02]	[$0, $0.03]	[$0, $0.01]	[$0, $0.02]	[$0, $0.03]	[$0, $0.01]	[$0, $0.02]	[$0, $0.03]
			I	II	III	IV	V	VI	VII	VIII	IX
β_1	$PosEM()$	?	0.038	0.038	0.037	0.003	0.003	0.004	0.021	0.021	0.021
			(1.295)	(1.292)	(1.295)	(0.089)	(0.084)	(0.108)	(1.522)	(1.510)	(1.481)
β_2	**$MBE \times HighPosEM()$**	**+**	**0.418***	**0.409***	**0.391***	**0.718***	**0.600***	**0.502***	**0.409***	**0.376***	**0.359***
			(3.175)	**(6.531)**	**(6.330)**	**(3.953)**	**(2.815)**	**(3.812)**	**(5.140)**	**(5.097)**	**(6.777)**
β_3	$MBE \times LowPosEM( )$	?	0.220*	0.165	0.183**	−0.105	0.055	0.071	0.143	0.158**	0.171**
			(1.927)	(1.683)	(2.199)	(−0.678)	(0.396)	(0.544)	(1.429)	(2.129)	(2.355)
β_4	$MBE \times NegEM( )$	0	−0.038	0.065	0.097	0.144*	0.164**	0.191***	−0.129	−0.021	0.018
			(−0.298)	(0.561)	(0.961)	(1.963)	(2.548)	(3.217)	(−1.128)	(−0.178)	(0.164)
β_5	$NegEarnChg$	+	−0.009	−0.005	−0.001	−0.009	−0.005	−0.001	−0.007	−0.004	0.001
			(−0.429)	(−0.238)	(−0.034)	(−0.515)	(−0.298)	(−0.066)	(−0.383)	(−0.178)	(0.030)
	Earnings	−	−0.393***	−0.394***	−0.394***	−0.389***	−0.388***	−0.389***	−0.389***	−0.388***	−0.388***
			(−2.908)	(−2.906)	(−2.918)	(−2.944)	(−2.962)	(−2.965)	(−2.919)	(−2.911)	(−2.923)
	Loss	+	0.257***	0.257***	0.257***	0.252***	0.252***	0.251***	0.253***	0.253***	0.252***
			(5.950)	(5.931)	(5.952)	(5.843)	(5.833)	(5.817)	(6.053)	(6.025)	(6.035)
	Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Observations		26,143	26,143	26,143	26,143	26,143	26,143	26,143	26,143	26,143
	Adj. R-Squared		12.8%	12.8%	12.9%	12.8%	12.8%	12.8%	12.8%	12.9%	12.9%
	Statistical test of										
	β_2–β_3: $F(1, 38)$=		1.73	5.82**	6.84**	9.11***	3.89*	5.22**	5.00**	4.26**	4.05*
	β_2–β_4: $F(1, 38)$=		6.62**	6.62**	5.95**	6.83**	3.59*	4.18**	12.80***	7.21**	8.05***
	β_2–β_5: $F(1, 38)$=		11.72***	46.76***	45.62***	15.39***	8.29***	14.89***	30.41***	28.14***	49.95***

Panel B: Comparison across earnings management groups (no, low, or high earnings management)

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The sample is partitioned into three groups: a group of firm-years with no suspected upward earnings management (Columns I–III), a group of firm-years with low level of upward earnings management (Columns IV–VI), and a group of firm-years with high upward earnings management (Columns VII–IX). The group of interest (*MBE*) comprises firms that met or beat past year's earnings by [one|two| three] cents. The baseline is the group of firms that beat past year's earnings by more than [one|two|three] cents. Firms with performance below prior year's are identified by *NegEarnChg* = 1. All variables are as defined in Appendix A. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

Independent variable	Pred. Sign		No earnings management $DA < 0$ and $RAM < 0$			Low earnings management Low-$PosEM(DA)=1$ or $LowPosEM(RA)=1$			High earnings management $HighPosEM(Comb) \geq 1$		
			MBE when $\Delta EPS \in$			MBE when $\Delta EPS \in$			MBE when $\Delta EPS \in$		
			[$0, $0.01]	[$0, $0.02]	[$0, $0.03]	[$0, $0.01]	[$0, $0.02]	[$0, $0.03]	[$0, $0.01]	[$0, $0.02]	[$0, $0.03]
			I	II	III	IV	V	VI	VII	VIII	IX
β_1	MBE	?/+	−0.088	0.026	0.066	0.130	0.154*	0.167**	0.416***	0.390***	0.361***
			(−0.726)	(0.207)	(0.590)	(1.321)	(1.923)	(2.160)	(3.157)	(5.195)	(5.340)
β_2	NegEarnChg	+	0.066**	0.071**	0.074**	−0.005	−0.001	0.002	−0.063	−0.059	−0.053
			(2.041)	(2.115)	(2.198)	(−0.168)	(−0.044)	(0.053)	(−1.433)	(−1.376)	(−1.245)
	Earnings	−	−0.376**	−0.376**	−0.376**	−1.049***	−1.045***	−1.044***	−0.259**	−0.259**	−0.260**
			(−2.698)	(−2.690)	(−2.693)	(−6.795)	(−6.764)	(−6.726)	(−2.035)	(−2.038)	(−2.058)
	Loss	+	0.221***	0.221***	0.221***	0.230***	0.229***	0.229***	0.239***	0.239***	0.239***
			(3.275)	(3.258)	(3.248)	(3.138)	(3.134)	(3.133)	(6.971)	(6.977)	(7.096)
	Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Observations		7,886	7,886	7,886	8,356	8,356	8,356	9,901	9,901	9,901
	Adj. R-Squared		14.1%	14.1%	14.1%	11.1%	11.1%	11.1%	11.3%	11.3%	11.4%
	Statistical test										
	$\beta_1 - \beta_2$; $F(1, 37) =$		1.84	0.16	0.01	1.82	3.61*	4.47**	17.32***	35.63***	35.27***

6.78). These results suggest that those firms most likely to have used income-increasing discretionary accruals to meet or beat prior performance have MD&A reports that are more complex by about 4/10th to 8/10th of a year of formal education when compared to firms that either miss the benchmark, or beat the benchmark by more than [one|two|three] cents, which is a material difference.

To obtain an alternative look at the differences in Fog as a function of earnings management, we partition the sample based on the extent of accrual or real earnings management. In Table 7, Panel B, the first group comprises all firm-years with no suspected upward earnings management by accruals or real activities (Columns I–III). The second group comprises firm-years with low levels of upward earnings management using accruals or real activity (Columns IV–VI). The third group comprises firm-years with high level of upward earnings management using either accruals or real activity (Columns VII–IX). When we compare firms with no suspected upward earnings management (i.e., when $DA < 0$ and $RAM < 0$) in Column I–III, the *MBE* firms have a similar level of readability as non-MBE firms. Moving to cases with low positive discretionary accruals or low real earnings management in Columns IV–VI, the coefficients increase in magnitude and are significant in some specifications. For cases with high positive earnings management in Columns VII–IX, the coefficients on *MBE* are the highest and statistically most significant (coeff = 0.36–0.42, t = 3.2–5.34). We reach similar conclusions when we compare MBE firms against firms that missed the benchmark ($\beta_1 - \beta_2$, ($F(1, 37)$ = 17.32–35.63)).

3.7. Supplemental robustness tests

We conduct six robustness checks to confirm our results above. For brevity, we present results based on the most specific definition of earnings management that we just used to test H1C (i.e., using *MBE* × *HighPosEM*( )). Also, we present results only for MBE defined to be $\Delta EPS \in$ [$0, $0.03]. Table 8 shows these results. Panel A shows regression estimates when we include firm-level fixed effects (Column I) or when we include lag(*Fog*) as an independent variable (Column II) to control for persistence in readability. These specifications are likely to be overly conservative due to overfitting; indeed, the explanatory power is around 70% in R^2. Nevertheless, the coefficient on *MBE* × *HighPosEM(Comb)* remains significantly positive, although the magnitude of the coefficient is lower compared to those in the previous tables. When compared to firms that missed the benchmark, we find that firms that are more likely to have managed earnings (*MBE* × *HighPosEM(Comb)*) exhibit more complex disclosures even though they are disclosing good news. The coefficient on *MBE* × *LowPosEM(Comp)* is no longer significant.

Panel B explores the results' robustness to using other discretionary accrual models. Column I uses the modified Jones model of Dechow et al. (1995) to measure discretionary accruals, and the results remain essentially the same as those reported in Table 7, which uses the simpler Jones (1991) model. Column II uses the performance-matched accrual model of Kothari et al. (2005). Again, the results are very similar to those reported in Table 7 except that the coefficient on $MBE \times LowPosDA$ is no longer significant, which is similar to what was found with firm-level fixed effects in Panel A.

Panel C of Table 8 considers the zero-earnings benchmark, instead of the zero earnings *change* benchmark we have examined in all the above analyses. We again observe very consistent results: whether we look at discretional accruals, real activities management, or both combined, the Fog score is higher for firms that meet or just beat the zero earnings benchmark and have high amounts of income-increase earnings management (coefficient=0.26–0.41; t=2.31–4.43) as compared to firms that beat the benchmark by more than three cents. The magnitudes of the coefficients are similar to that found previously (compare with Table 7A Columns III, VI, and IX).

In Panel D of Table 8, we isolate the set of firms with earnings changes just above and below zero for a more focused comparison. This is a small sample consisting of 1,501 firm-years with $\Delta EPS \in [-\$0.03, \$0.03]$. When we compare firms with $\Delta EPS \in [\$0, \$0.03]$ vs $\Delta EPS \in (-\$0.03, \$0.00)$, we find significant positive coefficients on $MBE \times HighPosEM()$, with magnitude similar to that found above (coefficient=0.259–0.435, t=2.20–2.85). Furthermore, we find the coefficient values of the same magnitude as that shown in Fig. 1, which showed a difference in Fog of 0.32 between firms that MBE vs. firms that just fell short.

Panel E of Table 8 analyzes a subset of that used in Panel D with high positive earnings management. Again, the results are similar.

Finally, in untabulated analysis, we also considered whether earnings management systematically increased disclosure length. We repeat our analyses by substituting word count in place of the Fog index as the dependent variable and did not observe significant results.

3.8. Additional tests – Evaluating the assumption that MD&A is important to investors and management

A maintained assumption throughout our analysis is that investors do find useful information in MD&A disclosures, and with rational expectations, management believes that the disclosures do matter to investors. In other words, we assume management is not merely fulfilling a legal obligation to provide the MD&A as part of its 10-K report filed with the SEC. This assumption underpins (i) why management wants to meet or beat the previous year's earnings, and (ii) our hypothesis that management will try to obfuscate to hide any earnings management used to meet or beat the previous year's earnings. In this section, we provide evidence that this assumption is justified.

First, we consider the timeliness of the MD&A. We posit that more timely disclosures will be more useful to investors, and hence management will be more concerned about establishing a pattern of stable or increasing earnings that is required as part of the MD&A. For this analysis, we measure timeliness relative to the earnings announcement date. We identify disclosures as timely if the company files its 10-K within 7 calendar days after the earnings announcement, corresponding to the 5 trading days used in Li and Ramesh (2009). After partitioning the data, we replicate the analysis reported in Panel A of Table 7.

In untabulated analysis, we find that the coefficient on $MBE \times HighPosEM()$ is larger in magnitude when the MD&A is more timely compared with when it is more than 7 days after earnings announcement date. This is the case when we look at discretionary accruals alone (2.6 times larger), real activities management alone (1.9 times larger), or both combined (1.4 times larger),[6] however the difference is only statistically significant for the case of earnings management using accruals.

A second way we evaluate the maintained assumption of MD&A importance to investors and management is to examine analyst following. Since analyst provide an alternate source of information, we posit that MD&A disclosures are more important for firms without analyst following. Furthermore, when there is no analyst following, management has one less benchmark to beat, so the zero earnings change benchmark is likely to become more salient for such firms.

We find that the coefficient on $MBE \times HighPosEM()$ is about twice as large for firms without analyst following compared with those with analysts following, but again, only significant for the case of accruals earnings management.

Overall, we find evidence supporting the validity of our maintained assumption that MD&A disclosures are useful to investors, and it is rational for management to believe that investors use those disclosures.

3.9. Restatement and fraud cases

Thus far, we have used quantitative techniques to identify firm-years that are more likely to contain significant earnings management. Turning to the human-assisted identification of earnings management, we now look at the results. Table 9 shows the results when earnings management is identified by financial restatements that have been identified as fraudulent or relating to SEC investigations. In the first specification (Column I), the indicator variable *Restate* is significantly positive (coefficient=0.25, t=2.30), meaning that firm-years that were subsequently restated have more complex MD&A. Now, since some restatements may be small in magnitude, we incorporate the magnitude of restatement in the variable *RestateSeverityDecile*, which ranges from 0 to 10, where 10 is the decile with the largest restatement and 1 the smallest, and

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[6] We find similar results with alternate cutoffs for timeliness of 0, 3, 5 days instead of 7 days.

Table 8

Third test of Hypothesis 1 – earnings management identified by MBE and magnitude of upward earnings management – supplemental robustness tests.

Panel A – Including firm-level (instead of industry) fixed effects or lag(Fog).

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The dependent variable is the FOG index of the MD&A section of current annual report. *PosEM( )* identifies positive earnings management, measured based on a combination of discretionary accruals and real activity earnings management. *MBE × HighPosEM( )* identifies the group more likely to managed reported earnings, which comprises firms that just meet or beat past year's earnings by [one|two|three] cents (*MBE*=1) and have above-median positive earnings management. *MBE × LowPosEM( )* identifies firms that meet or beat past year's earnings by [one | two | three] cents (*MBE*=1) and have below-median positive earnings management. Specifically,.

HighPosEM(DA)=1 if DA > median(DA|DA ≥ 0); *LowPosEM(DA)*=1 if DA ≤ median(DA|DA ≥ 0).
HighPosEM(RA)=1 if DA > median(RAM|RAM ≥ 0); *LowPosEM(RA)*=1 if RAM ≤ median(RAM|RAM ≥ 0).
HighPosEM(Comb)=*HighPosEM(DA)*+*HighPosEM(RA)*; *LowPosEM(Comb)*=1 if *LowPosEM(DA)*=1 and *LowPosEM(RA)*=1.

The coefficient on *MBE × NegEM( )* identifies the incremental Fog for firms that just met or beat past year's earnings by [one|two|three] cents (*MBE*=1) and have no suspected upwards earnings management. Column I uses firm-level fixed effects and clusters instead of industry fixed effects and clusters. Column II uses lag(FOG) as an independent variable and industry-level fixed effects and clusters.

The baseline is the group of firms that beat past year's earnings by more than three cents. Firms with performance below prior year's are identified by *NegEarnChg*=1. The control variables are the Li (2008) controls listed in Appendix A.

Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

	Independent variable	Pred. Sign	MBE when $\Delta EPS \in [\$0, \$0.03]$	
			With firm fixed effects I	With lag (Fog) II
β_1	PosEM(Comb)	?	−0.005 (−0.413)	−0.009 (−0.860)
β_2	**MBE × HighPosEM (Comb)**	+	**0.131** **(2.280)**	**0.101** **(2.472)**
β_3	MBE × LowPosEM (Comb)	?	−0.018 (−0.302)	−0.035 (−0.574)
β_4	MBE × NegEM (Comb)	0	0.016 (0.234)	0.024 (0.350)
β_5	NegEarnChg	+	0.016 (1.145)	0.030*** (3.267)
	Earnings	−	−0.086* (−1.694)	−0.117 (−3.691)
	Loss	+	0.078*** (3.088)	0.086*** 5.345
	lag(Fog)			0.804*** (107.753)
	Controls		Yes	Yes
	Industry fixed effects		No	Yes
	Firm fixed effects		Yes	No
	Year fixed effects		Yes	Yes
	Observations		26,143	21,403
	Adj. R-Squared		69.4%	70.5%
	Statistical test		$F(1, 38)=$	$F(1, 4739)=$
	$\beta_2 - \beta_3$		2.89*	2.97*
	$\beta_2 - \beta_4$		0.87	1.28
	$\beta_2 - \beta_5$		2.96*	3.29*

Panel B – Discretionary accruals estimated using modified Jones model of Dechow et al. (1995), Kothari et al. (2005)

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The dependent variable is the FOG index of the MD&A section of current annual report. *Pos EM( )* identifies positive earnings management. Column I uses accruals earnings management, Column II uses real activity earnings management, and Column III uses a combination of the two processes of earnings management. *MBE × HighPosEM( )* identifies the group more likely to managed reported earnings, which comprises firms that just meet or beat past year's earnings by [one | two | three] cents (*MBE*=1) and have above-median positive earnings management. *MBE × LowPosEM( )* identifies firms that meet or beat past year's earnings by [one|two|three] cents (*MBE*=1) and have below-median positive earnings management. Specifically,

Table 8 (continued)

HighPosEM(DA)=1 if DA > median(DA|DA ≥ 0); *LowPosEM(DA)*=1 if DA ≤ median(DA|DA ≥ 0).
HighPosEM(RA)=1 if DA > median(RAM|RAM ≥ 0); *LowPosEM(RA)*=1 if RAM ≤ median(RAM|RAM ≥ 0).
HighPosEM(Comb)=*HighPosEM(DA)*+*HighPosEM(RA)*; *LowPosEM(Comb)*=1 if *LowPosEM(DA)*=1 and *LowPosEM(RA)*=1.

The Coefficient on *MBE × NegEM( )* identifies the incremental Fog for firms that just met or beat past year's earnings by [one ǀ two ǀ three] cents (MBE=1) and have no suspected upwards earnings management. Column I uses the modified Jones model of Dechow et al. (1995) to measure discretionary accruals. Column II uses the performance-matched accrual model of Kothari et al. (2005) to measure discretionary accruals: we calculate expected accruals based on 1-to-1 matching on industry (using the Fama–French 48 industries), fiscal year, and closest previous-year return on assets (ROA, measured as net income divided by lagged total assets). The baseline is the group of firms that beat past year's earnings by more than three cents. Firms with performance below prior year's are identified by *NegEarnChg*=1. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

	Independent variable	Pred. Sign	MBE when ΔEPS	
			Modified Jones I	Kothari et al. II
β_1	PosEM(DA)	?	0.022 (1.438)	0.012 (0.681)
β_2	**MBE × HighPosEM(DA)**	+	**0.353*** (6.659)**	**0.376*** (7.675)**
β_3	MBE × LowPosEM(DA)	?	0.155* (1.958)	0.078 (0.810)
β_4	MBE × NegEM(DA)	0	0.031 (0.313)	0.116 (1.361)
β_5	NegEarnChg	+	0.000 (0.016)	0.000 (0.019)
	Earnings	−	−0.388*** (−2.925)	−0.390*** (−2.921)
	Loss	+	0.253*** (6.039)	0.252*** (6.109)
	Controls		Yes	Yes
	Industry fixed effects		Yes	Yes
	Year fixed effects		Yes	Yes
	Observations		26,143	26,038
	Adj. R-Squared		12.90%	12.90%
	Statistical test			
	β_2–β_3; $F(1, 38)$=		3.48*	6.18**
	β_2–β_4; $F(1, 38)$=		8.88***	8.56***
	β_2–β_5; $F(1, 38)$=		43.29***	58.58***

Panel C – Using zero-earnings benchmark (instead of zero earnings change)

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The dependent variable is the FOG index of the MD&A section of current annual report. *Pos EM( )* identifies positive earnings management. Column I uses accruals earnings management, Column II uses real activity earnings management, and Column III uses a combination of the two processes of earnings management. *MBE × HighPosEM( )* identifies the group more likely to managed reported earnings, which comprises firms that just meet or beat zero-earnings benchmark by less than three cents (MBE=1) and have above-median positive earnings management. *MBE × LowPosEM( )* identifies firms that meet or beat zero-earnings benchmark by less than three cents (MBE=1) and have below-median positive earnings management. Specifically,

HighPosEM(DA)=1 if DA > median(DA|DA ≥ 0); *LowPosEM(DA)*=1 if DA ≤ median(DA|DA ≥ 0).
HighPosEM(RA)=1 if DA > median(RAM|RAM ≥ 0); *LowPosEM(RA)*=1 if RAM ≤ median(RAM|RAM ≥ 0).
HighPosEM(Comb)=*HighPosEM(DA)*+*HighPosEM(RA)*; *LowPosEM(Comb)*=1 if *LowPosEM(DA)*=1 and *LowPosEM(RA)*=1.

The coefficient on *MBE × NegEM( )* identifies the incremental Fog for firms that just met or beat past year's earnings by [one ǀ two ǀ three] cents (MBE=1) and have no suspected upwards earnings management. The baseline is the group of firms that beat zero-earnings benchmark by more than three cents. Firms with performance below zero-earnings benchmark are identified by *NegEarnChg*=1. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

Table 8 (*continued*)

	Independent variable	Pred. Sign	MBE when $EPS \in [\$0, \$0.03]$		
			Accruals earnings management	Real activities management	Combined
			I	II	III
β_1	*PosEM()*	?	0.041	0.005	0.025
			(1.415)	(0.135)	(1.678)
β_2	**MBE × HighPosEM()**	+	**0.406*****	**0.281****	**0.258*****
			(4.432)	**(2.312)**	**(3.919)**
β_3	*MBE × LowPosEM( )*	?	0.260*	0.073	0.192
			(2.001)	(0.482)	(1.650)
β_4	*MBE × NegEM( )*	0	0.101	0.258***	0.133
			(1.006)	(3.521)	(1.053)
β_5	*NegEarnChg*	+	0.266***	0.260***	0.261***
			(6.407)	(6.331)	(6.536)
	Earnings	–	-0.394***	-0.392***	-0.391***
			(-2.910)	(-2.932)	(-2.900)
	Controls		Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes
	Observations		26,143	26,143	26,143
	Adj. R-Squared		12.8%	12.8%	12.8%
	Statistical test				
	$\beta_2 – \beta_3$; $F(1, 38)=$		1.05	0.75	0.27
	$\beta_2 – \beta_4$; $F(1, 38)=$		4.42**	0.07	1.11
	$\beta_2 – \beta_5$; $F(1, 38)=$		4.17**	0.53	2.40

Panel D – MBE firms are compared to firms that missed the benchmark by less than 3 cents

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The sample is restricted to firm-years with $\Delta EPS \in [-0.03, 0.03]$. The dependent variable is the FOG index of the MD&A section of current annual report. *Pos EM( )* identifies positive earnings management. Column I uses accruals earnings management, Column II uses real activity earnings management, and Column III uses a combination of the two processes of earnings management. *MBE × HighPosEM( )* identifies the group more likely to have managed reported earnings, which comprises firms that just meet or beat past year's earnings by [one|two| three] cents (*MBE*=1) and have above-median positive earnings management. *MBE × LowPosEM( )* identifies firms that meet or beat past year's earnings by [one|two|three] cents (*MBE*=1) and have below-median positive earnings management. Specifically,

HighPosEM(DA)=1 if DA > median(DA|DA ≥ 0); LowPosEM(DA)=1 if DA ≤ median(DA|DA ≥ 0).

HighPosEM(RA)=1 if DA > median(RAM|RAM ≥ 0); LowPosEM(RA)=1 if RAM ≤ median(RAM|RAM ≥ 0).

HighPosEM(Comb)=HighPosEM(DA)+HighPosEM(RA); LowPosEM(Comb)=1 if LowPosEM(DA)=1 and LowPosEM(RA)=1.

The coefficient on *MBE × NegEM( )* identifies the incremental Fog for firms that just met or beat past year's earnings by [one|two|three] cents (*MBE*=1) and have no suspected upwards earnings management. The baseline is the group of firms that missed past year's earnings by less than three cents. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

	Independent variable	Pred. Sign	MBE when $EPS \in [\$0, \$0.03]$		
			Accruals earnings management	Real activities management	Combined
			I	II	III
β_1	*PosEM()*	?	−0.092	−0.211	−0.159
			(−0.491)	(−1.253)	(−1.438)
β_2	**MBE × HighPosEM()**	+	**0.259****	**0.435****	**0.272*****
			(2.286)	**(2.201)**	**(2.851)**
β_3	*MBE × LowPosEM( )*	?	0.153	0.094	0.136
			(1.299)	(0.514)	(1.425)

Table 8 (*continued*)

Panel D – MBE firms are compared to firms that missed the benchmark by less than 3 cents

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The sample is restricted to firm-years with $\Delta EPS \in [-0.03, 0.03]$. The dependent variable is the FOG index of the MD&A section of current annual report. *Pos EM( )* identifies positive earnings management. Column I uses accruals earnings management, Column II uses real activity earnings management, and Column III uses a combination of the two processes of earnings management. $MBE \times HighPosEM( )$ identifies the group more likely to have managed reported earnings, which comprises firms that just meet or beat past year's earnings by [one|two| three] cents (*MBE*=1) and have above-median positive earnings management. $MBE \times LowPosEM( )$ identifies firms that meet or beat past year's earnings by [one|two|three] cents (*MBE*=1) and have below-median positive earnings management. Specifically,

$HighPosEM(DA) = 1$ if $DA >$ median$(DA|DA \geq 0)$; $LowPosEM(DA) = 1$ if $DA \leq$ median$(DA|DA \geq 0)$.

$HighPosEM(RA) = 1$ if $DA >$ median$(RAM|RAM \geq 0)$; $LowPosEM(RA) = 1$ if $RAM \leq$ median$(RAM|RAM \geq 0)$.

$HighPosEM(Comb) = HighPosEM(DA) + HighPosEM(RA)$; $LowPosEM(Comb) = 1$ if $LowPosEM(DA) = 1$ and $LowPosEM(RA) = 1$.

The coefficient on $MBE \times NegEM( )$ identifies the incremental Fog for firms that just met or beat past year's earnings by [one|two|three] cents (*MBE*=1) and have no suspected upwards earnings management. The baseline is the group of firms that missed past year's earnings by less than three cents. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

	Independent variable	Pred. Sign	MBE when *EPS* ∈[$0, $0.03]		
			Accruals earnings management I	Real activities management II	Combined III
β_4	$MBE \times NegEM( )$	0	−0.151 (−0.928)	−0.008 (−0.093)	−0.296** (−2.032)
	Earnings	−	−0.205* (−1.866)	−0.198** (−2.136)	−0.203** (−2.030)
	Loss	+	0.370*** (3.883)	0.366*** (3.752)	0.371*** (3.843)
	Controls		Yes	Yes	Yes
	Industry fixed effects		Yes	Yes	Yes
	Year fixed effects		Yes	Yes	Yes
	Observations		1501	1501	1501
	Adj. R-Squared		19.0%	18.9%	19.4%
	Statistical test				
	$\beta_2 - \beta_3$; $F_{(1, 37)} =$		1.22	2.55	2.18
	$\beta_2 - \beta_4$; $F_{(1, 37)} =$		3.89*	4.23**	11.12***

Panel E – MBE firms with high earnings management compared to firms that missed benchmark by less than 3 cents and had high earnings management

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The sample is restricted to firm-years with $\Delta EPS \in [-0.03, 0.03]$ with high upward earnings management. Specifically, $\Delta EPS \in [-0.03, 0.03]$ and $HighPosEM() = 1$, where

$HighPosEM(DA) = 1$ if $DA >$ median$(DA|DA \geq 0)$;

$HighPosEM(RA) = 1$ if $DA >$ median$(RAM|RAM \geq 0)$;

$HighPosEM(Comb) = HighPosEM(DA) + HighPosEM(RA)$;

The baseline is the group of firms with high upward earnings management that missed past year's earnings by no more than three cents. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

Independent variable	Pred. Sign	MBE when *EPS* ∈[$0, $0.03]		
		Accruals earnings management I	Real activities management II	Combined III
$MBE \times HighPosEM$ ()	+	0.394*** (2.858)	0.755*** (6.782)	0.276** (2.544)

Table 8 (*continued*)

Panel E – MBE firms with high earnings management compared to firms that missed benchmark by less than 3 cents and had high earnings management

The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The sample is restricted to firm-years with $\Delta EPS \in [-0.03, 0.03]$ with high upward earnings management. Specifically, $\Delta EPS \in [-0.03, 0.03]$ and $HighPosEM()=1$, where

$HighPosEM(DA)=1$ if DA > median$(DA|DA \geq 0)$;

$HighPosEM(RA)=1$ if DA > median$(RAM|RAM \geq 0)$;

$HighPosEM(Comb)=HighPosEM(DA)+HighPosEM(RA)$;

The baseline is the group of firms with high upward earnings management that missed past year's earnings by no more than three cents. The control variables are the Li (2008) controls listed in Appendix A. Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

Independent variable	Pred. Sign	MBE when $EPS \in [\$0, \$0.03]$		
		Accruals earnings management	Real activities management	Com-bined
		I	II	III
Earnings	–	−0.091	−0.350***	0.133
		(−0.423)	(−2.908)	(1.026)
Loss	+	0.502***	−0.243	0.506***
		(3.349)	(−0.785)	(4.536)
Controls		Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes
Observations		475	180	531
Adj. R-Squared		14.4%	21.0%	16.4%

Table 9
Test of Hypothesis H1D and H1E – Restatement Sample.
 The table reports determinant analyses of MD&A readability as a function of earnings management. The dependent variable is the FOG index of the MD&A section of current annual report. The group of interest comprises firm-years with restatements (Column I), or the magnitude of restatement (Column II), or cases of misstatement (Column III). The control variables are the Li (2008) controls listed in Appendix A.
 Predicted signs for variables from Li (2008) are as listed in that paper's Table 2, but if the predicted sign differs from the empirical association, then we list it as "?" above. *, **, and *** indicate significance at the 10%, 5%, and 1% levels (two-tailed test). The *t*-statistics are in parentheses.

Independent variable	Pred. Sign	I	II	II
Restated	+	**0.254****		
		(2.297)		
RestateSeverityDecile	+		**0.036****	
			(2.156)	
Misstated	+			**0.318****
				(2.076)
Earnings	–	−0.377***	−0.377***	−0.377***
		(−2.813)	(−2.815)	(−2.802)
Loss	+	0.244***	0.245***	0.245***
		(6.128)	(6.1)	(6.091)
Controls		Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes
Observations		26,967	26,967	26,967
Adj. R-Squared		12.80%	12.80%	12.70%
Restating/Fraud firm-years		659	659	114

0 for no restatement. Column II shows that the result using this variable is also significantly positive (coeff=0.036, t=2.16). Column III looks at the AAER sample of misstatements. Again, we find that firm-years with earnings management have less readable MD&A (*Misstated* coefficient=0.32, t=2.08).

In sum, we find consistent and robust evidence supporting Hypothesis 1 with different definitions of earnings management, different accrual models, controlling for different fixed effects, using a placebo test, using mechanical as well as human detection of earnings management.

4. Discussion and conclusion

This paper extends the readability analysis of Li (2008). Beyond the overall negative relations between the Fog Index and financial performance (i.e., the positive relationship between readability and performance), we hypothesize and document a disruption to that overall pattern. In the region where a firm meets or just beats the prior year's earnings, the Fog score increases and readability deteriorates. The effect is larger when we focus on subsets of firms within this neighborhood of earnings performance that are more likely to have engaged in accruals or real activities management to increase earnings. Overall, we find consistent and robust evidence that firms that are likely to have managed earnings to meet or beat the benchmark of the prior year's earnings on average have more complex MD&A reports. We find similar results for firms that meet or just beat the zero earnings benchmark.

If the ontological explanation proposed by Bloomfield (2008) were a sufficient explanation (i.e., that good performance is inherently easier to communicate than bad performance), then we should not observe the pattern we found. Our evidence suggests that, at least for firms that are most suspected of having managed earnings, obfuscation is involved in making the financial report more difficult to read.

Our results are also consistent with the commonly held belief, supported by empirical evidence, that telling the truth is easier than telling lies (Hancock et al., 2007). Lying is difficult if it is to be convincing because the communicator has to ensure the consistency of the purported "facts." While earnings management in many cases do not outright fall into the category of lying, the activity does involve some active efforts on the part of management to bias the financial statements through accruals or other means. Such actions create a discrepancy between unmanaged performance and reported performance, creating cognitive dissonance, which can make it mentally more taxing to explain reported performance when management knows the underlying unmanaged performance to be different. Earnings management also challenges managers' ethical standards, which again can cause cognitive stress, which can be indirectly connected to the readability of their writing.

While we believe that active obfuscation and cognitive dissonance contribute to decreased readability, both causes are observationally equivalent in our analysis and we are unable to distinguish between the two. Future research can seek to disentangle them.

Further research can also go beyond readability and explore how the specific content of the MD&A relates to benchmark beating and earnings management. For instance, do firms suspected of having managed earnings use different pronouns or a more passive writing style? Another avenue is to investigate other earnings benchmarks and the corresponding disclosures that would focus on those benchmarks (e.g., meeting or beating market expectations and conference calls).

Appendix A. Variable definitions

Readability variables.
$Fog = 0.4 \times$ (words per sentence + percent of complex words).
Variables in test of Hypothesis 1.
$\Delta EPS =$ change in EPS from year $t-1$ to t.
$NegEarnChg = 1$ if $\Delta EPS < 0$.
$MBE = 1$ if ΔEPS falls in the neighborhood from zero to a small positive number; 0 otherwise. (The small positive number is identified in each test.).
$DA =$ discretionary accruals estimated using the Jones (1991) model; in robustness tests, discretionary accruals are estimated using the modified Jones model of Dechow et al. (1995), or the performance-matched model of Kothari et al. (2005).
$PosEM(DA) = 1$ if $DA \geq 0$; otherwise 0. Indicates income increasing earnings management using discretionary accruals.
$HighPosEM(DA) = 1$ if $DA > \text{median}(DA|DA \geq 0)$; otherwise 0.
$RAM =$ real activities earnings management $= -(\Delta \text{R\&D expense} + \Delta \text{Advertising expense})/\text{total assets}$.
$PosEM(RA) = 1$ if RAM 0; otherwise 0. Indicates income increasing earnings management using real activities.
$HighPosEM(RA) = 1$ if $RAM > \text{median}(RAM|RAM \geq 0)$; otherwise 0.
$PosEM(Comb) = PosEM(DA) + PosEM(RA) = \{0, 1, 2\}$. Identifies firm-years that have income increasing earnings management using either discretional accruals or real activities, or both.
$HighPosEM(Comb) = HighPosEM(DA) + HighPosEM(RA) = \{0, 1, 2\}$.
$Restated = 1$ if restatement in Audit Analytics is identified as (i) relating to fraud or (ii) being initiated by or resulted in an SEC investigation.
$RestateSeverityDecile =$ decile rank of (total dollar change in Net Income due to the restatement scaled by Total Assets).
$Misstated = 1$ if a firm-year was reported in an AAER (SEC Accounting and Auditing Enforcement Release.).
$Earnings =$ operating earnings deflated by total assets at the fiscal year-end.

Loss = 1 if *Earnings* < 0.

Size = log of market value of equity at fiscal year-end.

MTB = (market value of equity + book value of liabilities)/book value of total assets, measured at the end of the fiscal year.

Age = number of years since a firm first appears in the CRSP monthly stock return file.

SpecItems = amount of special items divided by total assets.

EarnVol = standard deviation of operating earnings during the prior five years.

RetVol = standard deviation of monthly stock returns in the prior year.

NBSeg = natural log of the number of business segments.

NGSeg = natural log of the number of geographic segments.

NItems = number of items in Compustat with non-missing values.

M&A = 1 for firm-years in which a company is an acquirer according to SDC Platinum M&A database; 1 otherwise.

SEO = 1 for firm-years in which a company has a seasoned equity offering according to SDC Global New Issues database; 0 otherwise.

Delaware = 1 if the firm is incorporated in Delaware; 0 otherwise.

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