

MATERIALITY AND THE LENGTH OF MISSTATEMENT DETECTION PERIODS

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Abstract

In this paper, I examine if misstatement materiality motivates managers to shorten misstatement detection periods. Following the literature, I find that management shortens the gross detection period by about 116 days for material misstatements than for the immaterial misstatements. The impact of materiality is even more evident for the disclosure of serious (fraud/SEC investigated) than non-serious (error-related) misstatements. In order to reduce the confounding factor – SEC 2004 mandates disclosure of material misstatement within four business days – I estimate net detection periods and find consistently that they are negatively associated with materiality. Additional tests using misstatement severity and cumulative income effect in non-BigR firms as alternative measures of materiality yield consistent results. All three tests alleviate the concern that my finding is mechanical due to the regulatory requirement on disclosure. Further test shows that non-earnings related components of materiality contribute to shorter detection periods as well. Finally, I provide

evidence that among material-misstating firms the litigation risk is lower for earlier disclosers than for the later. This finding explains why management would like to shorten the detection period of material misstatement.

INTRODUCTION

This paper examines the impact of materiality on the length of misstatement detection periods (MDPs). Firms do not disclose the exact misstatement identification date in most cases due to the lack of regulations on this disclosure requirement. Therefore, the extant literature examines gross MDPs – the length of time from the end of the misstated period to the date of disclosure – in misstatement studies (Karpoff and Lou, 2010; and Hirschey et al., 2015). A shorter period enhances the usefulness of information by providing capital market participants with more timely information about misstatements.¹ This timeliness in revelation is a critical means to protect investors' interest as well (Skinner 1994 and 1997). Given that material misstatements result in severe negative market responses (Palmrose et al. 2004), hence are more detrimental to investors' interest, it is desirable to disclose them even earlier. Therefore, the Securities and Exchange Commission (SEC) requires that firms disclose material misstatements by filing Form 8-K item 4.02 (big R) within four business days if management makes a non-reliance judgement by concluding that the correction of these misstatements would alter investors' decisions (SEC 2004, Release No. 33-8400). However, there is no conclusion on whether and to what extent materiality drives management to shorten MDPs.

¹ Chapter 3 of SFAC No. 8, Conceptual Framework for Financial Reporting issued by FASB and Framework for the Preparation and Presentation of Financial Statements issued by IASB both emphasize that timeliness is one of the four characteristics that enhance the usefulness of accounting information.

The second motivation of this paper is to investigate the relations between litigation and the length of MDPs.² Disclosure of bad news literature ignores misstatements when examining the association between timely disclosure and litigation because timely disclosure of misstatements is less likely to decrease the incidence of litigation (Field et al., 2005 and Donelson et al., 2012). However, misstatements could be either immaterial or material. This difference in materiality merits more in-depth investigation. Even though material misstatements are less likely to avoid litigation than immaterial ones, it is unclear if timely disclosure could reduce litigation for a material misstatement firm in a within-group setting. This paper aims at examining all the issues above.

Timely detection and disclosure of misstatements, especially the material ones, play a critical role in protecting investor interest. The new millennium comes with a wave of financial scandals, such as Enron, Worldcom, Tyco, Healthsouth, Freddie Mac, etc.³ In the Enron scandal, management had to restate financials from 1997 through 2000. However, from the end of the restated period to the announcement of restatements on October 16, 2001, it took the public about 300 days to learn that Enron executives committed an accounting fraud. Investors suffered a disastrous \$74 billion loss. Should managers have revealed the materially misstated financials to the public earlier, a significant number of investors would have been able to avoid losses by refraining from investing in Enron.

Then, on average, does materiality drive managers to discover and disclose misstatements earlier? Reduction of litigation theory suggests that a timely revelation of material misstatement lowers the costs of litigation by weakening plaintiffs' claim that management violates Rule 10b-5 by misstating material fact with intent (elements 2 and 3 of Rule 10b-5), and reducing the

² The disclosure time for material misstatements is almost unified due to SEC 2004 requirement. Earlier disclosure implies a short detection period. Therefore, these two terms are used interchangeably in this paper.

³ For more details, see the Top 10 Worst Corporate Accounting Scandals of All Time at <http://www.accounting-degree.org/scandals/>.

size of plaintiffs and the magnitude of negative market response (Skinner 1994). In addition, management may choose to report material misstatements in a timely manner to demonstrate their competence, lower future costs of capital as well as comply with SEC requirements. SEC 2004 mandates disclosure of material misstatements in Section 4.02 of an 8-K filing within four business days of management's initial non-reliance judgment, while giving management leeway to disclose immaterial errors through other less apparent channels, such as press releases or other SEC filings, with significant delays. Given that a material misstatement has a significantly more negative impact on stock returns (Palmrose et al., 2004), managers may exercise extra effort in scrutinizing material accounting errors. The above argument suggests that management has incentives to shorten the length of MDPs.

On the other hand, agency theory suggests a delay in the detection and disclosure of material misstatement or an underestimate of materiality. Material misstatements may cause significant negative market reactions, such as negative abnormal returns, more executive turnover, higher litigation risks, poorer reputation in the labor market, higher cost of equity capital, tighter loan contracting terms, and loss in credibility of financial reports, etc (Hribar and Jenkins, 2004; Desai et al., 2006; Graham et al., 2008; Plumlee and Yohn, 2008; Wilson, 2008; Collins et al., 2009; and Burks, 2010). For the purpose of delaying/reducing the above negative impact, management may prolong MDPs by putting off the recognition date of non-reliance judgment, which triggers the mandatory disclosure. Alternatively, managers may choose to disclose material misstatements as immaterial, but still make timely disclosures. Because materiality is subject to management's evaluation using quantitative and qualitative criteria, Thompson (2017) provides empirical evidence that managers have the ability to exercise their discretion in the qualitative judgement to classify more restatements as immaterial and avoid Form 8-K filings.

In view of the conflicting predictions based on the above theories, I empirically examine the association between materiality and the length of MDPs. I use Form 8-K filings (BigR) provided

by Audit Analytics to capture the materiality of misstatement. This measure better reflects management's perception on the materiality of MDPs and is developed based on both qualitative and quantitative criteria, hence greatly reducing measurement errors. The sample period spans from August 23, 2004 to December 31, 2015. This sample period provides an opportunity to measure gross MDPs and estimate net MDPs. After controlling for factors affecting the complexity of financial reporting, I find that, on average, firms detect and disclose material misstatements 116 days earlier than immaterial ones in a pooled sample of 2,566 observations. I observe similar results when using firms filing both material and immaterial misstatements in a given year as a natural experimental setting and in a cross-sectional test. Additional tests show that management complies with SEC 2004 requirements by reporting material misstatements earlier, regardless of the external classification on severity. However, MDPs of material serious (fraud/SEC investigated) misstatements are about 70 days shorter than material non-serious (accounting/clerical error caused) misstatements. Among the control variables, I notice that corporate social responsibility (CSR) also contributes significantly to the timeliness of disclosing misstatements in the pooled sample and cross-sectional subsamples.

One alternative explanation to my finding is that the observed difference in the length of detection periods between material and immaterial misstatements is mechanical due to the four-business-day disclosure requirement in SEC 2004. I address this issue in three ways. First, assuming all material misstatements are disclosed on the fourth day after identification, I estimate net MDPs by subtracting four business days from gross MDPs for material misstatements, hence eliminating the mechanical impact of SEC 2004 on the disclosure time. Following Palmrose et al. (2004), I use the cumulative earnings impact of restatements as a measure of materiality for Form 8-K filing firms and conduct a within-sample test. Second, I use restatement severity as another proxy for materiality. Serious restatements either involve fraud or receive SEC investigations, hence must be material to investors

and creditors. Even though the Spearman test shows significant positive correlation between serious restatements and BigR, I do not eliminate BigR serious restatements in the test because it would result in a very small sample size.⁴ Third, I use the cumulative earnings impact of restatements as a measure of materiality, but test on non-Form 8-K filers, because their disclosure time is not subject to SEC 2004 requirement. All three tests generate results that are qualitatively consistent with our primary findings. They provide further evidence that materiality is the driving force behind management's timely detection and disclosure of misstatements.

Another confounding factor for the above results is the difficulty in detecting material misstatement. It is possible that the larger the scale of misstatements, the easier it is to identify them. I relieve this concern by testing if qualitative components of materiality – factors not related to the magnitude of cumulative earnings effect – affect timeliness. The result shows that the other aspects of materiality enhance the timely disclosure of misstatement as well.

Next, I examine the impact of the timely disclosure of materiality on the likelihood of litigation. Donelson et al. (2012) provide evidence that timely disclosure of bad earnings news lowers the probability of litigation. Files (2012) finds that cooperation with the SEC increases restatement firms' likelihood of sanction. However, the SEC may reward those firms that cooperate and make forthright disclosures with lower monetary penalties. Based on these findings, I posit and find that timely disclosure of materiality decreases the probability of litigation within the group of material-misstating firms.

My paper contributes to the literature in multiple ways. First, this paper extends Hirschey et al. (2015) by better gauging the impact of materiality on the length of detection periods. The

⁴ Over 50% of serious restatements are disclosed through Form 8-K filing. An elimination of these firms would leave only dozens of serious restatement observations in the sample.

sample period in Hirschey et al. (2015) spans from 1997 to 2006. Even though Hirschey et al. (2015) include Form 8-K filings as one control variable, most sample firms did not disclose materiality via Form 8-K from 1997 to August 23, 2004. Results reported in Table 4 of Hirschey et al. (2015) show that Form 8-K filings shorten detection periods by less than two days.⁵ It is possible that the impact of materiality is underestimated due to the mixture of pre- and post-SEC 2004 data. Using mandatory filings after SEC 2004, I find a much more significant effect of materiality on shortening detection periods.

Furthermore, this paper provides evidence that the impact of materiality on the detection period is not mechanically driven by SEC 2004 requirements. I use the cumulative earnings effect of restatements as an alternative proxy for materiality and conduct tests on net MDPs of Form 8-K filers and gross MDPs of non-Form 8-K filers, hence eliminating the impact of SEC 2004 on the length of detection periods. Furthermore, I use misstatement severity from a third party's perspective as an alternative measure of materiality. All results show consistently that materiality lessens the length of MDPs. To my knowledge, this paper is the first one that estimates net MDPs by using Form 8-K filings in the literature.

Third, I provide evidence that earnings impact is not the sole concern of materiality that pushes managers to detect and reveal misstatements earlier. An examination of material misstatements that are irrelevant to earnings shows that management discloses them significantly earlier than immaterial misstatements. However, due to the small sample size, I cannot pinpoint the specific qualitative factor(s) that plays a critical role in motivating timely disclosures.

Fourth, this paper contributes to the bad news disclosure literature. Consistent with the assumption of higher litigation risk

⁵ Even though Hirschey et al. (2015) include additional Audit Analytics samples from 2006 to 2010 in robustness tests, they provide no detailed result of the effect of materiality in the post-SEC 2004 period.

for material misstatement in the bad news disclosure literature, I find that materially misstating firms are more likely to be sued than those immaterially misstating firms are. However, further studies show that within the group of materially misstating firms, timely disclosure of misstatements decreases the likelihood of litigation, relatively. To my knowledge, this finding is documented for the first time in the bad news disclosure literature.

My research has significant implications for academia, investors and market regulating bodies. First, given that the disclosure period is somewhat fixed for material misstatements, management can manipulate only the discovery period. Future research may concentrate on the net detection period and identify motivations behind discovery period manipulations. Second, I provide evidence that most managers exercise their due diligence in identifying and revealing material misstatements across time. Third, investors and regulators may use my findings to evaluate if a firm is making a timely announcement of restatement(s). Significantly longer-than-expected detection periods may serve as a signal of managers' unwillingness or incompetency in discharging its due diligence. Then, investors should be more cautious when considering including these firms into their portfolio, while regulators may launch investigations into whether management is complying with legal requirements.

The rest of the paper is organized as follows. Section 2 reviews the length of detection period literature and develops hypotheses. Section 3 describes the data and sample selection. Section 4 discusses the model specification and empirical results, while Section 5 provides my conclusions.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Timely disclosure of misstated financials is desirable for the protection of investors' interest. The SEC requires firms to restate financials due to misapplication of accounting standards, fraud, misrepresentation, or accounting errors. The extant literature

shows that several papers have investigated what factors shorten each stage of restatements, including the period misstated, misstatement identification and disclosure period, quantitative detail revelation (dark) period, and the time thereafter (See Figure 1 for a timeline of restatement periods). For example, Singer and Zhang (2018) document that audit firm tenure is positively associated with the period misstated. Hirschey et al. (2015) examine a sample from 1997 to 2006 and find stronger corporate governance, but not characteristics of restatements, expedites the discovery and disclosure of misstatements. Schmidt and Wilkins (2013) set their focus on a “dark period”, the number of days between restatement announcement dates and detailed quantitative information revelation dates. They report negative associations between the dark period and audit quality and audit committee expertise. Badertscher and Burks (2011) provide evidence that fraud investigations prolong the restatement disclosure period, hence delaying subsequent earnings announcements and SEC filings. Studies focusing on materiality document that managers are more likely to waive qualitatively material misstatements, but auditors are striving to maintain their independence and audit quality in the disclosure of material misstatements (Keune and Johnstone, 2012; Jadallah, 2017; Thompson, 2017).

However, the relations between materiality and the length of MDPs is underexplored. Even though Hirschey et al. (2015) control for Form 8-K filings in their MDP model, it is mainly due to the concern of the mechanical impact of SEC 2004. It is unclear if materiality motivates management to shorten the length of MDPs. Furthermore, the effect of materiality on the detection period is potentially under-estimated, because the materiality of a majority of their sample misstatements is not captured by their measure.⁶

⁶ The sample period in (Hirschey et al. 2015) covers eight voluntary and two mandatory Form 8-K disclosure years and they conduct one test on a pooled sample. It is highly possible that a large number of firms disclosed misstatements that met quantitative and/or qualitative material criteria in a timely manner, but not through Form 8-K filings before SEC 2004. Thus, the

I posit that that materiality promotes management to disclose misstatements in a timely manner to lower litigation risk, show their competence, and cooperate with auditors. Litigation against managers is one of the severe consequences of misstatements. Litigation reduction theory hypothesizes that timely disclosure of bad news could decrease litigation risk. Plaintiffs who have filed a case against managers most often need to provide evidence of violations of Rule 10b-5 (Skinner 1994). They need to show five elements under Rule 10b-5: “(1) a misstatement or omission of (2) a material fact (3) made with intent (4) that the plaintiff justifiably relied on (5) causing injury in connection with the purchase or sale of securities” (Skinner 1994, page 4). By definition, material misstatements meet the first two elements. Chapter 3 of SFAC No. 8 defines “materiality” as “Information is material if omitting it or misstating it could influence decisions that users make on the basis of the financial information of a specific reporting entity”. If managers conclude that misstatements are material, they must have affected the plaintiff’s decisions. Therefore, it satisfies element (4). Palmrose et al. (2004) provide evidence that misstatements result in significant losses to investors. It is not hard for plaintiffs to cite this finding and negative market returns around the misstatement announcement date to show element (5). The challenge is to prove that managers committed misstatements intentionally. If managers detect and disclose misstatements in a timely manner, it is hard for plaintiffs to prove that managers misstated information with intention. It is more likely that a judge will decide to dismiss the lawsuit. Even if the lawsuit proceeds, a timely detection and disclosure would minimize the number of investors affected by the misstatement, hence reducing the size of the plaintiff class and the amount of compensation to them.

Reputation theory suggests that the ability to detect and disclose material misstatements is a demonstration of

impact of materiality is underestimated when using Form 8-K filings as a surrogate.

management's competence as well. The sooner management detects the misstatement, the higher ability it proves to investors, hence maintaining or facilitating the reestablishment of the business' finance credibility (Desai et al., 2006; and Hennes et al., 2008). Furthermore, Graham et al. (2015) point out that the forthright communication of bad news to investors may help build an image of transparency to outsiders – another critical reputational asset. Perceived higher transparency reduces the cost of capital and promotes future return on investment. Consequently, it may regain investor confidence in managers' ability to operate the business.

Benefits from long-term auditor-client relations may motivate management to cooperate with auditors in joint detection of material misstatements as well. Ghosh and Moon (2005) provide evidence that investors perceive higher earnings quality for longer auditor tenure and earnings response coefficients from returns-earnings regressions are higher for extended tenure. The long time relationship is at risk in the case of misstatements. The theory of reputation protection suggests that auditors are unwilling to agree on waiving material misstatements if that move threatens their most valuable asset – reputation – and brings in higher litigation risks. Even when there is an increase in audit fees, auditors are unwilling to tolerate any manipulations because the downside income risk and litigation risks are elevated (Larcker and Richardson, 2004; and Keune and Johnstone, 2012). The theory of reputation protection also suggests that auditors will strive to identify any material misstatements in a timely manner so as to better protect their reputation. Failure to cooperate with auditors are likely to jeopardize the auditor-client relationship. Therefore, a better choice for management is to cooperate with auditors. This cooperation may facilitate joint identification of material misstatements and help sustain a longer relationship with auditors.

Taken together, the above discussions suggest negative relations between materiality and the length of MDPs as stated in the first hypothesis:

H1: Materiality of misstatement is negatively associated with the length of the misstatement detection period.

On the other hand, competing theories suggest a delay in the detection and disclosure of material misstatements. Agency theory suggests that management has incentives to extend the length of detection periods or even waive the materiality resolution by exercising its control in the process. Misstatement detections are attributable to firms, auditors and the SEC (Hribar and Jenkins, 2004; Palmrose et al., 2004; and Keune and Johnstone, 2012). Palmrose et al. (2004) document that firms are the major force in identifying and announcing misstatements. Even if auditors are the ones who first identify misstated accounts, they need to inform client managers and audit committees of misstatements and reach a resolution with them on restatement materiality (Keune and Johnstone, 2012). During the materiality judgement process, the role of managers, auditors, and audit committees in resolving detected misstatements is not publicly observable (Kinney and Libby 2002; Nelson et al. 2002). The opacity gives management latitude to control, to a certain extent, the length of MDPs.

Furthermore, agency theory predicts that management would behave in its best interest when using its discretion in materiality resolutions. Career concerns might be the major driving force behind managers' decisions (Collins et al., 2009; and Kothari et al., 2009). Desai et al. (2006) document an approximately 60% turnover rate of at least one of three top positions (Chairman, CEO, or President) in the restatement firms within 24 months of the announcement of a restatement. The likelihood of executive turnover increases with the severity of restatements (Hennes et al., 2008). Even if executives save their jobs, they might be obliged to pay back part of their compensation that is deemed inappropriate due to clawback policies (Pyzoha, 2015). More transparent restatement announcements may also increase litigation risk. Files et al. (2009) examine where managers place their restatement announcement in a press release: headline, body or footnote. They find that a more prominent disclosure is associated with more

negative returns and a higher likelihood of lawsuits. Timely disclosure of misstatements is a form of transparency. Therefore, it may potentially increase the likelihood of litigation. Therefore, both executive turnover and litigation risks give management incentives to underreport material misstatements as immaterial. In this case, when these underreported “immaterial” misstatements are detected and disclosed in a timely manner, it is less likely to observe any difference between material and immaterial MDPs.

Then, the question is: is management able to manipulate the length of MDPs or even materiality? Technically, it is feasible in multiple ways. One way is to use its discretion in materiality assessment to conceal restatements (big R) into revisions (little r), but still disclose them in a timely manner. Thompson (2017) investigates management manipulation of the materiality judgements. He provides evidence that managers are more likely to use qualitative criteria to waive restatements of material misstatements, which resulted in proportional increases in revisions of immaterial misstatements in the last decade. However, based on his analysis, 40% of those financials revised should be restated. Alternatively, since SEC 2004 mandates disclosure of materiality within four business days only after the non-reliance judgement, they can delay the recognition of non-reliance discoveries, hence putting off the Form 8-K filing dates. If either way prevails, no difference would be observed in the length of material and immaterial MDPs.

Auditors play an important role in materiality resolutions. Can auditors fully prevent management from manipulating the length of MDPs and/or materiality? It is arguable if they can deter management from abusing its discretion. Auditors are economically dependent on clients since their major sources of income are from audit fees. This dependence puts pressure on auditors to allow clients to waive material misstatements so as to achieve their financial goals. Using analyst forecast consensus as a setting, Libby and Kinney (2000), Ng (2007), and Ng and Tan (2007) provide evidence supporting the theory of economic dependence. They find that auditors are more likely to give

management a free pass to waive material misstatements, especially quantitative misstatements, if the correction of these misstatements would result in missing analyst forecasts. In my setting, the theory of economic dependence suggests that auditors would allow managers to either make immaterial resolutions or delay the non-reliance decisions.

In summary, if agency theory and economic dependence theory prevail, the relations between materiality and the length of MDPs could be positive. Given the conflict between competing theories, I empirically test H1 using the archival data available in the Audit Analytics database.

The second purpose of this study is to examine the relations between the length of material MDPs and litigation. Even though I argue that litigation reduction theory may explain why management strives to shorten the length of MDPs, there is no empirical evidence to support this argument. Both Field et al. (2005) and Donelson et al. (2012) exclude misstating firms from their studies of the timely disclosure of bad news and litigation. The rationale is timely disclosure of misstatements is less likely to deter litigation. Given that material misstatements are presumed to have misled plaintiffs to make wrong decisions, the material-misstating managers are more likely to face litigation than immaterial-misstating managers are. However, these managers may compete with other material-misstating managers in disclosing misstatements sooner, so that they can demonstrate that their misstatements are unlikely to be intentional. If this strategy affects the judge's perception of management's intention, the judge is more likely to dismiss lawsuits against the firm. Therefore, I propose my second and third hypotheses as:

H2: Materiality of misstatement is positively associated with the likelihood of litigation.

H3: Among material-misstating firms, shorter detection period is associated with less likelihood of litigation.

DATA AND SAMPLE SELECTION

I test the above hypotheses by using a sample of restatements of misstated financials from August 23, 2004 - the effective date of SEC 2004 – to 2015. I identify restatement firms by using the Audit Analytics Non-reliance Restatement database. Following Jadallah (2017), I define a restatement as a big R if it is disclosed through a Form 8-K item 4.02 filing, and as a little r, otherwise. To be included in the sample, I require a sample firm have financial accounting data from the Compustat database and corporate social responsibility data from the MSCI KLD database.

Table 1						
Restatement Disclosure Sample Distribution						
Year of Disclosure	Full Sample of Misstatements		Material Restatements/Big R		Immaterial Restatements /Little r	
	# of Obs	%	# of Obs	%	# of Obs	%
2004	80	3.12	57	4.74	23	1.69
2005	395	15.39	329	27.35	66	4.84
2006	339	13.21	264	21.95	75	5.50
2007	208	8.11	145	12.05	63	4.62
2008	157	6.12	80	6.65	77	5.65
2009	190	7.40	72	5.99	118	8.66
2010	147	5.73	44	3.66	103	7.56
2011	169	6.59	53	4.41	116	8.51
2012	241	9.39	52	4.32	189	13.87
2013	278	10.83	61	5.07	217	15.92
2014	247	9.63	25	2.08	222	16.29
2015	115	4.48	21	1.75	94	6.90
Total	2566	100	1203	100	1363	100

Table 1 reports the distribution of restatements disclosed each year in the sample period, 2004-2015. The full sample column shows disclosure of all types of restatements, while the Material and Immaterial Restatements columns present the number of Form 8-K filings and non-Form 8-K filings, respectively, in the sample period.

Table 1 shows the sample distribution in each year. The screening process results in 2,566 misstatements. Among them, 1,203 material misstatements are disclosed as restatements (big R), while 1,363 immaterial misstatements are revisions (little r). Consistent with Thompson (2017), I find that the number of big R is decreasing almost monotonically from 2005 to 2015.

MODEL SPECIFICATION AND EMPIRICAL RESULTS

Model Specification

In H1, I posit that materiality motivates management to lessen the length of MDPs expressed in quarters (DetQtr), which is measured as the number of days from the end of the misstated period to the misstatement disclosure date divided by 90. DetQtr is a measure of gross MDPs because it consists of both the detection and disclosure periods. I formulate the relations between materiality and the detection period length in the following OLS regression model (1):

$$\begin{aligned} DetQtr_i = & \alpha_0 + \alpha_1 BigR_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i + \alpha_4 LogAT \\ & + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i \\ & + \alpha_9 NegEff_1_i + Fixed Industry Effects \\ & + Fixed Year Effects + \varepsilon \quad (1) \end{aligned}$$

In the base model, the explanatory variable of prime interest is the materiality dummy (BigR), which is set to 1 for a Form 8-K, item 4.02 filing after August 23, 2004 and 0 otherwise. In addition, I control for a number of variables that may affect the length of the detection period (DetQtr). The first control variable – Ethdum – is an indicator variable for corporate social

responsibility (CSR). Stakeholders and stewardship theories suggest management is morally obligated to fulfill its social responsibilities. Even if doing so may sacrifice managers' own interests, they should tailor their policies to protect the interests of other stakeholders, such as investors, workers, customers, suppliers, etc. Some studies provide supporting evidence that more socially responsible firms are less likely to engage in earnings management and fraud/SEC investigated restatements (Hong and Andersen, 2011; Kim et al., 2012; Wans, 2017). If managers weigh the moral obligation to society more heavily in their responsibilities, they would more carefully examine their accounting practices, choices and estimates. Therefore, they are more likely to discover irregularities and errors and take actions to minimize the negative impact on stakeholders' interests. In the case of auditors and the SEC initiated restatements, a socially responsible firm is more likely to cooperate in revealing irregularities and errors, hence promoting the disclosure of misstatement. Following Kim et al. (2012), I compute a CSR index as a sum of all strengths and weaknesses in the following five dimensions of CSR: community relations, diversity, employee relations, environment, and product. The CSR dummy (Ethdum) equals 1 if the CSR index is positive at the end of misstated period, and 0 otherwise.

CSR and governance are different constructs, in that corporate governance refers to a set of internal and external mechanisms that regulate managerial behaviors, whereas CSR aims at improving social and environmental conditions and benefits to all stakeholders (Kim et al., 2012). Hirschey et al. (2015) report a negative association between the detection period and the quality of corporate governance, such as the independence of the board of directors and post-restatement CEO/CFO turnovers. I control for the impact of corporate governance in model (1) as well. The Corporate governance (CGOV) score is a sum of all strengths and weaknesses in the corporate governance category in the MSCI KLD database.

In model (1), I control for firm characteristics that may affect the length of detection periods (Hirschey et al. 2015) as well. These control variables include: size (LogAT), market-to-book ratio (MB), leverage (Lev) and age (Age). Myers et al. (2013) argue that size, the natural logarithm of total assets, may affect a firm's reporting environment. Bell and Carcello (2000) document that a rapidly growing firm has incentives to engage in fraudulent accounting to inflate reported sales. For this study, it implies that management may be unwilling to reveal misstatements that, if corrected, would result in a halt/reversal of its growth trend. I calculate the market-to-book ratio (MB) as the ratio of the market value of equity to the accounting book value. Next, I use leverage (Lev), the ratio of a company's long-term debt to its total assets, and Age, the public listing time on exchanges, to control for financial distress. Firms are more likely to experience financial distress if they rely more on external financing through debt instruments or are in the early stages of their development, and younger firms are more likely to have weak corporate governance structures. Therefore, these firms are more likely to commit accounting frauds (Forez et al., 1991; Beasley, 1996). However, if a firm relies more on external financing, management might be motivated to set up forthright communication policies to reveal misstatements as soon as possible to build long-term credibility (Hirschey et al. 2015). Then, Lev would be negatively associated with the detection period (DetQtr). Based on the above discussion, I expect that management in young firms may be unwilling to disclose misstatements or make timely disclosures, but make no directional expectation on the association between the detection period and leverage.

Public auditors play a critical role in monitoring clients' accounting practice, identifying accounting errors and frauds, and correcting misstatements. However, the theories of economic dependence and reputation protection have opposite predictions on auditors' impact on materiality resolutions and disclosure policies (Libby and Kinney, 2000; Ng, 2007; Ng and Tan, 2007; Keune and Johnstone, 2012; Singer and Tang, 2018). Therefore, the impact of

auditors on detection periods remains an empirical question. I include Big 4, set to 1 for Big 4 auditors and 0 otherwise, to control for audit quality.

Palmrose et al. (2004) and Land (2010) argue that misstatements of a larger dollar amount raise more concerns to investors. Following Schmidt and Wilkins (2013) and Hirschey et al. (2015), I include the magnitude of misstatements (NegEff_1) – the amount of restated net income scaled by average total assets then multiplied by negative one – to control for misstatement characteristics in my model. I expect the greater the amount of cumulative earnings decreased by restatement, the shorter the disclosure time.

In summary, I make no directional prediction on the relations between DetQtr and BigR, LogAT and Lev. However, I expect negative impacts from Ethdum, CGOV, Age, Big4 and NegEff_1, and positive impacts from MB on DetQtr. I use a SAS Survey model to control for a clustering effect at the firm level in addition to controls of fixed industry and year effects. Appendix A lists detailed definitions of all variables.

In H2 and H3, I posit that material-misstating firms are more likely to face class actions than immaterial-misstating firms are, but the litigation risk is lower for timely material-misstatement disclosing firms in comparison to the peers. The association between the likelihood of litigation and materiality and timely disclosure is specified in logistic regression Models (2) and (3):

$$\begin{aligned}
 LTGT_i = & \alpha_0 + \alpha_1 BigR_i + \alpha_2 DetQtr_i + \alpha_3 BigR \times DetQtr_i + \alpha_4 \\
 & Ethdum_i \\
 & + \alpha_5 CGOV_i + \alpha_6 LogAT_i + \alpha_7 MB_i + \alpha_8 Lev_i + \alpha_9 Age_i \\
 & + \alpha_{10} Big4_i + \alpha_{11} HighLIT_i + Fixed Industry Effects \\
 & + Fixed Year Effects + \varepsilon \quad (2)
 \end{aligned}$$

$$\begin{aligned}
 LTGT_i = & \alpha_0 + \alpha_1 DetQtr_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i \\
 & + \alpha_4 LogAT_i + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i \\
 & + \alpha_9 HighLIT_i + Fixed Industry Effects + Fixed Year
 \end{aligned}$$

$$Effects + \varepsilon \quad (3)$$

In Models (2) and (3), the dependent variable – Litigation Risk (LTGT) – is an indicator variable set to 1 if a case has been filed against the firm subsequent to misstatement disclosure and 0 otherwise. In Model (2), I expect materiality (BigR) is positively associated with LTGT. In addition, I control for the length of the detection period (DetQtr) because an earlier disclosure of bad news lowers the likelihood of litigation (Field et al., 2005; Donelson et al. 2012). I include the interaction between BigR and DetQtr (BigR x DetQtr) in Model (2) as well, to test if earlier disclosure of material misstatements would decrease a firm's litigation risk when compared with immaterial-misstating firms. In addition to the same variables used to control for a firm's feature, I include industry-wide high litigation risk (HighLIT) because firms in biotech, computer, electronics and retail industries are more likely to be sued (Donelson et al. 2012).

Model (3) tests the association between timely disclosure and the likelihood of litigation among material-misstating firms. Therefore, I revise Model (2) into Model (3) by removing BigR and BigR x DetQtr from Model (2) and use the sample of material-misstating firms only.

Descriptive Data

Table 2

Summary Statistics for Restatement Disclosure Models

Panel A: Descriptive Statistics

Variable	Mean	StdDev	Q1	Median	Q3
DetQtr	2.22	1.81	1.37	1.61	2.74
BigR	0.47	0.50	0.00	0.00	1.00
Ethdum	0.27	0.44	0.00	0.00	1.00
CGOV	-0.21	0.72	-1.00	0.00	0.00
LogAT	7.21	1.65	5.96	7.10	8.29
MB	2.97	3.76	1.28	1.93	3.16

Lev	3.00	4.69	0.59	1.26	2.85
Age	16.83	12.85	7.00	13.00	23.00
Big4	0.88	0.32	1.00	1.00	1.00
NegEff_1	0.010	0.053	0.004	0.000	0.000
LTGT	0.26	0.44	0.00	0.00	1.00
FSECrst	0.07	0.26	0.00	0.00	0.00
HighLIT	0.30	0.46	0.00	0.00	1.00

Panel B: Spearman Correlation Matrix

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
DetQtr (1)	1.00						
BigR (2)	-0.33	1.00					
Ethdum (3)	-0.03	-0.08	1.00				
CGOV (4)	0.03	0.03	-0.02	1.00			
LogAT (5)	-0.03	-0.14	0.27	-0.20	1.00		
MB (6)	-0.04	0.09	0.06	0.01	-0.15	1.00	
Lev (7)	-0.01	0.01	0.04	-0.04	0.56	0.02	1.00
Age (8)	-0.01	-0.14	0.14	-0.08	0.30	-0.08	0.10
Big4 (9)	0.01	-0.08	0.09	-0.18	0.23	0.04	0.04
NegEff_1 (10)	-0.15	0.30	-0.04	-0.04	-0.12	0.07	-0.10
LTGT (11)	-0.10	0.16	0.06	-0.06	0.06	0.06	0.01
FSECrst (12)	-0.10	0.23	-0.03	-0.04	0.01	0.04	0.01
HighLIT (13)	-0.05	0.09	0.04	-0.07	-0.30	0.20	-0.36

Panel B continued

Variable	(8)	(9)	(10)	(11)	(12)
DetQtr (1)					
BigR (2)					
Ethdum (3)					
CGOV (4)					
LogAT (5)					
MB (6)					
Lev (7)					

Age (8)	1.00				
Big4 (9)	0.10	1.00			
NegEff_1 (10)	-0.06	0.00	1.00		
LTGT (11)	-0.09	0.01	0.13	1.00	
FSECrst (12)	-0.02	0.01	0.18	0.09	1.00
HighLIT (13)	-0.11	0.05	-0.13	0.05	0.05

This table provides summary statistics for variables used to examine the relationship between the detection period length and materiality. All variables are defined in Appendix A.

The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

Panel A of Table 2 presents descriptive statistics for the main variables. I winsorize all continuous variables at the top and bottom 1 percent of their distributions. Panel A reports that the median (mean) of DecQtr is 1.61 (2.22) quarters, suggesting that it takes half of the sample firms more than 123 days (on average about 200 days) to identify and disclose misstatements. Consistent with the sample distribution exhibited in Table 1, the median of BigR is zero, indicating that the majority of sample firms conclude that misstatements are immaterial and disclose their misstatements through less apparent channels than a Form 8-K filing. The median of Ethdum is 0, suggesting that most misstating firms are not socially responsible. On average, misstatement firms have poor Corporate Governance with a score of -0.21 and total assets of \$1.35 billion. Their average market-to-book ratio of 2.97 is higher than those reported in Dechow et al. (2011), implying they are relatively high-growth firms. The leverage ratio is 3 on average, also higher than in Dechow et al. (2011), suggesting that misstatement firms choose to finance their operations more through debt markets. The mean of Age suggests that sample firms are publicly listed for approximately 17 years on average, higher than that in Kim et al. (2012) due to the difference in sample periods. The median and third quartile of Big 4 are both 1, suggesting that most of the firms are audited by the top four public

accounting firms and that there is a lack of variance in audit quality. A mean of 0.01 for NegEff_1 indicates that, on average, restatements lead to a decrease in net income and the restated net income is one percent of average total assets. The averages for LTGT, FSECrst, and HighLIT are 0.26, 0.07, and 0.30, respectively, indicating that 26% of our sample firms have experienced class action lawsuits, 7% of them are serious-misstating firms, and 30% of them are in high litigation risk industries.

Panel B of Table 1 shows correlations among key variables. I find that the proxy for materiality (BigR) is negatively and statistically significantly correlated with detection period length (DetQtr). This finding lends support to management reputation/image theory in that reputation concerns motivate management to disclose material misstatements earlier than the immaterial ones. However, the correlations between DetQtr and most control variables are not statistically significant, with exceptions to MB and NegEff_1. The negative correlation with MB is unexpected, which suggests that firms with more growth potential are more likely to reveal material misstatements to the public earlier. The negative correlation with NegEff_1 is consistent with the expectation that management would like to accelerate the disclosure of material misstatements of larger magnitude. The correlations between control variables are moderate, with the only exception to the correlation between LogAT and Lev (correlation = 0.56). However, it seems multicollinearity is not a concern. I test variance inflation factors (VIF) in the models, with the highest VIF value being 2.10, much lower than the traditional threshold of 10.00 (Belsley et al., 1980).

Empirical Results

Table 3
Effect of Restatement Materiality on the Gross Detection Period of
Misstatements

Main	Base Model
------	------------

	Treatment			
	(1)	(2)	(3)	(4)
	Full Sample	Full Sample	Multiple Fillings	Unique Filing
Variable	Coeff.	Coeff.	Coeff.	Coeff.
Intercept	2.727*** (48.080)	3.639*** (6.745)	0.250 (0.268)	3.760*** (6.331)
BigR	-1.082*** (-15.796)	-1.294*** (-12.744)	-1.257*** (-4.191)	-1.295*** (-12.141)
Ethdum		-0.155** (-2.712)	-0.052 (-0.299)	-0.164** (-2.191)
CGOV		0.006 (0.108)	0.121 (0.765)	-0.031 (-0.558)
LogAT		0.006 (0.196)	0.048 (0.657)	-0.012 (-0.380)
MB		0.004 (0.360)	0.003 (0.128)	0.002 (0.225)
Lev		-0.006 (-0.846)	-0.005 (-0.218)	-0.007 (-0.914)
Age		-0.002 (-0.785)	0.001 (0.129)	-0.004 (-1.328)
Big4		-0.078 (-0.785)	0.047 (0.174)	-0.056 (-0.544)
NegEff_1		-0.534 (-1.286)	0.384 (0.432)	-0.647 (-1.493)
Fixed Industry Effects		√	√	√
Fixed Year Effects		√	√	√
# of Obs	2566	2566	508	2299
R-Square	0.09	0.137	0.103	0.144

This table reports coefficient estimates on variables used in examining the relationship between the detection period length and materiality. The regression equation is:

$$\begin{aligned} DetQtr_i = & \alpha_0 + \alpha_1 BigR_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i + \alpha_4 LogAT \\ & + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i + \alpha_9 NegEff_1_i \\ & + Fixed\ Industry\ Effects + Fixed\ Year\ Effects + \varepsilon \end{aligned}$$

(1)

Columns 1, 2, 3, and 4 show results without controls, with controls using the pooled sample, using firm-years with both material and immaterial misstatements, and with one type of misstatement, respectively. T-values are reported in parentheses. All variables are defined in Appendix A. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

I report test results of the impact of materiality on the detection period length in Table 3. Column 1 presents the impact of the main variable of interest without controls using the pooled sample. The coefficient estimate on BigR (-1.082, t-value= -15.796) is negative and statistically significant at the one percent level, suggesting that materiality decreases detection periods. The R-Square reported is 0.09. There are similar findings in Column 2 after including controls. The coefficient estimate on BigR is -1.294 (t=-12.744). The economic implication is that a one unit increase in materiality would lead to an earlier revelation of misstatements by 116 days. In other words, it decreases the detection period length by 58% on average. Hirschey et al. (2015) report a significant impact of materiality on detection period length as well. However, they estimate that one unit change in materiality will change the log of count of detection period by 0.276, namely two days. This underestimate of the impact of materiality could be due to the use of a sample covering from 1997 to 2006. During this period, it is hard to distinguish between material and immaterial misstatement disclosures, especially from 1997 to August 23, 2004 – the pre-SEC 2004 requirement period.

Another interesting finding is that corporate social responsibility contributes to shorter detection periods. The

estimated coefficient on Ethdum is -0.155 ($t=-2.712$), significant at the five percent level, suggesting that more socially responsible firms would detect and reveal material misstatements seven days earlier than others. However, none of the coefficients of the other control variables are significant. The R-Square increases to 0.137 after including all control variables in the base model.

One potential issue with the base model is omitted control variables. It is possible that some firm specific latent factors other than materiality are driving the observed shorter MDPs. I alleviate this concern by comparing material misstatement firms with themselves. Using firms that report both material and immaterial misstatements in the same year as a quasi-experimental setting, I rerun the tests in the base models and report results in Column 3. If materiality is not the driving force, the coefficient estimated on materiality is expected to be insignificant. However, consistent with the results in Columns 1 and 2, I find that management would discover and disclose material misstatements much faster than immaterial misstatements as evidenced by the coefficient estimate of -1.257 ($t\text{-value}= -4.191$) on BigR. When using immaterial misstatements revealed by the same firm as the control group, the coefficient estimate on Ethdum is not significant at any traditional level. This may imply that socially responsible firms do not discriminate in the timely disclosure of material and immaterial misstatements. Due to the small sample size (508 observations), the R-Square is only 0.103, slightly smaller than the full sample.

The finding in Column 3 raises another question: is it possible that the observed impact of materiality on timely disclosure in the pooled sample test is due to multiple disclosure – both material and immaterial misstatement disclosure – in the same year? I answer this question by removing immaterial misstatements in Column 3 test from the pooled sample. This process generates 2,299 observations with a single filing for each firm in one year. Column 4 presents the test results, where I find that the coefficient estimates on BigR (-1.295, $t\text{-value}=-12.141$) and Ethdum (-0.164, $t\text{-value}=-2.191$) are almost identical to the one in the full sample test. However, I observe no significant relationship between

DetQtr and CGOV and Big4, as well as other control variables in any of the above tests. The overall results in Table 3 provide supporting evidence to H1 that materiality is negatively associated with the length of MDPs.

Table 4
Effect of Restatement Materiality on Timely Disclosure of Serious and Non-Serious Restatements

Variable	(1)		(2)	
	Serious Restatements		Non-Serious Restatements	
	Coeff.		Coeff.	
Intercept	4.414 **		3.579 ***	
	(2.175)		(6.034)	
BigR	-2.796 **		-1.249 ***	
	(-2.527)		(-12.912)	
Ethdum	-0.197		-0.142 **	
	(-0.475)		(-1.976)	
CGOV	0.062		0.003	
	(0.302)		(0.062)	
LogAT	0.175		-0.006	
	(0.908)		(-0.200)	
MB	0.006		0.004	
	(0.151)		(0.349)	
Lev	-0.062 *		-0.002	
	(-1.861)		(-0.241)	
Age	-0.008		-0.003	
	(-0.386)		(-0.823)	
Big4	0.114		-0.075	
	(0.231)		(-0.741)	
NegEff_1	1.395		-0.862 *	
	(0.904)		(-1.766)	
Fixed Industry Effects	√		√	

Fixed Year Effects	√	√
# of Observations	181	2385
R-Square	0.286	0.129

This table reports coefficient estimates on variables used in examining the relationship between the detection period length and materiality when holding restatement severity constant. The regression equation is:

$$\begin{aligned}
 DetQtr_i = & \alpha_0 + \alpha_1 BigR_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i + \alpha_4 LogAT \\
 & + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i \\
 & + \alpha_8 Big4_i + \alpha_9 NegEff_1_i + Fixed\ Industry\ Effects + \\
 & Fixed\ Year\ Effects + \varepsilon \quad (1)
 \end{aligned}$$

Columns 1 and 2 show results using serious and non-serious restatement, respectively. T-values are reported in parentheses. All variables are defined in Appendix A. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Furthermore, I hold the misstatement severity level constant by splitting the sample into serious and non-serious restatement subsamples and report test results of Model (1) in Table 4. Hennes et al. (2008) and Dechow et al. (2010) advocate that research in restatements of misstated financials distinguish between serious (fraud or SEC investigated) and non-serious (clerical or accounting errors) restatements so as to provide more insights into determinants and consequences of variation in restatements. Palmrose et al. (2004) find that the cumulative abnormal return around restatements is -20% for fraud (deliberately misreporting) firms, but only -6% for the non-fraud. Given that the restatement severity level (serious vs. non-serious) is determined more by outsiders' perceptions, it may not coincide with management's materiality resolutions. The untabulated results show that during the sample period, there are 181 serious restatements and 2,385 non-serious restatements. A preliminary test shows that more than 50% of serious restatements are disclosed through Form 8-K filings, compared to less than 30% of non-serious restatements. It should be of interest to the literature to

learn the impact of interactions between self-assessed and outsider-perceived importance of misstatements on the detection period.

Table 4, Column 1 shows that the coefficient estimated on BigR is -2.796 (t-value = -2.527), indicating that if management concurs with outsiders that the misstatements are serious and material, they would disclose them 125 days before exposing immaterial but serious restatements to the public. However, the coefficient estimate on BigR in Column 2 is -1.249 (t-value=12.912), suggesting a 56-days-shorter detection period for material error restatements. A comparison between the results in Columns 1 and 2 demonstrates the critical role materiality plays in a timely detection of serious restatements.

Even though the above tests consistently show that materiality shortens the length of MDPs, a great concern is that all the above findings are mechanical due to the four-day disclosure requirement in SEC 2004. I address this concern by conducting three additional tests. First, I estimate net MDPs (Net DetQtr) by deducting four business days from gross MDPs for all Form 8-K misstatements. SEC 2004 mainly affects the disclosure time of material misstatements. I assume that all Form 8-K filings are completed exactly four business days after the materiality resolution. Deducting four business days from gross MDPs eliminate the mechanical impact of SEC 2004 on the disclosure of material misstatements. Even though the actual variance in filing could be one or two days, if materiality only promotes detection by one or two days, this measure of net MDPs will reduce the likelihood of finding a negative relationship between materiality and net MDPs. Given that all the sample misstatements are material, following Palmrose et al. (2004), I substitute materiality (BigR) with Cumulative Income Impact to capture the variance in materiality among Form 8-K filings. The relations between Net DetQtr and Cumulative Income Impact is specified in Model (1a):

$$\begin{aligned} Net\ DetQtr_i = & \alpha_0 + \alpha_1 AbsNegEff_i / NegEff_I_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i \\ & + \alpha_4 LogAT_i + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i \\ & + Fixed\ Industry\ Effects + Fixed\ Year\ Effects + \varepsilon \quad (1a) \end{aligned}$$

The variable of interest is the absolute value of cumulative earnings impact (AbsNegEff). It captures the magnitude of misstated earnings. In addition, I use the signed value of cumulative earnings impact (NegEff_1) in Model (1a) because misstatements that result in negative impact to restated earnings are more concerning to investors.

Table 5
Effect of Restatement Materiality on the Net Detection Period of
Misstatements

Variable	Base Model			
	(1)		(2)	
Intercept	1.590 ***		1.570 ***	
	(3.397)		(3.347)	
AbsNegEff	-0.912 **			
	(-2.362)			
NegEff_1			-0.836 **	
			(-2.182)	
Ethdum	-0.232 ***		-0.229 ***	
	(-2.697)		(-2.667)	
CGOV	-0.058		-0.058	
	(-0.791)		(-0.801)	
LogAT	-0.075 **		-0.073 **	
	(-2.274)		(-2.230)	
MB	-0.010		-0.010	
	(-0.759)		(-0.794)	
Lev	0.000		0.000	
	(-0.032)		(0.032)	
Age	0.003		0.003	
	(0.635)		(0.622)	
Big4	-0.046		-0.042	
	(-0.438)		(-0.397)	
Fixed Industry Effects	✓		✓	

Fixed Year Effects	√	√
# of Observations	1203	1203
R-Square	0.035	0.035

This table reports coefficient estimates on variables used in examining the relationship between the length of net detection periods and the absolute value of cumulative earnings impact (AbsNegEff) in Column 1 and the signed value of cumulative earnings impact multiplied by negative one (NegEff_1) in Column 2. The sample used in these tests are Form 8-K filers.

$$\begin{aligned} Net\ DetQtr_i = & \alpha_0 + \alpha_1 AbsNegEff/NegEff_1_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i \\ & + \alpha_4 LogAT + \alpha_5 MB_i \\ & + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i + Fixed\ Industry\ Effects + \\ & Fixed\ Year\ Effects + \varepsilon \quad (1a) \end{aligned}$$

T-values are reported in parentheses. All variables are defined in Appendix A. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 5 presents the test results using Model (1a). Columns 1 and 2 show the coefficient estimates on AbsNegEff and NegEff_1 are -0.912 and -0.836, respectively. Both coefficient estimates are significant at 5% level. The economic implication is that one standard deviation increase in the cumulative earnings impact would decreases net MDPs by about 6.7 days. These results provide further support to H1 after controlling for the mechanical impact of SEC 2004.

Second, I use Serious Restatement dummy (FSECrst) as an alternative measure of materiality and test H1 using the full sample. Even though BigR captures management's perception of materiality, some misstatements disclosed through channels other than Form 8-K are material as well from a third party point of view. However, the materiality of these misstatements are underreported, but are captured by FSECrst. A test on the sample shows that more than 40% of serious restatements are not disclosed via Form 8-K filings. I formulate the relationship between gross MDPs (DetQtr) and serious restatements (FSECrst) in Model (1b):

$$DetQtr_i = \alpha_0 + \alpha_1 FSECrst_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i + \alpha_4 LogAT$$

$$+ \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i + \alpha_9 NegEff_1_i \\ + Fixed Industry Effects + Fixed Year Effects + \varepsilon \quad (1b)$$

FSECrst equals 1 if one firm's misstatement is fraud related or receives the SEC investigation, and 0 otherwise. Both fraud and the SEC investigation are strong indicators that the misstatement is material to plaintiffs. However, more than 50% of serious restatements are disclosed through Form 8-K filing, hence inevitably highly correlated with BigR. To lessen the correlation, I also include restatements in the pre-SEC 2004 period when no BigR exists in the test and obtain a sample of 2,866 observations. If firms made non-serious restatements of material misstatements in a timely manner in the pre-SEC 2004, I would expect to observe no or less impact of FSECrst on the length of detection periods.

Third, I test the relations between materiality and gross MDPs by using non-Form 8-K misstatements. There is no mandated disclosure requirement for these misstatements under SEC 2004. Therefore, they are not subject to the mechanical influence of SEC 2004. For these misstatements, I use Cumulative Income Impact as a proxy for materiality. Because these misstatements have much less impact to earnings than material misstatements, I use Cumulative Income Impact Dummy (NegDum) in Model (1c) to capture the extreme effect:

$$DetQtr_i = \alpha_0 + \alpha_1 NegDum_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i + \alpha_4 LogAT_i \\ + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i \\ + Fixed Industry Effects + Fixed Year Effects + \varepsilon \quad (1c)$$

where NegDum is set to 1 if a correction of misstatement decreases net income by over \$20,979 and 0 otherwise. Even though the cumulative income effect of these misstatements is not high enough to be qualified as material, it is still rational to expect that higher income effect raises a greater concern to investors. This research design decreases the sample size to 675 observations. Due to the control of NegDum, I remove NegEff_1 from Model (1c).

Even though the above three research designs alleviate the mechanical impact concern, they do not exclude another possible explanation to the major finding. The observed negative association between materiality and gross MDPs could be due to the possibility that greater Cumulative Income Impact is easier to detect even if there is absence of management's incentives. I address this concern by examining if non-income related components of materiality affect the length of MDPs as well. I use Non-Income Related Material Misstatement (Non-NI BigR) as a substitute for BigR in Model (1d):

$$\begin{aligned} DetQtr_i = & \alpha_0 + \alpha_1 Non-NI\ BigR_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i + \alpha_4 LogAT \\ & + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i + \alpha_9 NegEff_1_i \\ & + Fixed\ Industry\ Effects + Fixed\ Year\ Effects + \varepsilon\ (1d) \end{aligned}$$

where Non-NI BigR is equal to 1 for material misstatement, and 0 otherwise. I conduct an OLS regression test on Model (1d) by using material misstatements that have no cumulative income impact. This requirement results in a sample size of 132 observations.

Table 6					
Effect of Alternative Measures of and Components of Materiality on Disclosure Timeliness					
Variable	(1)		(2)		(3)
Intercept	1.603 ***		2.030 ***		1.322
	(4.219)		(3.954)		(0.602)
FSECrst	-0.267 *				
	(-1.726)				
NegDum			-0.567 ***		
			(-2.639)		
Non-NI BigR					-2.257 ***
					(-3.197)
Ethdum	-0.172 **		-0.302 *		-0.815 *
	(-2.197)		(-1.737)		(-1.741)

CGOV	-0.122 ** (-1.991)	0.013 (0.109)	0.289 (0.866)
LogAT	-0.012 (-0.412)	-0.011 (-0.219)	0.312 (1.439)
MB	-0.007 (0.747)	-0.031 (-1.576)	-0.053 (-0.541)
Lev	-0.009 (-1.189)	0.020 (1.267)	0.005 (0.063)
Age	0.002 (0.760)	-0.004 (-0.740)	-0.021 (-0.978)
Big4	0.074 (0.733)	0.095 (0.492)	-0.490 (-0.673)
NegEff_1	-1.791 *** (-3.792)		
Fixed Industry Effects	✓	✓	✓
Fixed Year Effects	✓	✓	✓
# of Observations	2866	675	132
R-Square	0.050	0.055	0.257

This table reports coefficient estimates on variables used in examining the relationship between the detection period length and alternative measures – serious misstatement (FSECrst) in Column 1 and negative income impact (NegDum) in Column 2 – and non-income related components (Non-NI BigR in Column 3) of materiality. Column 1 includes observations from pre- and post-2004 periods, Column 2 excludes restatements disclosed in Form 8-K to eliminate the mechanical impact of SEC 2004, while Column 3 uses restatements of misstated financials that have no income effect.

$$\begin{aligned}
 DetQtr_i = & \alpha_0 + \alpha_1 FSECrst/NegDum/Non-NI\ BigR_i + \alpha_2 Ethdum_i \\
 & + \alpha_3 CGOV_i + \alpha_4 LogAT + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i \\
 & + \alpha_8 Big4_i + \alpha_9 NegEff_1_i + Fixed\ Industry\ Effects \\
 & + Fixed\ Year\ Effects + \varepsilon \quad (1b, 1c, 1d)
 \end{aligned}$$

T-values are reported in parentheses. All variables are defined in Appendix A. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Columns 1, 2, and 3 of Table 6 show test results by using Models 1b, 1c, and 1d, respectively. The coefficient estimates on FSECrst, NegDum and Non-NI BigR are -0.267 (t-value=-1.726), -0.567 (t-value=-2.639), and -2.257 (t-value=-3.197), correspondingly. All coefficients are significant at the 10% level, at least. Consistent with the findings in Table 4, the alternative measures of materiality are negatively associated with the length of MDPs, hence providing further support to H1, while alleviating both the mechanical and easy detection concerns. The economic implication of findings in Columns 1 and 2 is that, on average, serious misstatements and more income-decreasing restatements shorten the detection period by 24 and 51 days, respectively. The weaker impact of these two alternative materiality measures on the length of detection periods might be attributable to the change in sample and the materiality level. The result in Column 3 indicates that non-earnings related components of materiality decrease the length of MDPs as well. Due to the small sample size, I am cautious about the interpretation of economic implications.

Table 7
Misstatement Material and the Probability of Litigation

Variable		
Intercept	-1.469 (4.619)	**
BigR	0.640 (13.424)	***
DetQtr	-0.057 (2.269)	
BigRQtr	-0.020 (0.093)	
Ethdum	0.205	*

	(3.412)	
CGOV	-0.107	
	(2.342)	
MKV	0.001	***
	(48.575)	
ROA	-0.411	
	(1.292)	
MB	0.000	
	(0.001)	
Lev	0.011	
	(0.921)	
Age	-0.023	***
	(27.986)	
Big4	0.047	
	(0.094)	
HighLIT	0.139	
	(1.129)	
Fixed Industry Effects	√	
Fixed Year Effects	√	
Number of Observations	2566	
Likelihood Ratio	179.87	

This table reports coefficient estimates on variables used in comparing the likelihood of litigation between material and immaterial misstatements while considering the timeliness of disclosure. The regression equation is:

$$\begin{aligned}
 LTGT_i = & \alpha_0 + \alpha_1 BigR_i + \alpha_2 DetQtr_i + \alpha_3 BigR \times DetQtr_i + \alpha_4 \\
 & Ethdum_i + \alpha_5 CGOV_i \\
 & + \alpha_6 LogAT_i + \alpha_7 MB_i + \alpha_8 Lev_i + \alpha_9 Age_i + \alpha_{10} Big4_i + \\
 & \alpha_{11} HighLIT_i \\
 & + Fixed\ Industry\ Effects + Fixed\ Year\ Effects + \varepsilon \quad (2)
 \end{aligned}$$

All variables are defined in Appendix A. Wald-Chi square values are reported in parentheses. The symbols *, **, and *** indicate significance

at the 10%, 5%, and 1% levels in a two-tail test, respectively. The symbol # denotes significance at the 10% level in a one-tail test.

In H2, I posit that material misstating firms are more likely to face class actions than immaterial misstating firms are due to the severe impact of their misstated financials. Table 7 reports the result by using Model (2). The coefficient estimate on BigR is 0.640 (Wald-Chi Square=13.424) and significant at the 1% level, suggesting that materiality of misstatement increases the odds of litigation by 0.64. This finding provides supporting evidence to H2. However, the insignificant coefficient on BigRQtr suggest that when both material and immaterial misstating firms make timely detection and disclosure of misstatements, the litigation risk is indifferent.

Table 8
Effect of Timely Disclosure of Material Misstatements on the
Probability of Litigation

Variable	All Pre- and Post-2004 BigR (1)	Post-2004 BigR (2)
Intercept	-0.379 (0.074)	-2.064 *** (6.935)
DetQtr	-0.092 * (2.778)	-0.087 # (2.502)
Ethdum	0.046 (0.080)	0.038 (0.059)
CGOV	-0.031 (0.074)	-0.001 (0.001)
LogAT	0.322 *** (23.873)	0.347 *** (32.156)
MB	0.075 *** (16.479)	0.075 *** (17.588)
Lev	-0.048 ** (5.906)	-0.051 *** (7.182)
Age	-0.025 ***	-0.024 ***

	(14.687)	(14.139)
Big4	-0.332 *	-0.313
	(2.857)	(2.565)
HighLIT	0.316 *	0.349 **
	(3.138)	(3.915)
Fixed Industry Effects	✓	✓
Fixed Year Effects	✓	✓
Number of Observations	1209	1203
Likelihood Ratio	116.32	94.38

This table reports coefficient estimates on variables used in examining the impact of timely disclosure of material misstatement on likelihood of litigation. The regression equation is:

$$\begin{aligned}
 LTGT_i = & \alpha_0 + \alpha_1 DetQtr_i + \alpha_2 Ethdum_i + \alpha_3 CGOV_i \\
 & + \alpha_4 LogAT_i + \alpha_5 MB_i + \alpha_6 Lev_i + \alpha_7 Age_i + \alpha_8 Big4_i \\
 & + \alpha_9 HighLIT_i + Fixed\ Industry\ Effects \\
 & + Fixed\ Year\ Effects + \varepsilon \quad (3)
 \end{aligned}$$

All variables are defined in Appendix A. Wald-Chi square values are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% levels in a two-tail test, respectively. The symbol # denotes significance at the 10% level in a one-tail test.

However, within-group tests show that a shorter detection period decreases a material-misstating firm's litigation risk as reported in Table 8. Even though SEC 2004 took into effect since August 23, 2004, some firms voluntarily revealed misstatement materiality via Form 8-K item 4.02 filing right before the effective date. For the purpose of maximizing the sample size and enhancing the power of tests, I include these observations in Column (1). Then, I exclude them in Column (2) to show consistency in testing. Both tests show that the timeliness of disclosure decreases the likelihood of litigation. The coefficient estimates on DetQtr are -

0.092 (Wald-Chi Square=2.778, significant at the 10% level for a two-tail test) and -0.087 (Wald-Chi Square=2.502, significant at the 10% level for a one-tail test) in Columns (1) and (2), respectively. These results are in line with the conjecture in H3 that materiality motivates misstating firms to accelerating detection and disclosure to relatively lower their litigation risk.

The findings in Tables 7 and 8 provide more insight on the relations between bad news disclosure and litigation. Even though restatements are less likely to avoid litigation risk (Field et al., 2005 and Donelson et al., 2012) and material misstatements are associated with higher likelihood of litigation than the immaterial, materiality still motivates management to shorten the detection period. Thus, they can lower the firm's litigation risk compared to peers, hence building a relatively better image.

Robustness Tests

Hirschey et al. 2015 argue that it is more appropriate to use negative binomial regressions in detection period tests. Following Hirschey et al. (2015), I use negative binomial regressions to test my base model as well. The untabulated results are qualitatively the same as what I have reported in Table 3.

Furthermore, I compare the impact of materiality in the pre- and post-2004 periods. In the pre-2004 periods, 95 misstatements were disclosed through Form 8-K, but not via item 4.02 filings. Given that Form 8-K reveals material corporate information to market participants, I use these voluntary disclosures to capture materiality in the pre-2004 period. Neither univariate nor multivariate tests show any evidence of significant difference in the length of detection periods between the pre- and post-2004 periods, suggesting that managers consistently reveal material misstatements in a timely manner.

CONCLUSIONS

In this paper, I examine if materiality motivates management to shorten the length of MDPs. Using Form 8-K item

4.02 filings (BigR) as a proxy for misstatement materiality, I find that material misstating firms detect and disclose misstatements 116 days earlier than immaterial misstating firms do. The effect of materiality is more evident when discovering and disclosing serious restatements. The biggest concern of using BigR to capture materiality is the mechanical concern due to the mandated four-business-days disclosure requirement in SEC 2004. I alleviate this concern by using misstatement severity and the cumulative earnings impact as alternative measures of materiality. Furthermore, I estimate net MDPS and exclude all BigR in the cumulative earnings impact test, hence eliminating the mechanical impact of SEC 2004. All tests provide corroborative evidence that materiality shortens the length of MDPs. The test using non-earnings related components of materiality shows that the impact of materiality does not depend on the easiness of detection. Overall, these findings are consistent with the predictions made by litigation reduction, management reputation, and cooperation with auditors theories. I find no evidence that supports the competing theories.

There is a dearth of evidence showing that shorter material misstatement detection periods may decrease litigation risk in the extant literature. I provide evidence that more timely disclosure of material misstatements lowers the likelihood of litigation in a within-group setting.

Like many other papers, my paper has several limitations. First, my proxy for litigation risk reflects only the occurrence of litigations against misstatement firms. Future studies may examine the impact of timely disclosure of materiality on the other aspects of litigation risks, such as the dollar amount of compensation to investors, executive officer turnovers, monetary penalties charged to executive officers, etc.

Second, my measure of corporate governance is based on the data obtained from the MSCI KLD dataset. The corporate governance literature has developed multiple proxies to capture various dimensions of corporate governance (Larcker et al., 2007; Dechow et al., 2010). Even though I find no association between

the detection period length and corporate governance, I cannot rule out the possibility of measurement errors in the proxy. Therefore, I would suggest a cautious interpretation of the test results. It might be worthwhile for future studies to develop better proxies for governance and reexamine, in the presence of materiality, the impact of governance on the length of detection periods.

CONFLICTS OF INTEREST

The author declares no conflicts of interest associated with this manuscript.

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Appendix A: Variable Definitions

This table provides definitions of the variables used in this study.

Variable	Abbreviation	Definition
<i>Detection Period</i>	<i>DetQtr</i>	Number of days from the end of misstated period to misstatement disclosure date and scaled by 90.
<i>Litigation Risk</i>	<i>LTGT</i>	Indicator variable equal to 1 if a case has been filed against the misstatement firm subsequent to disclosure and 0 otherwise.
<i>Materiality of Misstatements</i>	<i>BigR</i>	Indicator variable equal 1 if a firm disclose restatements in Section 4.02 of an 8-K filing, and 0 otherwise.
<i>Corporate Social Responsibility Dummy</i>	<i>Ethdum</i>	Equals 1 if the firm-year CSR index is positive and 0 otherwise.
<i>Corporate Governance</i>	<i>CGOV</i>	The sum of each firm's strengths and weaknesses scores in corporate governance category. Higher scores indicate better governance.
<i>Market-to-Book Ratio</i>	<i>MB</i>	Market to book ratio is the ratio of market value of equity to the accounting book value. Market value is the log of the product of common stocks outstanding and year-end stock price.
<i>Size</i>	<i>LogAT</i>	Natural logarithm of total assets.
<i>Leverage</i>	<i>Lev</i>	Total liabilities scaled by total stockholders' equity.
<i>Age</i>	<i>AGE</i>	Number of years that a firm has been publically listed on stock exchanges.
<i>Audit Quality</i>	<i>BIG4</i>	Indicator variable equal to 1 if the auditor is big 4 and 0 otherwise.

<i>High Litigation Industries</i>	<i>HighLIT</i>	Indicator variable set to 1 for firms in SIC codes 2833–2838 and 8731–8734 (biotech), 3570–3577 and 7370–7374 (computer), 3600–3674 (electronics), and 5200–5961 (retail), and 0 otherwise.
<i>Magnitude of Misstatements</i>	<i>NegEff_1</i>	Calculated as the amount of restated net income scaled by average total assets then multiplied by negative one.
<i>SEC 2004</i>	<i>SEC 2004</i>	Indicator variable equal to 1 for the post-SEC 2004 period and 0 otherwise.
<i>Serious Restatements</i>	<i>FSECrst</i>	Indicator variable equal to 1 for fraud/SEC investigated restatements and 0 otherwise.
<i>Negative Impact Dummy</i>	<i>NegDum</i>	Indicator variable equal to 1 if a restatement decreases net income by over \$20,979 and 0 otherwise.

Figure 1
Timeline of Misstatement Periods

