Operational Risk and Reputation in Financial Institutions: Does Media Tone Make a Difference?

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Abstract

Operational risk announcements are unexpected adverse media news supposedly harming the reputation of financial institutions. This paper examines the equity-based and debt-based reputational effects of financial sentiment tones in operational risk announcements and shows how such reputational effects are moderated by alternative sources of public information. Our analysis reveals that the net negative tone and litigious tone have adverse reputational effects and the uncertainty tone mitigates the adverse reputational impact. Additionally, alternative, simultaneous sources of information neutralize the reputational effects of textual tones. First, loss amount disclosure dissolves the favorable (adverse) reputational effects of the uncertainty tone (litigious tone) whilst regulatory announcements counteract the favorable (adverse) reputational consequences of the uncertainty tone (litigious tone). Moreover, by resolving most of the ambiguity underlying the operational risk event, final settlements remove, if not reverse, the favorable reputational impact of the uncertainty tone. Overall, our findings indicate that the reputational effects of the media materialize most when there is lack of certain, regulated public information about the operational risk event.

Keywords: Content Analysis, Financial Sentiment, Media News, Operational Risk, Reputational Risk, Textual Tone

JEL Classifications: D8 Information, Knowledge, and Uncertainty, G1 General Financial Markets, G2 Financial Institutions and Services

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1. INTRODUCTION

Over the last two decades, a number of high-scale operational losses have hit large financial institutions all over the world leading to severe financial disturbances including the collapse of some institutions. For example, UBS Investment Bank lost $2bn in 2011 when a trader entered false information into the trade booking system in order to hide risky trades without breaching trading thresholds for over three years. This pattern of deception led to the largest unauthorized trading losses in British history, albeit it had followed in the footsteps of similar incidents such as the rogue trading loss of €4.9bn uncovered by Société Générale in 2008. In terms of the business consequences of operational losses, one of the worst examples is the unauthorized speculative trading loss of £827million (approximately $1.3bn) by Nick Lesson to Barings Bank during the period 1992-1995. Although small in comparison to more recent operational risk losses it caused the United Kingdom's then oldest investment bank to collapse due to its inability to absorb such losses. In light of these high-profile scandals, operational risk management and disclosure practices in financial institutions have recently attracted increased attention from academics, professionals, and regulators (e.g., BCBS, 1998, 2001; Helbok and Wagner, 2006; Ford et al., 2009). Moreover, the inception of the Basel II Capital Accord (BCBS, 2006b) required banks to reserve regulatory capital against operational risk[1] exposure in addition to those reserved against exposures of market and credit risk.

However, financial firms are unavoidably subject to reputational risk as a result of the announcements related to these operational risk events, which ultimately encompass elements of 'poor internal controls' as posited by Chava et al. (2017, p2) when investigating the effects of misreporting on borrower reputation[2]. The BCBS definition of operational risk (BCBS, 2006b) and the evidence provided by the literature (e.g., Cummins et al., 2006; Chernobai et al., 2011; Wang and Hsu, 2013) show that operational risk event announcements reveal serious problems in the internal control systems, behavior of management and employees, and ultimately weak corporate governance mechanisms in financial firms. These problems within the announcements have important ramifications for investors as they indicate information that could potentially affect their expected return and variance (Markowitz, 1952), whilst allowing for investors to perceive their potential risk exposure to the event itself by taking into consideration the levels of 'controllability' the institution has at its disposal to limit exposure (March and Shapira, 1987; Slovic, 1987; Weber and Milliman, 1997). Previous research has found consistent evidence of the adverse reputational effects of large operational risk event announcements in the financial industry as reflected by a drop in the market

[1] Basel Committee on Banking Supervision (Basel Committee on Banking Supervision, 2006, p.144) defines operational risk as *"…the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk."*

[2] We use the terms "operational risk event announcements" and "operational risk announcements" interchangeably to refer to online news articles disclosing information on operational risk events incurred by financial institutions.

values of loss firms by more than one-to-one[3] for internal fraud and non-fraud internally-caused operational losses (Perry and de Fontnouvelle, 2005; Cummins et al., 2006; Gillet et al., 2010; Sturm 2013a; Fiordelisi et al. 2014). Plunus et al. (2012) have documented the adverse impact of operational risk announcements on the first announcement date and firm recognition date on cumulative abnormal bond returns and interpret their results as 'pure' reputational damage since operational risk losses usually do not deplete shareholders' equity and therefore should not be directly relevant to the behavior of debt investors. In agreement with Gillet et al. (2010) but disagreement with Sturm (2013a) results on stock returns, Plunus et al. (2012) have found that debt markets react favorably to settlement announcements. Sturm (2013b) has inspected the impact of operational risk announcements in the European banking industry on credit default swap (CDS) markets and found that abnormal CDS spreads increase only around settlement announcements and when the relative operational loss size is higher. He has interpreted his results to suggest that some of the characteristics and timings of operational risk announcements can cause an increase in the bank's default risk. We also believe that these results (Sturm, 2013b) confirm the existence of 'pure' debt-based reputational damage caused by operational risk announcements.

Fiordelisi et al. (2013) have studied the firm-specific, event-related, and macro determinants of reputational damage resulting from operational risk announcements in European and U.S. banks during the period 2003 – 2008. They found that the probability of reputational damage is positively associated with bank's profitability and size, and negatively associated with its capital adequacy and growth potentials. In a relevant research stream, Biell and Muller (2013) have examined the timings and durations of equity market reactions to operational risk announcements in Europe during the period 1974 – 2009 and found that the reputational damage (as measured by the absolute ratio of cumulative abnormal stock returns to the operational loss amount disclosed) starts earlier and accumulates faster for internal fraud events when compared to External Fraud (EF) and Clients, Products, and Business Practices events (CPBP)[4]. They have also shown that reputational damage occurs later when the firm suffering the loss has a higher credit rating and that the extent of reputational damage is positively associated with the duration of market's overreactions to the announcements. Further, Chava et al (2017) have highlighted that firms who misreport their earnings can suffer reputational damage in the form of more expensive borrowings for up to six years after the re-statement of earnings.

To the best of our knowledge, no previous paper on operational and reputational risks has examined the market-based effects of narrative contents in operational risk announcements. Operational risk announcements are pieces of adverse news which unexpectedly hit the media

[3] For example, suppose the market value of a firm dropped as a result of an announcement of an operational risk event. Then, a drop in the market value of three-to-one means that the magnitude of the market value drop is three times the magnitude of the operational loss.
[4] As defined by the Basel II loss event categories.

headlines revealing new information on deficiencies in corporate governance structures, internal control systems, and risk management practices in financial institutions. Much of the previous research has studied media effects accompanying corporate earnings announcements albeit the empirical evidence documented was mixed. While some studies proved that media coverage and contents drive the financial sentiment (Tetlock, 2007; Tetlock et al., 2008), stock returns (Fang and Peress, 2009; Ahmad et al, 2016), and local trading (Engelberg and Parsons, 2011), other studies have documented the media hype and bias especially towards local firm announcements (Gurun and Butler, 2012). This mixed evidence clearly calls for further investigation into the role of different types of media (e.g. newswire services, TV, internet search engines, social media etc.) in influencing the financial sentiments of investors and driving the reactions of equity, debt, and CDS market to different types of announcements. Therefore, in this paper, we empirically examine the market-based reputational effects of financial sentiment tones in operational risk announcements extracted from newswire services.

The recent decision of *'The Independent'* newspaper to discontinue its print edition and continue only as an online service is another early manifestation of a publication trend which is expected to prevail throughout the media news services in the years to come. More focus is continually being given to online newswire services and less attention is given to hardcopy newspapers (Saperstein, 2014). This attitude is expected to be stronger for financial markets' investors because they can find the required information on business news in a timelier and less costly manner than hardcopy newspapers. Moreover, we argue that this attitude is expected to be amplified around unexpected, adverse news announcements hitting the financial industry as a major pillar in the economic stability of any country. Given this expected high importance and relevance of newswire services, we aim to empirically investigate and document evidence on the reputational contribution of the textual contents in media news on operational risk events recently announced in a global sample of financial institutions.

To achieve the aim of this paper, we utilize a global sample of 288 operational risk event announcements from 80 financial institutions in 18 countries which hit the public media news following the global financial crisis (2010 - 2014). We then perform content analysis of textual information disclosed in the first operational risk announcements using the financial sentiment dictionary recently developed by Loughran and McDonald (2011)[5]. More specifically, we measure the financial sentiment tones across four dimensions which are: negative words, positive words, uncertainty words, and litigious words. We decide to include the uncertainty tone and litigious tone because of the high degree of ambiguity and considerable litigation risks known to be associated with operational risk events. On the one hand, ambiguity is usually very high especially when the exact or

[5] We use the most recently updated version of Loughran and McDonald dictionary in 2014: http://www3.nd.edu/~mcdonald/Word_Lists_files/LoughranMcDonald_MasterDictionary_2014.xlsx.

estimated operational loss amount is not disclosed, or not mentioned as settled, in the first announcement, and when the operational risk event is not recognized by the loss firm or announced by a regulatory body (e.g., the SEC in the USA or FCA in the UK). On the other hand, litigation risks are more significant when operational risk announcements mention on-going or forthcoming legal lawsuits or regulatory sanctions. We argue that this intensive degree of loss severity, ambiguity, and litigation risk represents a unique opportunity to examine how the narrative contents in media news drive the behaviors of different types of investors, thus possibly causing reputational damage to financial institutions.

Our paper adds several original contributions to the extant literature on operational risk, reputational risk, and media coverage. First, this is the first paper to examine the incremental reputational effects of textual information in operational risk announcements. This adds value to the findings of previous relevant papers which have examined only the impact of quantitative information disclosed in operational risk announcements (i.e. absolute loss amount or its ratio to market capitalization). Second, this is one of the early papers to examine the reputational effects of the Loughran and McDonald (2011) litigious and uncertainty tones in media news. Most previous papers have documented merely the sentimental effects of media coverage using the informational contents of the positive tone and negative tone in the news announcements. Third, this is the first paper to quantify the reputational effects of textual contents in newswires services in an increasingly out-of-print media world. The paper exploits the unique nature of operational risk announcements well known to cause different degrees of reputational damage to pinpoint the association between online media contents and reputational risk. Fourth, this is the first paper to study operational risk announcements and relevant reputational risk in an entirely post-GFC setting, thus providing updated evidence in this area. The global financial crisis and recent rapid developments in banking regulations (such as Basel III and its anticipated full implementation in 2018) and insurance regulations (such as Solvency II which has come into full effect in 2016) all call for updating the empirical evidence to uncover whether the attitudes of the investing community towards operational and reputational risks have seen any technical or behavioral shifts. Fifth, this is one of the early papers to use the ORIC[6] database (which is actually used by the institutions under investigation to provide external loss event data when calculating their operational risk based capital requirements) to extract and examine the market-based consequences of operational risk announcements in financial institutions. Finally, this is the first paper to empirically examine the reactions of both equity and CDS markets to operational risk announcements and draw beneficial inferences on simultaneous behaviors of potential shareholders and creditors. Previous studies have separately examined investor's behavior around operational risk announcements either in 'equity-based' markets (Perry and de Fontnouvelle, 2005;

[6] ORIC stands for Operational Risk International Consortium: https://www.oricinternational.com/.

Cummins et al., 2006; Gillet et al., 2010; Sturm 2013a) or 'debt-related' markets (Plunus et al., 2012; Sturm, 2013b) but never together.

We believe that the six contributions mentioned above could inform policymakers, regulators, and market participants as to the importance of developing innovative mechanisms to mitigate the reputational effects of operational risk losses. Given the results presented in this study the development of media task forces to follow, analyze, and respond to any exceptionally adverse news announcements which could have disastrous consequences on big financial institutions or destabilize the whole financial industry should be considered. Moreover, the findings of this paper could advise risk managers, executive officers, and board directors in financial institutions on the importance of establishing and utilizing early warning systems in the form of content analysis software and information processing models (Kremer et al., 2013).

The remainder of this paper is organized as follows: Section 2 presents a review of the literature and develops our research hypotheses. Section 3 provides the details of our research methodology. Section 4 presents and discusses our empirical results and robustness checks. Concluding remarks are mentioned in Section 5.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. The Net Negative Tone

Previous studies have documented that stock returns are negatively associated with the negative tone in media news (Tetlock, 2007; Ahmad et al., 2016), 10-k filings (Loughran and McDonald, 2011), earnings announcements (Demers and Vega, 2014), and analyst reports (Huang et al., 2014). However, several studies (e.g. Tetlock, 2007; Engelberg, 2008; Loughran and McDonald, 2015) have shown that the positive tone is not priced in equity markets, possibly because equity investors view positive words as merely 'cheap talk'.

As the number of negative words is expected to largely exceed positive words in 'adverse' operational risk announcements, we decided to focus our investigations on the net negative tone (i.e. negative words minus positive words standardized by the total number of financial sentimental words) in these announcements. Journalists, news agents and media experts (we group them together as 'media channels') get access to both public and private sources of information which they are willing to disclose to their different audiences (obviously including investors) through newswire services. Therefore, we expect that media channels will tend to reveal the current or expected severity of the operational risk event through the net negative tone used in the first news announcement. To the extent that the markets are efficient, the media transmission channels are free from noise, and the investors are willing to believe the media. Therefore, we expect investors to interpret the net negative

tone as an indicator of the unexpected adverse impact of the operational risk event on future cash flows and default risk of the loss firm causing an abnormal drop in stock prices and an abnormal boost in CDS spreads following the operational risk announcements. Therefore, we formulate our first research hypothesis as follows:

H_1: The net negative tone in operational risk event announcements is negatively associated with loss-adjusted abnormal stock returns and positively associated with abnormal CDS spreads following the announcements.

2.2. The Uncertainty Tone

Previous papers have found that the uncertainty tone in different types of business communication is negatively associated with stock returns and positively associated with stock return volatility (Demers and Vega, 2014; Loughran and McDonald, 2011). These findings indicate that uncertainty words are interpreted by investors as revealing a higher degree of distrust in the firm-specific distributions of future cash flows and earnings which ultimately manifests itself in higher discount rates and greater volatilities.

However, we argue here that media channels are expected to reveal the degree of ambiguity they know to be associated with the operational risk event through the uncertainty tone in the first news announcement. Ambiguity associated with the operational risk event on its announcement date could come from several sources; i.e. the operational loss amount is unknown either exactly or approximately, the firm has not yet recognized an internal fraud (e.g. embezzlement) or external fraud (hacking damage), there is no simultaneous regulatory announcement which clarifies more detailed information on the event from an independent governmental agency, or there is no final in-court or out-of-court settlement announced. The reputational impact of ambiguity/uncertainty tone on markets could have one of two potential consequences (apart from the 'Cheap Talk' theory which posits that, under certain circumstances, investors fully discount media news and consider it as merely hype thus supporting the status-quo bias (Samuelson and Zeckhauser 1988)). The first consequence is that higher ambiguity reflected in an amplified uncertainty tone would reduce investors' trust in the reliability of future cash flows and increase their downside suspicions about the long-term default risk of the loss firm. This outcome has been supported by empirical evidence in previous studies (Demers and Vega, 2014; Loughran and McDonald, 2011). The second potential consequence is that investors could give the loss firms the benefit of the doubt in the case of high uncertainty and therefore could be conditionally optimistic that the consequences of the operational risk event might not be as bad as initially suggested by the first news announcement as the institution begins to implement 'controllability' of the exposure. This latter outcome could be more suitable for the nature of

operational risk announcements; i.e. investors interpret uncertain bad news as good news. Therefore, we formulate our second research hypothesis using the second suggested consequence as follows:

H_2: The uncertainty tone in operational risk event announcements is positively associated with loss-adjusted abnormal stock returns and negatively associated with abnormal CDS spreads following the announcements.

2.3. The Litigious Tone

The litigious tone in operational risk announcements is likely to be utilized by media channels in disclosing the level of litigation risk they believe to be associated with the operational risk event. In the case of first news announcements on operational risk events, litigation risk could imply both upside and downside potentials. For example, when an employee or group of employees are suing a bank over allegations of employer malpractice, it might not be that clear on the first announcement date whether the bank will lose or win this forthcoming legal case. Hence, the litigious tone could reveal either upside or downside litigation risk and the net impact on investors' behavior could therefore be indeterminable. However, since previous empirical evidence mostly links the litigious tone to an increase in trading volume and stock return volatility (Loughran and McDonald, 2011), we formulate our third research hypothesis in this downside way and let our empirical evidence challenge the following null hypothesis:

H_3: The litigious tone in operational risk event announcements is negatively associated with loss-adjusted abnormal stock returns and positively associated with abnormal CDS spreads following the announcements.

2.4. Interactions with Loss Amount Disclosure

The operational loss amount (whether exact or estimated) is a proper quantification constituting an objective measure of the operational risk event's severity. Since the net negative tone (i.e. bad news) in the operational risk announcement could be seen as a qualitative assessment reflecting the subjective beliefs of media channels about the severity of the operational risk event, it would be expected that the net negative tone and operational loss amount disclosed in the media channels are interpreted by investors as substitute sources of information. In contrast, disclosing the operational loss amount, as a quantifiable, more reliable measure of severity, is expected to neutralize the adverse impact of the narrative bad news (i.e. the net negative tone) on the loss firm's reputation. Albeit the seminal work of Fischoff (1995, p139) has highlighted that although managers may 'hand over the numbers', the suspicious recipients of such raw information (investors) may re-adjust these estimates to accommodate their perception that they have been calculated under likely biases internally.

We also argue that the disclosure of an exact amount or best estimate of the operational loss would partially reduce the uncertainty about the operational risk event's severity but may not remove the uncertainty associated with the causes and consequences of the operational risk event (for example, the uncertainty concerning the underlying Internal Control Weaknesses (ICWs)[7] or any possible future effects on the business model, corporate governance[8], and customer satisfaction of the loss firm). Hence, to the extent that the underlying uncertainty has been reduced by the loss amount disclosure, we expect the calming effect of the uncertainty tone on the equity and debt markets to be counteracted. Similarly, we argue that when the operational loss amount is disclosed, the degree of underlying litigation risk (whether upside or downside) will shrink because investors will know, or at least can more accurately estimate, the maximum legal reserve which needs to accumulated by the loss firm in relation to the announced operational risk event. Hence, the information conveyed by narratives on litigation risk (i.e. the litigious tone) in the first news announcement could become less influential to investors. Therefore, we formulate our fourth hypothesis as follows:

H_4: The associations *of the textual tones in operational risk event announcements with loss-adjusted abnormal stock returns and abnormal CDS spreads following the announcements become weaker when the exact amount or best estimate of the loss is disclosed.*

2.5. Interactions with Firm Recognition

Gillet et al. (2010) have shown that equity markets react favorably when the loss firm recognizes the operational risk event and/or loss. Hence, such a corporate confession may calm turbulent market reactions and alleviate the adverse impact of the net negative tone whereas a lack of confession as investigated by Kothari et al. (2009) can increase the cost of equity for the offending organization. However, such a confession could also give more credibility and attention to the narrative bad news, thus magnifying its adverse market consequences. We also attribute the Gillet et al. (2010) finding to the higher degree of certainty implied by firm recognition which the markets seem to appreciate. Hence, we expect the decreased underlying uncertainty caused by simultaneous firm recognition to mitigate the impact of the uncertainty tone in the first news announcement since investors become less uncertain and hence are less vulnerable to the sentimental effects of media news. However, firm recognition could have mixed effects on the underlying litigation risk. On the one hand, confession by the loss firm could indicate that it is in a weak legal position and hence likely to be exposed to a more severe court decision or regulatory sanction (i.e. downside litigation risk). In this case, investors might

[7] Chernobai et al. (2011) have found that ICWs are associated with higher frequency of operational risk events incurred by U.S. financial institutions whilst Cosetllo and Wittenberg-Moerman (2011) highlight that ICW's effect the contractual terms of borrowing from lenders based on the severity of the ICW.

[8] Barakat (2014) has shown that U.S. financial institutions respond to large operational risk announcements by making significant changes in their corporate governance structures and that equity markets react (either favourably or unfavourably) to such changes.

search for more litigation-related information in the first news announcement, thus amplifying the adverse impact of the litigious tone. On the other hand, it might imply that the loss firm is able to resolve the legal situation in a less hostile manner since it has already admitted the underlying fault (whether intentional or not). In this latter case, investors might become less concerned about searching for or interpreting litigation-related narratives thus causing the litigious tone to be of less adverse impact. Therefore, we formulate our fifth hypothesis using the latter proposition and let our empirical evidence challenge it:

H_5: The associations *of the textual tones in operational risk event announcements with loss-adjusted abnormal stock returns and abnormal CDS spreads following the announcements become weaker when the loss firm recognizes the event.*

2.6. Interactions with Regulatory Announcement

Many operational risk events are merely regulatory sanctions (which are related to underlying operational risk drivers) or regulatory announcements on emerging or on-going investigations or prosecutions. For example, the U.S. Department of Justice might announce that it is going to prosecute a certain bank for alleged wrong-doing or breach of fiduciary duties. Accompanying operational risk announcements in the media might include brief allusions or, in rare cases, actual contents of simultaneous regulatory announcements and additional information clarifying the relevant underlying facts and expected consequences of such a regulatory process. Hence, regulatory announcements can be seen by investors as alternative sources of information, thus reducing investors' reliance on narrative bad media news to make their investment decisions. Obviously, regulatory announcements inject more credible information into the markets and are likely to reduce the degree of underlying uncertainty associated with the operational risk event. For example, Fiordelisi et al. (2014) found that reputational damage is only caused by 'pure' operational losses which are neither regulatory sanctions nor legal cases. We argue here that more 'simultaneous' 'trustable' sources of information and a lower degree of underlying uncertainty are likely to dissolve the favorable reputational impact of the uncertainty tone on investors' behavior. In addition, litigation risk emerges mostly from either a legal (e.g. class action lawsuits) or regulatory (e.g. fines by regulators or supervisors) source; hence the importance of interacting the litigious tone with the regulatory announcement to extract any marginal effects due to differences in investors' attitudes toward legal-related and regulatory-induced litigation risks. If investors view regulatory-induced litigation risks to be more (less) severe than legal-related litigation risks, we then expect investors to be more (less) interested in searching for and processing litigious information when the operational risk event is (not) simultaneously announced by a regulatory body. Therefore, we formulate our sixth hypothesis as follows:

H_6: The associations *of the textual tones in operational risk event announcements with loss-adjusted abnormal stock returns and abnormal CDS spreads following the announcements become weaker when the event is simultaneously announced by a regulatory body.*

2.7. Interactions with Settlement

Gillet et al. (2010) have documented clear positive equity market reactions to settlement announcements on operational risk events, and Plunus et al. (2012) have documented similar reactions in debt markets. The settlement means that an in-court or out-of-court agreement has been reached or a final regulatory fine or sanction has been decided which the firm agrees with. It is noteworthy here to mention that settlement and firm recognition are not identical as the loss firm could recognize the event but would not accept a pending settlement or would decide to go through an appeal process. In very rare cases (only two events in our sample), the loss firm might accept the final settlement but does not admit any wrong-doing or fault within its internal control system or risk management function. Some might view settlement as an implicit recognition by the firm and therefore consider settlement as a sub-division or special case of firm recognition. Although from the first look it seems that the final settlement obviously removes all of the uncertainty underlying the operational risk event, it still seems possible that there is an element of unresolved ambiguity regarding the vulnerability of the loss firm to similar events or litigation processes in the future (possibly due to inherent ICWs, corporate governance problems, or risk management deficiencies). This is of particular importance within the UK as the FCA incentivize early settlement for operational risk breaches by reducing financial penalties by up to 30%. Hence, we expect settlements (if explicitly mentioned in the first news announcement) to remove, if not reverse, the favorable impact of the uncertainty tone on investors' behavior. Similarly, final settlements should indicate no further 'current' litigation risk but it could still pinpoint to future litigation risk associated with similar events or other events caused by the same underlying factors of the current event. Hence, we again posit that the sentimental effects of the litigious tone would become weaker when a final settlement is mentioned in the first news announcement on the operational risk event. Therefore, we formulate our seventh research hypothesis as follows:

H_7: The associations *of the textual tones in operational risk event announcements with loss-adjusted abnormal stock returns and abnormal CDS spreads following the announcements become weaker when the event is settled.*

3. RESEARCH METHODOLOGY

3.1. Sample Selection and Composition

Table 1 details our sample selection procedures. We begin with all 16110 public announcements in the commercial database ORIC which spans the period 1921 – 2015 (data extracted in March 2015).

Since ORIC announcements are only regularly collected from 2010, our sample period covers the post global financial crisis (post-GFC) years (2010 – 2014). We exclude the following from the dataset: announcements before 2010 and after 2014, announcements in non-financial firms because the nature of operational risk is clearly different from that in financial institutions, announcements in loss firms not headquartered in USA, Europe, Canada, and Australia to coincide with previous operational risk studies which focused mainly on U.S. & European firms, announcements which have no clear operational risk classification (event type or business line), announcements whose dates are not confirmed or full-text news articles not found (we have double-checked and downloaded available full-texts of operational risk announcements from LexisNexis news database), announcements in privately held financial firms, and announcements with outliers in reputational returns or abnormal CDS relative spread changes (i.e. less than -10% or more than 10%).

[Insert Table 1 here]

Hence, we end up with 288 operational risk announcements from 80 financial institutions in 18 countries (Table 2, Panel A) which hit the public media news during the years 2010 - 2014. Since we collect full-texts of announcements only in English, we decided to consider the cultural impact when loss firms are listed in stock exchanges dominated in non-English speaking countries. Although almost all our sample firms are multi-national institutions which are listed on the big stock exchanges in terms of market capitalization, we still find it is crucial to have one global sample and one English-dominated sample to isolate cultural effects due to language differences. Therefore, we have our whole sample of 288 events (hereafter, 'Global Sample') and English-denominated stock exchanges sub-sample of 216 events (hereafter, 'English Sample'). We believe that our 'Global Sample' is of a good size as it exceeds, in terms of yearly average, the sample sizes in most of previous studies on operational and reputational risks such as 115 events (1974 – 2004) in Perry and de Fontnouvelle (2005), 492 events (1978 – 2003) in Cummins et al. (2006); 103 events (1994 – 2006) in Gillet et al. (2010), 71 events (1994 – 2006) in Plunus et al. (2012), 136 events (2000 – 2009) in Sturm (2013a); 99 events (2004 – 2010) in Sturm (2013b); and 430 events (1994 – 2008) in Fiordelisi et al. (2014).

Table 2 (Panel B) presents the composition of our 'Global Sample' by industry type. Our 'Global Sample' is greatly diversified as it encompasses 16 different industry subtypes of financial institutions (according to Bloomberg classification) with most of the sample coming from banking-related activities (216/75%) and the remaining events coming mainly from brokerage-related activities (21/7%), wealth management-related activities (21/7%), and insurance-related activities (15/5%).

[Insert Table 2 here]

3.2. Variables Tested and Data Sources

3.2.1. Equity-based Reputational Impact

Following the literature on operational risk announcements (De Fontnouvelle and Perry, 2005; Gillet et al., 2010; Sturm, 2013a; Fiordelisi et al. 2013; Fiordelisi et al. 2014), we measure the

informational impact of textual information in operational risk announcements using the Cumulative Abnormal Stock Returns (CAR) which is computed utilizing the single-index market model with the estimation period being a window of 250 trading days ending one calendar month before the announcement date. We use a more conservative approach reflected in a shorter event window (0,+1); i.e. the announcement date and following trading day; if the operational risk event is announced on a non-trading day, the event window then spans the two trading days following the announcement date. We use a much shorter event window because we believe that the impact of financial sentiment tones would manifest themselves only in the very short-term[9]. We collect data on stock prices and local stock market indices from DataStream.

Also, following the literature on reputational risk (Gillet et al., 2010; Fiordelisi et al. 2013; Fiordelisi et al. 2014), we measure the equity-based reputational impact using the loss-adjusted CAR which we call the reputational return or $RCAR$ and compute according to the following formula:

$$RCAR(0,+1) \quad = CAR(0,+1) \quad + \left| \frac{Loss\ Amount(0,+1)}{Market\ Capiltalisation(-6)} \right|$$

We measure the market capitalization six trading days before the announcement date to exclude any impact on the firm's market value caused by leakage of information in the trading week preceding the announcement date. We here also follow a more conservative approach and assume the $loss\ amount(0,+1)$ to be zero if no operational loss amount, either exact figure or best estimate, is disclosed in the event window (0,+1)[10]. In this way, we relax the strong assumption posited by Gillet et al. (2010) that the market is able to accurately estimate the settlement amount on the first announcement date even if it is not actually disclosed. Since we use a very short event window (0,+1) which is clean from any other announcements, we believe that $RCAR$ can accurately measure the 'pure' reputational impact (i.e. non-mechanical market reaction to the information disclosed in the operational risk announcement). Since almost 64% of our sample announcements are associated with non-negative $RCAR$ (i.e. supposedly not incurring any equity-based reputational damage), we hence devise a logit regression model to distinguish between firms incurring reputational damage and firms not incurring reputational damage following the operational risk announcement. In this sense, we look into how financial sentiment tones help differentiate between reputation-damaging and non-reputation-damaging announcements. Our proposed logit model is more conservative than the order logit model used by Fiordelisi et al. 2013 which defined reputational damage as $RCAR$ in the lowest third of the $RCAR$ distribution even if it is non-negative.

[9] For example, Loughran and McDonald (2011) choose the event window (0,+3) to measure the equity market impact of 10-K tones. However, it is obvious that periodic 10-K disclosures are more comprehensive and informative than operational risk announcements which happen only occasionally; therefore, we preferred to use a shorter event window (0,+1).

[10] We double-checked data downloaded from ORIC with announcements extracted from LexisNexis to confirm whether the loss amount had been disclosed.

3.2.2. Debt-based Reputational Impact

Following (Sturm, 2013b), we use Cumulative Abnormal CDS Spread Changes ($CASC$) and Cumulative Abnormal CDS Relative Spread Changes ($CARSC$) as measures of debt-based reputational damage. To the extent that losses are covered by shareholders' equity, operational risk events should be of no relevance to creditors. Therefore, any positive impact on abnormal CDS (relative) spread changes would indicate both an increase in the implied default risk of the loss firm and a pure reputational loss.

We have chosen to employ CDS spreads rather than bond returns to measure the debt-based impact of operational risk announcements (i.e. which we consider as a proxy for both the pure reputational impact and change in implied default risk around the operational risk announcement). There are three reasons for our choice. Firstly, Ericsson, Jacobs, & Oviedo, 2009 found that CDS spreads are superior to stock returns and bond returns in measuring the default risk of the business entity. Second, Mengle, 2007 documented a boost in CDS market liquidity due to the increased contribution of hedge funds in more recent years. Third, Blanco et al., 2005 showed that the causality relationship flows from CDS spreads (the cause) to bond spreads (the effect) and not vice versa.

We collect data on five year modified modified structure CDS spreads in Euro from DataStream and data on the iTraxx index from Bloomberg.

We compute cumulative abnormal CDS spread change (*CASC*) for firm *i* on day *t* as follows:

$$ASC_{it} = (CDS_{it} - CDS_{it-1}) - (iTraxx_t - iTraxx_{t-1})$$

$$CASC(t_1, t_2) = \sum_{t=t_1}^{t_2} ASC_t$$

Also, we compute cumulative abnormal CDS spread relative change (*CARSC*) for firm *i* on day *t* as follows:

$$ARSC_{it} = (\frac{(CDS_{it} - CDS_{it-1})}{CDS_{it-1}}) - (\frac{(iTraxx_t - iTraxx_{t-1})}{iTraxx_{t-1}})$$

$$CARSC(t_1, t_2) = \sum_{t=t_1}^{t_2} ASRC_t$$

3.2.3. Financial Sentiment Tones

These are the main explanatory variables of interest in our empirical analysis. Here, we use financial sentiment tones proposed by Loughran and McDonald (2011) from their comprehensive research into 10-K filings of U.S. firms. We focus on four types of financial sentiment words which

are positive words, negative words, uncertainty words, and litigious words. We then construct the following three proxies of textual tone in operational risk announcements:

$$Net\ Negative\ Tone = \left(\frac{Negative\ Words - Positive\ Words}{Total\ Financial\ Sentiment\ Words}\right) * 100$$

$$Uncertainty\ Tone = \left(\frac{Uncertainty\ Words}{Total\ Financial\ Sentiment\ Words}\right) * 100$$

$$Litigous\ Tone = \left(\frac{Litigious\ Words}{Total\ Financial\ Sentiment\ Words}\right) * 100$$

Where:

$$Total\ Financial\ Sentiment\ Words = Negative\ Words + Positive\ Words + Uncertainty\ Words + Litigous\ Words$$

We compute these three financial sentiment tones for the longest news article disclosing the operational risk event and published on day (0).[11]

3.2.4. Operational Risk Event Features and Announcement Characteristics

Since the reputational impact of operational risk announcements could also be caused by the features of the operational risk event *per se* or characteristics of the announcement, we control for such factors in our multivariate regressions. Firstly, we employ a dummy variable to capture whether the operational loss amount is disclosed in the first announcement. In addition, we control for whether the operational risk event has been recognized by the loss firm itself. This does not necessarily mean that the loss firm has issued a press release but this recognition could simply be mentioned in the first announcement (for example, a representative of the loss firm has made a short comment affirming the event but challenging the relevant fine imposed by a regulatory body or court of law). Moreover, we include a dummy to indicate whether a simultaneous regulatory announcement concerning the operational risk event has been released. Almost always, operational risk announcements come out on the same day of the relevant regulatory announcement.

Furthermore, a dummy is included to indicate whether the first announcement includes a final settlement. Since our sample is recent, many of our operational risk announcements have not yet been settled with only 23% settlement announcements included in our 'Global Sample'. It is to be noted that no settlement does not mechanically imply no firm recognition as we relax our definition of

[11] We choose the longest news article because we expect that equity and debt investors are looking for the most comprehensive and most detailed source of information on the operational risk event. We get qualitatively similar results, although generally less significant, when we use the averages of financial sentiment tones for all news articles published on day (0).

settlement to include cases when the settlement is accepted by only one party to the legal or regulatory conflict. Following this logic, we find that approximately 20% of our no-settlement announcements have already been recognized by the loss firm. Furthermore, we control for the location of the operational risk event itself (not the announcement) and whether it has taken place outside the incorporation's country.

Additionally, we consider whether the operational risk event has included top corporate figures (i.e. C-suite officers or board directors of the loss firm). Moreover, we control for the fraudulent nature of the event by including a dummy to capture whether the operational risk event is classified as internal fraud or external fraud event type. We collect data on these dummies by double-checking the relevant news articles in LexisNexis. Finally, since ORIC employs some additional non-Basel II business lines such as life insurance, general insurance and insurance broking, we include a dummy variable to control for the Basel II business lines which are: corporate finance, trading and sales, retail banking, commercial banking, payment and settlement, agency services, asset management and retail brokerage.

3.2.5. Control Variables

To properly identify our multivariate regression models, we include some common control variables. Firstly, we control for the size, profitability, leverage, and growth of the loss firm using the natural logarithm of total assets, ROA, long-term debt to shareholders' equity ratio, and natural logarithm of market-to-book-value ratio plus one, respectively. In addition to accounting-based proxies, we also control for the riskiness of the loss firm using market-based measures which are the annualized standard deviation of daily stock returns and monthly betas. Moreover, we consider the share's floatation by including the percentage of outstanding shares available to ordinary shareholders one week before the announcement date. In addition, we control for trading volume by including the natural logarithm of the number of shares traded for the stock (in thousands) one week before the announcement date. We collect accounting and market data from DataStream. Since we conduct a multi-country analysis, we control for the GDP per capita whose data is collected from the World Bank's website.

Further, to account for any leakage of private information before the first operational risk announcement date, we include lagged measures of the informational and reputational impact over the trading week preceding the first announcement date. For example, in the multivariate regressions modelling the equity-based reputational impact, we use $CAR(-5,-1)$ as a proxy for any leakage of information before the first announcement date.

Finally, to consider the information environment of the loss firm before the announcement date, we employ the number of analysts estimating the firm's EPS in the month preceding the

announcement. We collect data on analyst coverage from Bloomberg. Additionally, we control for the creditworthiness of the loss firm by including S&P long-term local issuer credit rating in the form of a cardinal scale which ranges from AAA=1 to D or SD = 22. We collect credit rating data from Bloomberg.

3.2.6. Descriptive Statistics

Table 3 presents descriptive information on all our variables (for the 'Global Sample'). The average reputational return is 0.78% with 36% of our sample incurring a negative reputational return in the event window (0,+1). The average abnormal CDS (relative) spread change in the event window (0,+1) is -0.15 basis point (0.06%). These statistics do not clearly indicate whether operational risk announcements would cause an equity-based or debt-based reputational damage, thus calling for a more in-depth multivariate analysis of the determinants of the reputational effects of these announcements.

Since operational risk announcements are typically revealing bad news on the loss firm, the net negative tone is as expected, dominating the financial sentiment of the announcements with 53.42% on average compared with averages of only 8.29% for the uncertainty tone and 25.75% for the litigious tone. It is also as expected that the litigious tone is dominating the uncertainty tone as most operational risk announcements include detailed legal or regulatory information. These financial sentiment statistics give credibility to the Loughran and McDonald (2011) dictionary as appropriately classifying the textual tones in our sample of operational risk announcements.

Additionally, there is clear heterogeneity in the announcement characteristics, and event features, which enable us to test their main and marginal reputational effects. For example, 66% of the announcements disclose the exact loss amount or its best estimate, while 38% and 55% of operational risk announcements are recognized by the loss firm itself and simultaneously announced by a regulatory body, respectively. Moreover, only 23% of the first announcements include final settlements which reduces the possibility of private information leaking prior to the first announcement. Furthermore, only 6% of events involve top executives or board directors and 27% of events took place in a different country. Finally, most of the announcements relate to events of non-fraudulent nature (88%) and occurred in one of the eight Basel II business lines (79%).

Finally, the wide range of accounting-based proxies, market-based measures, and information environment factors all confirm the diversity of our sample as it includes big corporations (maximum total assets is $2,867,224 million USD) and small firms (minimum total assets is $644 million USD), profitable (maximum ROA is 7.20%) and non-profitable firms (minimum ROA is -3.28%), high-risk (maximum beta is 4.46) and low-risk firms (minimum beta is 0.44), and highly visible (maximum analysts following is 37) and least visible firms (minimum analysts following is 1). On the

macroeconomic level, our sample covers both developing economies (minimum GDP per capita is $10,646 USD) and highly advanced economies (maximum GDP per capita is $100,575 USD).

[Insert Table 3 here]

3.2.7. Correlation Analysis

For the sake of brevity, Table 4 reports only Pearson correlation coefficients between the four dependent variables (*RCAR(0,+1), Reputation Loss Dum(0,+1), CASC(0,+1), CARSC(0,+1)*) and the three explanatory variables (*Net Negative Tone*, *Uncertainty Tone*, *Litigious Tone*). There is a strong negative correlation (as expected) between the two equity-based dependent variables (-0.68), thus indicating that higher reputational return implies less likelihood of reputational damage. Interestingly, there is a strong positive correlation between the two debt-based dependent variables (0.89), thus confirming that absolute and relative reactions of CDS markets are strongly associated.

It is noteworthy to mention that the medium negative correlations between the three financial sentiment tones (-0.45 between *Uncertainty Tone* and *Litigious Tone*, -0.30 between *Uncertainty Tone* and *Net Negative Tone*, and -0.25 between *Litigious Tone* and *Net Negative Tone*) reflect overlapping between the three textual tones (i.e. words classified under two or more of these tones) and show that these textual tones could partially substitute each other (Loughran & McDonald, 2015). This has two implications for the design of our empirical study. Firstly, we run a separate baseline regression and four interaction regressions for each of the textual tones. Secondly, the interaction terms could reflect the marginal effects of overlapping words (e.g. the interaction term *Settlement Dum * Uncertainty Tone* could reflect the marginal effects of uncertain bad news once a final settlement is announced and the underlying certainty is fully resolved).

Finally, untabulated results on correlation coefficients do not reveal any serious multicollinearity concerns. In addition, it is noteworthy that Variance Inflation Factor (VIF) scores do not reflect any material biases in variable coefficients for our multivariate regression models.

[Insert Table 4 here]

3.3. Multivariate Regression Models

3.3.1. Equity-based Reputational Impact Regressions

First, we test the following OLS model to extract the equity-based reputational impact of financial sentiment tones in the first media news announcement of operational risk event i incurred by the loss firm j incorporated in country k during the event window $(0, +1)$:

$$
\begin{aligned}
&RCAR_{ijk}(0,+1) \\
&\quad = \alpha_{ijk} + Net\ Negative\ Tone_i + Uncertainty\ Tone_i + Litigious\ Tone_i \\
&\quad + Loss\ Disclosure\ Dum_i + Firm\ Recognition\ Dum_i \\
&\quad + Regulatory\ Announcement\ Dum_i + Settlement\ Dum_i \\
&\quad + Different\ Country\ Dum_i + Top\ Figures\ Dum_i \\
&\quad + Fraud\ Dum_i + Basel\ Business\ Line\ Dum_i + Analyst\ Coverage_j \\
&\quad + StDev\ Ret_j + Beta_j + Float\%_j + Ln(Volume)_j + Ln(Total\ Assets)_j + ROA_j \\
&\quad + Leverage_j + Ln(MTBR)_j + GDP\ Per\ Capita_k + CAR_{ijk}(-5,-1) + \epsilon_{ijk}
\end{aligned}
$$

Additionally, we fit the following binary logit model to estimate the odds of equity-based reputational damage caused by the financial sentiment tones in the first media news announcement of operational risk event i incurred by the loss firm j incorporated in country k during the event window $(0, +1)$:

$$
\begin{aligned}
&\ln\left(\frac{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=1)}{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=0)}\right) \\
&\quad = \alpha_{ijk} + Net\ Negative\ Tone_i + Uncertainty\ Tone_i + Litigious\ Tone_i \\
&\quad + Loss\ Disclosure\ Dum_i + Firm\ Recognition\ Dum_i \\
&\quad + Regulatory\ Announcement\ Dum_i + Settlement\ Dum_i \\
&\quad + Different\ Country\ Dum_i + Top\ Figures\ Dum_i \\
&\quad + Fraud\ Dum_i + Basel\ Business\ Line\ Dum_i + Analyst\ Coverage_j \\
&\quad + StDev\ Ret_j + Beta_j + Float\%_j + Ln(Volume)_j + Ln(Total\ Assets)_j + ROA_j \\
&\quad + Leverage_j + Ln(MTBR)_j + GDP\ Per\ Capita_k + CAR_{ijk}(-5,-1) + \epsilon_{ijk}
\end{aligned}
$$

Heteroscedasticity-robust standard errors are used to infer the significance of the regression coefficients estimated for the two regression models above.

3.3.2. Debt-based Reputational Impact Regressions

To test the debt-based reputational impact caused by financial sentiment tones in the first media news announcement of operational risk event i incurred by the loss firm j incorporated in country k during the event window $(0, +1)$, we test the following OLS models:

$$
\begin{aligned}
CA(R)SC_{ijk}(0,+1) &= \alpha_{ijk} + Net\ Negative\ Tone_i + Uncertainty\ Tone_i + Litigious\ Tone_i \\
&+ Loss\ Amount\ Disclosure\ Dum_i + Firm\ Recognition\ Dum_i \\
&+ Regulatory\ Announcement\ Dum_i + Settlement\ Dum_i \\
&+ Different\ Country\ Dum_i + Top\ Figures\ Dum_i \\
&+ Fraud\ Dum_i + Basel\ Business\ Line\ Dum_i + Analyst\ Coverage_j \\
&+ Credit\ Rating_j + StDev\ Ret_j + Beta_j + Ln(Total\ Assets)_j + ROA_j \\
&+ Leverage_j + Ln(MTBR)_j + GDP\ Per\ Capita_k + CA(R)SC_{ijk}(-5,-1) + \epsilon_{ijk}
\end{aligned}
$$

Heteroscedasticity-robust standard errors are used to infer the significance of the regression coefficients estimated for the two regression models above.

3.3.3. Interaction Regressions

To examine whether the reputational effects could be partially driven by the operational risk announcement characteristics, we interact each of the four variables measuring the nature of disclosure in operational risk announcements (i.e. loss amount disclosure, firm recognition, regulatory announcement, final settlement) with the three textual tones (net negative tone, uncertainty tone, litigious tone). To alleviate collinearity concerns, we separately interact each disclosure characteristic with each of our textual tones. Heteroscedasticity-robust standard errors are used to infer the significance of the regression coefficients estimated.

4. EMPIRICAL RESULTS

4.1. Baseline Regressions

In Table 5 (Panel A), there is marginal evidence (one-tailed test) of a negative association between the net negative tone and the reputational return[12]. For example, one standard deviation increase in the net negative tone (i.e. 14.43%) would decrease RCAR(0,+1) by 0.24%. In addition, there is also a negative association between the litigious tone and the reputational return. For example, one standard deviation increase in the litigious tone (i.e. 12.44%) would decrease RCAR(0,+1) by 0.26%. However, there is no evidence that the uncertainty tone directly affects the reputational return which may highlight the presence of the status-quo bias by equity investors in the presence of uncertainty around the risk event. Overall, these empirical results coincide with the previous results in the literature documenting the adverse market-based impact of the negative tone of disclosures in the annual and quarterly earnings announcements, analyst reports, and media news. Additionally, the information on litigation risk in the media seems to harm the market-based reputation of the litigated firm i.e. the litigious framing of the subjective narrative around the event is detrimental to the firms' equity based reputation. However, the results in Table 5 (Panel B) show that the textual tones in operational risk announcements do not help recognize firms incurring equity-based reputational damage (i.e. incurring a negative RCAR(0,+1)).

In Table 5 (Panel C), there is clear evidence that the textual tones in media news strongly affect CDS spreads following operational risk announcements. Firstly, there is a positive association between the net negative tone and abnormal CDS spread changes. For example, one standard deviation increase in the net negative tone would increase CASC(0,+1) by 0.62 basis points. Secondly, there is a negative association between the uncertainty tone and abnormal CDS spread changes. For example, one standard deviation increase in the uncertainty tone (i.e. 7.72%) would decrease CASC(0,+1) by 0.69 basis points. Finally, there is a positive association between the litigious tone and abnormal CDS spread changes. For example, one standard deviation increase in the litigious tone would increase CASC(0,+1) by 0.60 basis points. Overall, these empirical results support our hypotheses H_1, H_2, and H_3, and show that the net negative tone and litigious tone in operational risk announcements magnify the default risk of the loss firm as implied by CDS market participants. On the contrary, the uncertainty tone in operational risk announcements leaves a margin of doubt about the exact causes and consequences of the operational risk event which seems to be appreciated by CDS market participants, thus reducing the implied default risk of the loss firm. In other words, the net negative tone and litigious tone amplifies the debt-based reputational damage, whereas the uncertainty tone alleviates it following operational risk announcements. This finding that the presence of 'uncertainty tone' in the narrative framing of announcements at worst has no effect on

[12] The empirical results presented and discussed in Section 4 belong to the 'English Sample' unless stated otherwise.

equity based reputation, and at best alleviates debt-based reputational damage would suggest that the idea that "communications should tell people things that they need to know" as outlined by Fischoff (1995, p140) should be treated with caution by reporting firms. Evidence of this is highlighted in Table 5 (Panel D) as one standard deviation in the uncertainty tone would decrease CARSC(0,+1) by 0.78%. This finding also supports the Tversky and Kahneman (1981) idea that in the domain of a loss (risk event announcement) investors increase risk taking (in our case preferring uncertainty and value it optimistically) thus acting irrationally. Further, all of the results for the abnormal CDS relative spread changes support the findings from Table 5 (Panel C) regarding the effects of textual tones on the loss firm's implied default risk. For example, one standard deviation in the net negative tone and litigious tone would increase CARSC(0,+1) by 0.60% and 0.61%, respectively.

[Insert Table 5 here]

4.2. Interactions with Loss Amount Disclosure

In Table 6 (Panel A), it is interesting to note that only the interaction term *Loss Amount Disclosure Dum * Net Negative Tone* enters significant and negative, thus indicating that the loss amount disclosure amplifies the adverse equity-based reputational impact of the net negative tone. For example, if the operational loss amount is disclosed, one standard deviation increase in the net negative tone would cause a drop in RCAR(0,+1) which is more severe by 0.88% than when no loss amount is disclosed. However, the effects of the uncertainty tone and litigious tone do not seem to be moderated by the disclosure of the operational loss amount. This result is contrary to our hypothesis H_4, and obviously indicates that equity investors become more worried about the narrative bad news once it is associated with a reliable quantification. In coincidence with these findings, the results in Table 6 (Panel B) show that the interaction term *Loss Amount Disclosure Dum * Net Negative Tone* is significant and positive, thus indicating that the operational loss amount disclosure amplifies the impact of net negative tone on the odds of equity-based reputational damage. For example, if the operational loss amount is disclosed, one standard deviation increase in the net negative tone would make the odds of equity-based reputational damage higher by 101% than when no loss amount is disclosed.

On the contrary, the 'Global Sample' results on the uncertainty tone and litigious tone in Table 6 (Panel B) support our hypothesis H_4, and show that the loss amount disclosure dissolves the calming effect of the uncertainty tone and mitigates the adverse effect of the litigious tone on the reputational return. As discussed in Section 2.4, these results could be due to the fact that the quantifiable loss amount resolves much of the underlying ambiguity and reduces the level of litigation risk associated with the operational risk event. For example, in the 'Global Sample', if the operational loss amount is disclosed, one standard deviation increase in the uncertainty tone (litigious tone) would make the odds of equity-based reputational loss higher (lower) by 72% (43%) than when no loss amount is disclosed.

However, the results on CDS spreads in Table 6 (Panels C & D) clearly show that the loss amount disclosure does not moderate the effects of textual tones in operational risk announcements on the implied default risk of the loss firm. Since the operational loss amount is very likely to be absorbed fully by the equity capital, then its disclosure might not play an important role in driving the financial sentiments of debt investors. Hence, our debt-based results do not support our hypothesis H_4.

[Insert Table 6 here]

4.3. Interactions with Firm Recognition

Only for the 'Global Sample' is there clear evidence that firm recognition of the operational risk event would magnify the adverse impact of the net negative tone and mitigate the positive impact of the uncertainty tone on the equity-based reputation of the loss firm. In Table 7 (Panel A), the interaction term *Firm Recognition Dum * Net Negative Tone* is significant and negative, indicating that the equity-based impact of net negative tone would be more adverse if the loss firm has recognized the operational risk event. For example, if the loss firm has recognized the operational risk event, one standard deviation increase in the net negative tone would cause RCAR(0,+1) to drop by 0.54% more than when no recognition has been made. This result contradicts our hypothesis H_5 and indicates that firm recognition draws more attention from investors and gives higher credibility to narrative bad news.

The interaction term *Firm Recognition Dum * Uncertainty Tone* (Table 7 Panel A), is also significant and negative, thus indicating that the equity-based impact of uncertainty tone would be less positive if the loss firm has recognized the operational risk event supporting the previous work of Kothari et al. (2009). For example, if the loss firm has recognized the operational risk event, one standard deviation increase in uncertainty tone would cause RCAR(0,+1) to drop by 0.49% more than when no recognition has been made. This result supports our hypothesis H_5 and indicates that firm recognition removes much of the uncertainty surrounding the operational risk event and hence reinforces the adverse financial sentiment of equity investors who become more certain about the bad news unexpectedly hitting the markets. The results in Table 7 (Panel B) support the findings above especially for the moderation of the financial sentimental effects caused by the uncertainty tone. For example, for the 'Global Sample', one standard deviation increase in the uncertainty tone would increase the odds of equity-based reputational damage by 94% if the loss firm has recognized the operational risk event.

All the above results concerning the uncertainty tone obviously indicate that equity investors give the loss firm the benefit of the doubt, since they penalize the loss firm (by becoming more risk averse) in terms of deteriorating stock prices and higher odds of equity-based reputational damage only if the loss firm has recognized the operational risk event. This finding is not a call for the loss firms to ignore recognizing the operational risk events (since the *Firm Recognition Dum* has a positive

coefficient in most of the reputational return (RCAR) regressions, thus indicating that it effectively mitigates the adverse equity-based reputational impact of operational risk announcements). It simply calls for the loss firms to properly understand and appropriately respond to the reputational ramifications in the market of them recognizing the operational risk event. However, the results in Table 7 (Panels C & D) show that firm recognition plays no role in moderating the effects of textual tones on the loss firm's implied default of risk. This indicates that firm recognition, like loss amount disclosure, are not priced by CDS market participants who seem to assign higher weights to impartial sources of information such as regulatory announcements and final settlements officially disclosed by the courts of law.[13]

[Insert Table 7 here]

4.4. Interactions with Regulatory Announcement

In Table 8 (Panel A), both direct terms *Net Negative Tone* and *Regulatory Announcement Dum* are significant and negative, while the interaction term *Regulatory Announcement Dum * Net Negative Tone* is significant and positive. This result indicates that both regulatory announcements and media news are substitute sources of bad news and therefore regulatory announcements seem to neutralize the adverse equity-based impact of the net negative tone in media news on operational risk announcements. For example, for the 'Global Sample', one standard deviation increase in the net negative tone would increase (decrease) RCAR(0,+1) by 0.28% (0.38%) if there is (no) simultaneous relevant announcement made by a regulatory body (e.g. the SEC in USA or FCA in UK). Hence, our hypothesis H_6 is only supported for the equity-based impact of the net negative tone. The results in Table 8 (Panel B) marginally support the findings above. For example, for the 'Global Sample', one standard deviation increase in the net negative tone would be associated with an odds of equity-based reputational damage that is lower by 43% if there is a simultaneous relevant announcement made by a regulatory body. From Table 8 (Panel D), the results show that regulatory announcements remove the uncertainty associated with media news on operational risk events and also substitute information on litigation risk disclosed in the media. For example, for the 'Global Sample', one standard deviation increase in the uncertainty tone would increase (decrease) CARSC(0,+1) by 0.45% (0.82%) if there is (no) simultaneous relevant announcement made by a regulatory body. In addition, for the 'Global Sample', one standard deviation increase in litigious tone would decrease (increase) CARSC(0,+1) by 0.08% (0.68%) if there is (no) simultaneous relevant announcement made by a regulatory body. It is important to note that the financial sentimental effects of the uncertainty tone and litigious tone in the media news are reversed and become much weaker once a regulatory announcement has been made

[13] It can be argued that the loss amount and firm recognition could be less impartial sources of information since the operational loss amount disclosed on the first announcement day could be changed later and the loss firm might recognise the event but not provide sufficient relevant information to fully substitute narrative bad news.

on the operational risk event. Hence, our hypothesis H_6 is only supported for the debt-based effects of the uncertainty tone and litigious tone.

[Insert Table 8 here]

4.5. Interactions with Settlement

Approximately 23% of operational risk announcements in our sample include information on a settlement which is usually a court decision or regulatory fine with which the loss firm often agrees and hence no further action by any relevant party is expected. We argue here that a final settlement would resolve most of the uncertainty associated with the operational risk event and hence tend to cancel out the favorable impact of the uncertainty tone on the reputational return and implied default risk of the loss firm.

In Table 9 (Panel A), for the 'Global Sample', the interaction term *Settlement Dum* * *Uncertainty Tone* is significant and negative, thus indicating that the uncertainty tone adversely affects the reputational return only in settlement announcements when investors do not give the loss firm the benefit of doubt. For example, one standard deviation increase in the uncertainty tone would cause RCAR(0,+1) to drop by 0.44% only if a final settlement is announced. However, the results in Table 9 (Panel B) do not seem to support the proposition that the uncertainty tone in settlement announcements can help distinguish firms incurring equity-based reputational losses. Hence, our hypothesis H_7 is marginally supported for the equity-based impact of the uncertainty tone.

The results in Table 9 (Panels C & D) provide strong and robust evidence that final settlements are informative to CDS market participants and hence tend to neutralize, if not reverse, the favorable impact of the uncertainty tone on the loss firm's implied default risk. For example, in Table 9 (Panel C), one standard deviation increase in the uncertainty tone would increase (decrease) CASC(0,+1) by 0.79 (1.19) basis points if there is (no) final settlement announced. Confirming the result above, in Table 9 (Panel D), one standard deviation increase in the uncertainty tone would increase (decrease) CARSC(0,+1) by 0.20% (1.11%) if there is (no) final settlement announced. Once again it is important to note that the favorable financial sentiment effect of the uncertainty tone in the first press-cutting is reversed and becomes much weaker once a final settlement is announced and the underlying uncertainty fades away. Hence, our hypothesis H_7 is strongly supported for the debt-based impact of the uncertainty tone.

[Insert Table 9 here]

4.6. Robustness Checks

We have performed several robustness checks to make sure that our main results hold under different assumptions[14]. First, we address the endogeneity concerns arising from the assumption that the *actual media tones* (i.e. the average net negative, litigious, and uncertainty tones on Day 0) are merely a natural response to the operational risk event characteristics (i.e. the actual media tones are endogenous variables in our estimation models) by utilizing the *lagged media tones* (i.e. the average net negative, litigious, and uncertainty tones in all media articles featuring the firm name in their headlines during the year ending one month before the announcement date).We believe that these lagged media tones are valid as instrumental variables in a two-stage least squares (2SLS) regression model given that they measure the *ex ante* overall attitude of the media towards the loss firm and hence correlate with the actual media tones on Day 0. In other words, these lagged media tones drive the reputational effects of operational risk event announcements exclusively through their impact on the actual media tones around these announcements. Running this 2SLS regression, the results for all our variables of interest remain qualitatively similar.

Second, we add to our models the number of media articles featuring the event and a dummy variable indicating whether The Wall Street Journal (WSJ) or The Financial Times (FT) has covered the event on Day 0. These additional control variables supposedly measure other dimensions of the media attention to the operational risk event during the (0,+1) event window. Again, our main results hold for the inclusion of these additional controls.

Third, we rerun all our regressions for different post-announcement windows ranging from (0,+2) to (0,+10) where the media tones are once measured on Day 0 (i.e. as used in our main regressions) and once measured on a one-day-lagged basis (e.g. for the analysis in the (0,+5) event window, we use the average media tones in the event window (0,+4), and so forth). We find that Day-0 media tones are able to predict the reputational effects of operational risk announcements only for the first-week event windows (i.e. (0,+1) to (0,+5)) but not for longer event windows (i.e. (0,+6) to (0,+10)).

Overall, for all our robustness checks, our main results hold qualitatively similar and confirm that media tones have an incremental explanatory power for the reputational effects of operational risk event announcements in financial institutions.

[14] In the interests of brevity, our robustness checks are not reported but their full results are available upon request.

5. CONCLUSIONS

Operational risk event announcements are pieces of adverse news which unexpectedly hit the media headlines revealing new information on deficiencies in corporate governance structures, internal control systems, and risk management practices in financial institutions. Previous research has documented severe reputational damage as measured by negative loss-adjusted abnormal stock returns and positive abnormal credit default swap (CDS) spread changes around operational risk announcements. Although some previous studies have analyzed how characteristics of operational risk announcements (e.g. event type, business line, disclosure source, loss amount, event location) could explain equity and CDS market reactions, no previous research has examined how the tone (i.e. the form of words used) of operational risk announcements could drive those reactions. To fill this gap in the literature, we utilized the financial sentiment dictionary introduced by Loughran and McDonald (2011) to assess the reputational effects of the positive tone, negative tone, uncertainty tone, and litigious tone in a global sample of 288 operational risk event announcements in financial institutions extracted from the Operational Risk International Consortium (ORIC) database during the post-crisis period (2010 – 2014). In particular, we examine the main and marginal effects of these tones on the loss-adjusted abnormal stock returns (i.e. reputational returns), the likelihood of incurring a reputational damage (i.e. a negative reputational return), and the abnormal CDS (relative) spread changes (i.e. also used as a direct measure of the loss firm's implied default risk) following operational risk announcements.

Our empirical analysis revealed a number of original and interesting findings. First, we found strong evidence that the net negative tone and litigious tone increase the firm's implied default risk, whereas the uncertainty tone decreases it. On one side, CDS market participants penalize the loss firms for the bad news and litigation risk information disclosed in operational risk announcements. On the other side, CDS market participants give the loss firms the benefit of the doubt (as proxied by the uncertainty tone in media news) following operational risk announcements. Second, the net negative tone and litigious tone adversely affect the reputational return following operational risk announcements. Third, both the disclosure of the operational loss amount and firm recognition give more credibility to the net negative tone and hence exacerbate its adverse equity-based reputational impact. Fourth, firm recognition, regulatory announcements, and final settlements all seem to resolve most, if not all, of the uncertainty underlying the operational risk event, thus removing, or even reversing, the favorable impact of the uncertainty tone on the loss firm's reputational return and implied default risk causing investors to become more risk averse. Fifth, regulatory announcements partially neutralize the financial sentimental effects of textual tones in media news on operational risk events. Finally, in terms of their capacity to substitute the textual tones in media news, the regulatory announcements and final settlements are more informative than the disclosed operational loss amount

and firm recognition to CDS market participants, thus indicating that debt investors search for more impartial sources of public information which are more reliable and long-term relevant.

All in all, our results provide robust evidence on how narratives in unexpected adverse media news could strongly drive the financial sentiment of equity and debt investors. It is also apparent that how prompt regulatory announcements are released, relevant to the event, are crucial to discipline market behavior and enable investors to take better informed and more rational investment decisions. In this regard, our findings are beneficial to current and potential equity and debt investors, analysts, board directors, and regulators of the financial industry. More specifically, our results suggest that internal to these institutions risk managers should at the very least be much more involved and careful in the coordination of messages to market when detailing operational risk events within them.

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Table 1: Sample Selection Procedures

This table reports the selection criteria and procedure of our final sample comprising operational risk event announcements in publicly listed financial institutions incorporated in USA, Europe, Canada, and Australia during the post-global financial crisis (post-GFC) period (2010 – 2014).

Selection Procedure	**Observations**
Complete ORIC Database (March 2015)	16110
(-) Announcements before 1st January 2010	(804)
(-) Announcements after 31st December 2014	(99)
(-) Announcements in non-financial Firms	(2190)
(-) Announcements in loss firms not headquartered in USA, Europe, Canada, and Australia	(3653)
(-) Announcements which have no clear operational risk classification (event type or business line)	(5044)
(-) Announcements whose dates are not confirmed or full-text press articles not found	(3291)
(-) Announcements in privately held financial firms	(696)
(-) Announcements with outliers in reputational returns or abnormal CDS relative spread changes (i.e. less than -10% or more than 10%)	(45)
Global Sample	288
(-) Announcements in loss firms publicly listed in Non-English Dominated Stock Exchanges	(72)
English Sample	216

Table 2: Composition of the Final Sample

This table reports the composition of our final sample comprising operational risk event announcements in publicly listed financial institutions incorporated in USA, Europe, Canada, and Australia during the post-global financial crisis (post-GFC) period (2010 – 2014).

Panel A: By Country

Country	Number of Events	Percent%
Austria	3	1.04
Australia	13	4.51
Belgium	2	0.69
Canada	2	0.69
Switzerland	21	7.29
Germany	17	5.9
Spain	4	1.39
France	4	1.39
United Kingdom	86	29.86
Hungary	3	1.04
Ireland	2	0.69
Italy	4	1.39
Netherlands	3	1.04
Norway	1	0.35
Russian Federation	2	0.70
Sweden	2	0.69
Turkey	6	2.08
United States	113	39.24
Total	288	100

Table 2: Composition of the Final Sample

This table reports the composition of our final sample comprising operational risk event announcements in publicly listed financial institutions incorporated in USA, Europe, Canada, and Australia during the post-global financial crisis (post-GFC) period (2010 – 2014).

Panel B: By Industry Type

Industry Type	**Number of Events**	**Percent%**
Banks	47	16.32
Consumer Finance	6	2.08
Corporate Banking	1	0.35
Diversified Banks	150	52.08
Institutional Brokerage	20	6.94
Instl Trust, Fiduciary & Custody	5	1.74
Insurance Brokers	1	0.35
Investment Income - Life Insurance	1	0.35
Investment Management	3	1.04
Life Insurance	9	3.13
Managed Care	1	0.35
Mortgage Finance	2	0.69
Other Financial Services	1	0.35
P&C Insurance	5	1.74
Retail Banking	18	6.25
Wealth Management	18	6.25
Total	288	100

Table 3: Descriptive Statistics

This table reports the descriptive statistics for the variables tested. Variables description is reported in the appendix.

	Obs	Min	1%	5%	25%	Median	Mean	StDev	75%	95%	99%	Max
RCAR(0,+1)	288	-0.073067	-0.063234	-0.021133	-0.003433	0.005590	0.007773	0.022197	0.018447	0.045427	0.078073	0.082584
Reputation Loss Dum(0,+1)	288	0	0	0	0	0	0.357639	0.480139	1	1	1	1
CASC(0,+1)	149	-11.171000	-9.633801	-5.717000	-1.782000	-0.187000	-0.148899	3.363751	1.709000	4.763000	7.462990	9.462000
CARSC(0,+1)	149	-0.086051	-0.082197	-0.043312	-0.014214	-0.001804	0.000588	0.027946	0.015426	0.055946	0.067970	0.068334
Net Negative Tone	288	0	6.818182	30	44.680855	52.941177	53.414825	14.428533	63.636364	73.529411	81.818184	90
Uncertainty Tone	288	0	0	0	2.650053	6.798922	8.288917	7.718252	10.912698	24	33.333332	41.176472
Litigious Tone	288	0	0	5.882353	18.301435	25	25.745021	12.437962	33.956289	46.666668	53.125000	60
Loss Amount Disclosure Dum	288	0	0	0	0	1	0.663194	0.473440	1	1	1	1
Firm Recognition Dum	288	0	0	0	0	0	0.381944	0.486709	1	1	1	1
Regulatory Announcement Dum	288	0	0	0	0	1	0.552083	0.498146	1	1	1	1
Settlement Dum	288	0	0	0	0	0	0.232639	0.423249	0	1	1	1
Different Country Dum	288	0	0	0	0	0	0.270833	0.445164	1	1	1	1
Top Figures Dum	288	0	0	0	0	0	0.062500	0.242483	0	1	1	1
Fraud Dum	288	0	0	0	0	0	0.118056	0.323236	0	1	1	1
Basel Business Line Dum	288	0	0	0	1	1	0.791667	0.406823	1	1	1	1
Analyst Coverage	288	1	1	9	19	25	23.604167	7.529472	29	34	36	37
Credit Rating	149	3	3	5	6	7	6.382550	1.171724	7	8	11	12
StDev Ret	288	0.008355	0.008585	0.010447	0.014427	0.019562	0.021575	0.009529	0.025996	0.039040	0.049981	0.076589
Beta	288	0.438700	0.499800	0.795000	1.237550	1.673550	1.737650	0.656674	2.139750	2.950100	3.183000	4.455600
Float%	288	0	0	0	70	93.500000	79.250000	28.599603	100	100	100	100
Ln(Volume)	288	-0.693147	3.218876	4.079231	8.219105	9.340234	8.974527	2.068143	10.279562	11.857175	12.564181	12.717121
Ln(Total Assets)	288	6.467730	6.856390	10.306004	13.102013	14.170700	13.560051	1.529168	14.569399	14.760633	14.868855	14.868855
ROA	288	-3.278073	-1.764910	-0.866259	0.041357	0.390876	0.477471	0.929101	0.803119	1.771917	4.711409	7.199489
Leverage	288	0	0	0.362878	0.759757	1.286286	1.550832	0.997642	2.303329	3.364115	4.096467	5.462355
Ln(MTBR)	288	0.029267	0.029267	0.039878	0.058222	0.090826	0.418372	0.437397	0.896917	1.077006	1.240374	1.240374
GDP Per Capita	288	10646.035156	10646.035156	31832.238281	41681.919922	48374.054688	48748.318095	13879.752042	51456.660156	84669.289063	88002.609375	100575.117188
CAR(-5,-1)	288	-0.223682	-0.102538	-0.032991	-0.012488	0.001181	0.001459	0.030863	0.016606	0.042500	0.080863	0.129701
CASC(-5,-1)	149	-61.572899	-23.618200	-10.078000	-4.246000	-0.424000	-0.002609	9.938803	3.698000	11.639000	41.074100	54.259995
CARSC(-5,-1)	149	-0.184066	-0.154638	-0.081733	-0.030828	0.001680	0.002120	0.057232	0.033975	0.109788	0.137396	0.221156

Table 4: Correlation Analysis (Global Sample)

This table reports Pearson's correlation coefficients of the variables tested. Variables description is reported in the appendix. * p<0.1; ** p<0.05; *** p<0.01

	RCAR(0,+1)	Reputation Loss Dum(0,+1)	CASC(0,+1)	CARSC(0,+1)	Net Negative Tone	Uncertainty Tone	Litigious Tone
RCAR(0,+1)	**1.0000**						
Reputation Loss Dum(0,+1)	**-0.6796**	**1.0000**					
	(0)***						
CASC(0,+1)	**0.0316**	**0.0084**	**1.0000**				
	(0.6973)	(0.9175)					
CARSC(0,+1)	**0.0216**	**0.0659**	**0.8869**	**1.0000**			
	(0.7899)	(0.417)	(0)***				
Net Negative Tone	**-0.1193**	**-0.0126**	**0.0137**	**0.0334**	**1.0000**		
	(0.043)**	(0.8319)	(0.8659)	(0.681)			
Uncertainty Tone	**0.0578**	**-0.0183**	**-0.1529**	**-0.1316**	**-0.3041**	**1.0000**	
	(0.3283)	(0.7569)	(0.0584)*	(0.1038)	(0)***		
Litigious Tone	**-0.0426**	**0.0361**	**0.1625**	**0.1536**	**-0.2539**	**-0.4449**	**1.0000**
	(0.4716)	(0.5413)	(0.044)**	(0.0572)*	(0)***	(0)***	

Table 5: Baseline Regressions

Panel A: Reputational Returns

This table reports the results of the OLS regression model estimating the equity-based reputational impact ($RCAR(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$RCAR(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	-0.000088			-0.000169		
	(0.82)			(1.29)		
Uncertainty Tone		0.000148			-0.000020	
		(0.89)			(0.11)	
Litigious Tone			-0.000137			-0.000212
			(1.27)			(1.75)*
Loss Amount Disclosure Dum	0.009039	0.009362	0.009339	0.007792	0.008018	0.008035
	(2.96)***	(3.07)***	(3.09)***	(2.13)**	(2.18)**	(2.23)**
Firm Recognition Dum	0.000274	-0.000278	-0.000635	0.002487	0.002255	0.000524
	(0.07)	(0.07)	(0.16)	(0.56)	(0.49)	(0.12)
Regulatory Announcement Dum	-0.004503	-0.005165	-0.006124	-0.005242	-0.006623	-0.008130
	(1.50)	(1.81)*	(2.06)**	(1.55)	(2.01)**	(2.34)**
Settlement Dum	0.000743	0.000754	0.001029	0.000746	0.000926	0.001599
	(0.20)	(0.20)	(0.27)	(0.19)	(0.22)	(0.39)
Different Country Dum	-0.005056	-0.005489	-0.005497	-0.002898	-0.003801	-0.003883
	(1.44)	(1.56)	(1.55)	(0.56)	(0.75)	(0.78)
Top Figures Dum	-0.003975	-0.003828	-0.003290	-0.006114	-0.005305	-0.004002
	(0.63)	(0.61)	(0.53)	(0.93)	(0.81)	(0.62)
Fraud Dum	0.000827	0.000833	0.000191	-0.000630	-0.002145	-0.001479
	(0.19)	(0.18)	(0.04)	(0.14)	(0.47)	(0.33)
Basel Business Line Dum	0.000037	0.000264	0.000587	-0.001230	-0.001359	-0.000016
	(0.01)	(0.07)	(0.15)	(0.26)	(0.28)	(0.00)
Analyst Coverage	0.000240	0.000252	0.000235	0.000394	0.000371	0.000346
	(0.94)	(1.00)	(0.92)	(1.29)	(1.21)	(1.13)
StDev Ret	0.480697	0.481456	0.482048	0.828627	0.801689	0.794790
	(2.34)**	(2.34)**	(2.36)**	(3.12)***	(3.08)***	(3.02)***
Beta	-0.001218	-0.000863	-0.000559	-0.000404	-0.000050	0.000439
	(0.43)	(0.31)	(0.20)	(0.11)	(0.01)	(0.12)
Float%	-0.000083	-0.000078	-0.000074	-0.000060	-0.000063	-0.000066
	(1.30)	(1.24)	(1.18)	(0.57)	(0.58)	(0.61)
Ln(Volume)	-0.000074	-0.000176	-0.000315	-0.000805	-0.000968	-0.001229
	(0.11)	(0.25)	(0.44)	(0.50)	(0.59)	(0.75)
Ln(Total Assets)	0.000244	0.000264	0.000247	0.001584	0.001834	0.001970
	(0.12)	(0.13)	(0.12)	(0.69)	(0.76)	(0.84)
ROA	0.000249	0.000273	0.000418	0.002647	0.002926	0.003201
	(0.09)	(0.10)	(0.15)	(0.98)	(1.05)	(1.13)
Leverage	-0.000775	-0.000932	-0.001010	-0.002377	-0.002480	-0.002753
	(0.42)	(0.52)	(0.56)	(1.15)	(1.21)	(1.34)
Ln(MTBR)	-0.000229	-0.000272	-0.000261	-0.000530	-0.000625	-0.000540
	(0.52)	(0.62)	(0.60)	(1.03)	(1.24)	(1.08)
GDP Per Capita	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	(0.43)	(0.54)	(0.63)	(0.98)	(1.00)	(0.98)
CAR(-5,-1)	0.061208	0.062832	0.065908	0.117575	0.129220	0.129789
	(1.05)	(1.10)	(1.15)	(2.22)**	(2.52)**	(2.57)**
Constant	-0.000188	-0.006722	-0.001126	-0.032034	-0.040623	-0.034179
	(0.01)	(0.25)	(0.04)	(0.95)	(1.15)	(0.98)
R^2	0.13	0.13	0.13	0.21	0.20	0.21
N	288	288	288	216	216	216

Table 5: Baseline Regressions

Panel B: The Odds of Reputational Damage

This table reports the results of the logit regression model estimating the odds of equity-based reputational damage ($\ln\left(\frac{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=1\right)}{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=0\right)}\right)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$\ln(\frac{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=1)}{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=0)})$					
	Global Sample			English Sample		
Net Negative Tone	-0.011562			-0.014395		
	(1.11)			(1.21)		
Uncertainty Tone		-0.002414			0.029322	
		(0.13)			(1.40)	
Litigious Tone			0.008522			0.012889
			(0.75)			(0.94)
Loss Amount Disclosure Dum	-0.636832	-0.606505	-0.612244	-0.589279	-0.524269	-0.548066
	(2.15)**	(2.05)**	(2.08)**	(1.70)*	(1.50)	(1.59)
Firm Recognition Dum	0.006222	0.019068	0.074401	-0.011989	-0.188229	0.087323
	(0.02)	(0.05)	(0.19)	(0.03)	(0.43)	(0.19)
Regulatory Announcement Dum	0.381425	0.276782	0.337848	0.560269	0.465316	0.556820
	(1.26)	(0.98)	(1.16)	(1.60)	(1.41)	(1.59)
Settlement Dum	-0.382898	-0.366893	-0.393462	-0.535025	-0.506678	-0.603647
	(0.89)	(0.86)	(0.92)	(1.10)	(1.08)	(1.24)
Different Country Dum	-0.065133	-0.126566	-0.126553	-0.112622	-0.228517	-0.186080
	(0.15)	(0.29)	(0.29)	(0.18)	(0.38)	(0.30)
Top Figures Dum	-0.361599	-0.334019	-0.367281	-0.337348	-0.263704	-0.384695
	(0.54)	(0.50)	(0.56)	(0.39)	(0.30)	(0.43)
Fraud Dum	-0.144073	-0.249230	-0.254531	-0.234039	-0.102317	-0.399991
	(0.29)	(0.50)	(0.52)	(0.43)	(0.19)	(0.74)
Basel Business Line Dum	-0.150248	-0.149036	-0.179601	0.389090	0.526564	0.329877
	(0.43)	(0.43)	(0.51)	(0.87)	(1.15)	(0.72)
Analyst Coverage	-0.016103	-0.017197	-0.016828	-0.025760	-0.029206	-0.025555
	(0.64)	(0.70)	(0.68)	(0.76)	(0.86)	(0.75)
StDev Ret	-8.713067	-9.861970	-10.174017	-50.100071	-54.388766	-51.388441
	(0.50)	(0.57)	(0.59)	(1.95)*	(2.08)**	(1.99)**
Beta	-0.308347	-0.273312	-0.293231	-0.344452	-0.332523	-0.343941
	(1.04)	(0.93)	(0.98)	(1.00)	(0.98)	(0.97)
Float%	0.006173	0.006692	0.006450	-0.000371	-0.000763	-0.000258
	(1.03)	(1.12)	(1.08)	(0.03)	(0.07)	(0.02)
Ln(Volume)	0.027758	0.019854	0.030199	0.328977	0.323490	0.329938
	(0.32)	(0.24)	(0.35)	(1.63)	(1.68)*	(1.63)
Ln(Total Assets)	0.056520	0.062807	0.063427	-0.228111	-0.222096	-0.220457
	(0.38)	(0.44)	(0.44)	(1.20)	(1.22)	(1.18)
ROA	-0.039990	-0.038070	-0.048000	-0.227273	-0.234241	-0.226139
	(0.16)	(0.16)	(0.20)	(0.73)	(0.83)	(0.75)
Leverage	0.005248	-0.003510	0.003415	0.062891	0.048685	0.073495
	(0.03)	(0.02)	(0.02)	(0.30)	(0.23)	(0.35)
Ln(MTBR)	0.056925	0.049645	0.049092	0.076628	0.078473	0.063169
	(1.30)	(1.14)	(1.13)	(1.41)	(1.50)	(1.19)
GDP Per Capita	-0.000002	-0.000001	-0.000002	0.000005	-0.000002	0.000006
	(0.17)	(0.07)	(0.15)	(0.14)	(0.05)	(0.16)
CAR(-5,-1)	-5.091921	-4.454341	-4.550655	-9.993617	-9.814844	-9.078417
	(1.23)	(1.08)	(1.11)	(1.98)**	(1.88)*	(1.81)*
Constant	-0.075119	-0.692308	-0.961745	1.805298	1.235661	0.684693
	(0.04)	(0.40)	(0.56)	(0.67)	(0.48)	(0.26)
R^2	0.07	0.06	0.06	0.12	0.12	0.11
N	288	288	288	216	216	216

Table 5: Baseline Regressions

Panel C: Abnormal CDS Spread Changes

This table reports the results of the OLS regression model estimating the debt-based reputational impact $(CASC_{ijk}(0,+1))$ for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CASC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.021965			0.042682		
	(1.10)			(1.73)*		
Uncertainty Tone		-0.050545			-0.089554	
		(1.69)*			(2.12)**	
Litigious Tone			0.033184			0.048429
			(1.55)			(1.78)*
Loss Amount Disclosure Dum	-0.303698	-0.361185	-0.362240	-0.340432	-0.518312	-0.473966
	(0.47)	(0.57)	(0.57)	(0.38)	(0.61)	(0.56)
Firm Recognition Dum	-1.308555	-1.155561	-1.055972	-1.656876	-1.290495	-1.186864
	(1.14)	(1.03)	(0.92)	(1.24)	(0.99)	(0.89)
Regulatory Announcement Dum	-0.377891	-0.224679	0.059943	-0.278253	0.020674	0.447862
	(0.60)	(0.37)	(0.09)	(0.34)	(0.03)	(0.51)
Settlement Dum	1.019108	0.884658	0.631353	1.075273	0.855515	0.402131
	(0.83)	(0.72)	(0.52)	(0.78)	(0.61)	(0.28)
Different Country Dum	-1.420153	-1.461084	-1.434789	-1.365634	-1.274494	-1.195317
	(1.74)*	(1.80)*	(1.80)*	(1.09)	(1.12)	(1.06)
Top Figures Dum	-3.317444	-3.144850	-3.226305	-4.046882	-3.534916	-4.159699
	(1.41)	(1.34)	(1.38)	(1.00)	(0.85)	(1.04)
Fraud Dum	1.650272	1.673281	1.788198	1.432454	1.416642	1.565779
	(1.22)	(1.26)	(1.35)	(0.94)	(0.93)	(1.04)
Basel Business Line Dum	1.202832	1.105599	1.058289	0.842920	0.509219	0.641973
	(1.48)	(1.38)	(1.34)	(0.72)	(0.44)	(0.56)
Analyst Coverage	0.083769	0.084136	0.080598	0.117889	0.129167	0.126627
	(0.98)	(0.99)	(0.95)	(1.09)	(1.22)	(1.17)
Credit Rating	-0.074656	-0.054973	0.017120	-0.522330	-0.446346	-0.114886
	(0.17)	(0.12)	(0.04)	(0.83)	(0.71)	(0.17)
StDev Ret	-43.013598	-43.977158	-39.587744	-32.041778	-17.080206	-21.731262
	(1.18)	(1.20)	(1.11)	(0.48)	(0.25)	(0.33)
Beta	0.693440	0.607062	0.466857	1.616339	1.502064	1.190560
	(1.01)	(0.91)	(0.67)	(1.85)*	(1.78)*	(1.30)
Ln(Total Assets)	0.089869	0.067994	0.133393	0.160748	0.191275	0.164078
	(0.16)	(0.12)	(0.24)	(0.17)	(0.20)	(0.18)
ROA	1.214835	1.181514	1.312702	1.586121	1.770357	2.008156
	(1.46)	(1.44)	(1.58)	(1.17)	(1.31)	(1.39)
Leverage	-0.388848	-0.379770	-0.349218	0.334319	0.292618	0.302039
	(1.05)	(1.02)	(0.94)	(0.57)	(0.49)	(0.48)
Ln(MTBR)	-0.192395	-0.181362	-0.184322	-0.462351	-0.486039	-0.369937
	(1.83)*	(1.72)*	(1.78)*	(1.49)	(1.49)	(1.13)
GDP Per Capita	0.000041	0.000037	0.000030	0.000264	0.000286	0.000153
	(1.81)*	(1.62)	(1.28)	(1.06)	(1.11)	(0.57)
CASC(-5,-1)	0.031787	0.037560	0.038223	-0.007882	0.004345	0.005857
	(0.70)	(0.84)	(0.87)	(0.14)	(0.08)	(0.11)
Constant	-5.236669	-3.151748	-5.426941	-16.646627	-15.677827	-13.491061
	(0.54)	(0.32)	(0.58)	(0.74)	(0.69)	(0.59)
R^2	0.20	0.20	0.20	0.23	0.25	0.24
N	149	149	149	109	109	109

Table 5: Baseline Regressions

Panel D: Abnormal CDS Relative Spread Changes

This table reports the results of the OLS regression model estimating the debt-based reputational impact $(CARSC_{ijk}(0,+1))$ for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CARSC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.000251			0.000414		
	(1.38)			(2.01)**		
Uncertainty Tone		-0.000381			-0.001005	
		(1.38)			(3.09)***	
Litigious Tone			0.000278			0.000493
			(1.64)			(2.19)**
Loss Amount Disclosure Dum	-0.011112	-0.011868	-0.011950	-0.014381	-0.016351	-0.016095
	(1.94)*	(2.11)**	(2.15)**	(1.84)*	(2.23)**	(2.20)**
Firm Recognition Dum	-0.008601	-0.007267	-0.006317	-0.009587	-0.005859	-0.004908
	(0.90)	(0.79)	(0.68)	(0.89)	(0.57)	(0.47)
Regulatory Announcement Dum	-0.005567	-0.003609	-0.001233	-0.005075	-0.002196	0.002167
	(0.97)	(0.68)	(0.22)	(0.70)	(0.34)	(0.30)
Settlement Dum	0.008870	0.007172	0.005037	0.006894	0.005111	-0.000050
	(0.90)	(0.73)	(0.52)	(0.68)	(0.49)	(0.00)
Different Country Dum	-0.008944	-0.009070	-0.008942	-0.009068	-0.008397	-0.007534
	(1.31)	(1.32)	(1.35)	(0.79)	(0.80)	(0.72)
Top Figures Dum	-0.022075	-0.020619	-0.021130	-0.023174	-0.017792	-0.024197
	(1.43)	(1.37)	(1.42)	(0.99)	(0.70)	(1.03)
Fraud Dum	0.012534	0.013556	0.014417	0.011603	0.010753	0.012889
	(1.15)	(1.27)	(1.35)	(1.02)	(0.93)	(1.14)
Basel Business Line Dum	0.004276	0.003307	0.002913	-0.003289	-0.006916	-0.004918
	(0.69)	(0.54)	(0.48)	(0.40)	(0.87)	(0.64)
Analyst Coverage	0.000344	0.000339	0.000306	0.000696	0.000801	0.000749
	(0.50)	(0.51)	(0.45)	(0.80)	(0.98)	(0.87)
Credit Rating	-0.001799	-0.001759	-0.001130	-0.006264	-0.005482	-0.002018
	(0.46)	(0.43)	(0.27)	(1.12)	(0.97)	(0.33)
StDev Ret	-0.136522	-0.134585	-0.099480	0.197455	0.378630	0.314704
	(0.51)	(0.50)	(0.38)	(0.42)	(0.80)	(0.66)
Beta	0.002504	0.001643	0.000431	0.011683	0.010513	0.007283
	(0.45)	(0.30)	(0.08)	(1.60)	(1.51)	(0.92)
Ln(Total Assets)	0.004786	0.004599	0.005179	0.010495	0.010988	0.010649
	(1.15)	(1.08)	(1.23)	(1.56)	(1.71)*	(1.64)
ROA	0.004430	0.003835	0.004998	0.010261	0.012462	0.014880
	(0.65)	(0.55)	(0.70)	(0.93)	(1.12)	(1.23)
Leverage	-0.003602	-0.003427	-0.003127	0.003924	0.003406	0.003769
	(1.09)	(1.02)	(0.92)	(0.85)	(0.73)	(0.75)
Ln(MTBR)	-0.001035	-0.000900	-0.000934	-0.005071	-0.005554	-0.004188
	(1.15)	(1.01)	(1.07)	(2.11)**	(2.35)**	(1.66)
GDP Per Capita	0.000001	0.000000	0.000000	0.000004	0.000004	0.000003
	(2.20)**	(2.04)**	(1.75)*	(1.89)*	(2.21)**	(1.27)
CARSC(-5,-1)	0.010739	0.017762	0.022700	-0.023826	-0.019494	-0.001004
	(0.26)	(0.45)	(0.56)	(0.48)	(0.43)	(0.02)
Constant	-0.084662	-0.063498	-0.082481	-0.319339	-0.320685	-0.289977
	(1.16)	(0.85)	(1.11)	(1.77)*	(1.87)*	(1.62)
R^2	0.19	0.19	0.19	0.26	0.29	0.27
N	149	149	149	109	109	109

Table 6: Interactions with Loss Amount Disclosure

Panel A: Reputational Returns

This table reports the interaction terms of the OLS regression model estimating the equity-based reputational impact ($RCAR(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$RCAR(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.000257			0.000297		
	(1.43)			(1.45)		
Loss Amount Disclosure Dum * Net Negative Tone	-0.000441			-0.000608		
	(2.05)**			(2.44)**		
Uncertainty Tone		0.000425			0.000085	
		(1.41)			(0.26)	
Loss Amount Disclosure Dum * Uncertainty Tone		-0.000417			-0.000164	
		(1.13)			(0.38)	
Litigious Tone			-0.000407			-0.000312
			(1.77)*			(1.22)
Loss Amount Disclosure Dum * Litigious Tone			0.000367			0.000139
			(1.48)			(0.50)
Loss Amount Disclosure Dum	0.033381	0.012624	-0.000501	0.040576	0.009469	0.004329
	(2.78)***	(2.75)***	(0.07)	(3.14)***	(1.59)	(0.54)
R^2	0.14	0.13	0.14	0.23	0.20	0.21
N	288	288	288	216	216	216

Table 6: Interactions with Loss Amount Disclosure

Panel B: The Odds of Reputational Damage

This table reports the interaction terms of the logit regression model estimating the odds of equity-based reputational damage ($\ln\left(\frac{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=1\right)}{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=0\right)}\right)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$\ln(\frac{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=1)}{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=0)})$					
	Global Sample			English Sample		
Net Negative Tone	-0.043636			-0.050697		
	(2.14)**			(2.13)**		
Loss Amount Disclosure Dum *	0.042532			0.048402		
Net Negative Tone	(1.87)*			(1.86)*		
Uncertainty Tone		-0.049129			-0.011872	
		(1.45)			(0.31)	
Loss Amount Disclosure Dum *		0.070317			0.062922	
Uncertainty Tone		(1.74)*			(1.38)	
Litigious Tone			0.041021			0.028045
			(1.76)*			(1.01)
Loss Amount Disclosure Dum *			-0.045730			-0.021844
Litigious Tone			(1.76)*			(0.72)
Loss Amount Disclosure Dum	-2.975848	-1.140695	0.622353	-3.209459	-1.066970	0.039365
	(2.31)**	(2.76)***	(0.79)	(2.20)**	(2.06)**	(0.04)
R^2	0.08	0.07	0.07	0.13	0.12	0.12
N	288	288	288	216	216	216

Table 6: Interactions with Loss Amount Disclosure

Panel C: Abnormal CDS Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact ($CASC_{ijk}(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CASC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.024000			0.063467		
	(0.48)			(1.00)		
Loss Amount Disclosure Dum *	-0.002678			-0.028013		
Net Negative Tone	(0.05)			(0.40)		
Uncertainty Tone		-0.130176			-0.173260	
		(1.64)			(1.81)*	
Loss Amount Disclosure Dum *		0.110009			0.121038	
Uncertainty Tone		(1.13)			(0.99)	
Litigious Tone			0.038249			0.079897
			(0.89)			(1.59)
Loss Amount Disclosure Dum *			-0.007523			-0.043831
Litigious Tone			(0.15)			(0.79)
Loss Amount Disclosure Dum	-0.158949	-1.251973	-0.172580	1.181796	-1.612107	0.584341
	(0.05)	(1.29)	(0.12)	(0.30)	(1.26)	(0.34)
R^2	0.20	0.21	0.20	0.24	0.25	0.24
N	149	149	149	109	109	109

Table 6: Interactions with Loss Amount Disclosure

Panel D: Abnormal CDS Relative Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact $(CARSC_{ijk}(0,+1))$ for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CARSC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.000046			0.000171		
	(0.13)			(0.43)		
Loss Amount Disclosure Dum *	0.000269			0.000327		
Net Negative Tone	(0.69)			(0.76)		
Uncertainty Tone		-0.001112			-0.001804	
		(1.74)*			(2.51)**	
Loss Amount Disclosure Dum *		0.001011			0.001164	
Uncertainty Tone		(1.27)			(1.25)	
Litigious Tone			0.000417			0.000949
			(1.18)			(2.50)**
Loss Amount Disclosure Dum *			-0.000206			-0.000638
Litigious Tone			(0.51)			(1.54)
Loss Amount Disclosure Dum	-0.025699	-0.020083	-0.006739	-0.032176	-0.026939	-0.000673
	(1.16)	(2.26)**	(0.62)	(1.31)	(2.54)**	(0.06)
R^2	0.20	0.20	0.20	0.27	0.31	0.28
N	149	149	149	109	109	109

Table 7: Interactions with Firm Recognition

Panel A: Reputational Returns

This table reports the interaction terms of the OLS regression model estimating the equity-based reputational impact ($RCAR(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$RCAR(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.000102			0.000029		
	(0.70)			(0.16)		
Firm Recognition Dum *	-0.000376			-0.000364		
Net Negative Tone	(1.97)*			(1.60)		
Uncertainty Tone		0.000477			0.000249	
		(1.89)*			(0.82)	
Firm Recognition Dum *		-0.000633			-0.000502	
Uncertainty Tone		(1.98)**			(1.30)	
Litigious Tone			-0.000136			-0.000161
			(0.89)			(0.94)
Firm Recognition Dum *			-0.000001			-0.000118
Litigious Tone			(0.00)			(0.52)
Firm Recognition Dum	0.019631	0.005442	-0.000619	0.021160	0.007094	0.003331
	(1.86)*	(1.13)	(0.09)	(1.74)*	(1.18)	(0.42)
R^2	0.14	0.14	0.13	0.22	0.20	0.21
N	288	288	288	216	216	216

Table 7: Interactions with Firm Recognition

Panel B: The Odds of Reputational Damage

This table reports the interaction terms of the logit regression model estimating the odds of equity-based reputational damage ($\ln\left(\frac{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=1\right)}{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=0\right)}\right)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$\ln(\frac{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=1)}{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=0)})$					
	Global Sample			English Sample		
Net Negative Tone	-0.020345			-0.029035		
	(1.29)			(1.65)*		
Firm Recognition Dum *	0.017736			0.028553		
Net Negative Tone	(0.89)			(1.26)		
Uncertainty Tone		-0.047331			-0.009955	
		(1.78)*			(0.32)	
Firm Recognition Dum *		0.085592			0.072123	
Uncertainty Tone		(2.30)**			(1.65)*	
Litigious Tone			0.009899			0.014677
			(0.65)			(0.79)
Firm Recognition Dum *			-0.003431			-0.004601
Litigious Tone			(0.15)			(0.17)
Firm Recognition Dum	-0.904269	-0.765725	0.157593	-1.477217	-0.909435	0.192549
	(0.83)	(1.42)	(0.23)	(1.18)	(1.38)	(0.24)
R^2	0.07	0.08	0.06	0.12	0.13	0.11
N	288	288	288	216	216	216

Table 7: Interactions with Firm Recognition

Panel C: Abnormal CDS Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact ($CASC_{ijk}(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CASC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.011748			0.029625		
	(0.43)			(0.92)		
Firm Recognition Dum *	0.023589			0.026807		
Net Negative Tone	(0.55)			(0.58)		
Uncertainty Tone		-0.052942			-0.103480	
		(1.37)			(2.17)**	
Firm Recognition Dum *		0.005659			0.033065	
Uncertainty Tone		(0.08)			(0.34)	
Litigious Tone			0.009744			0.028821
			(0.34)			(0.83)
Firm Recognition Dum *			0.074415			0.061121
Litigious Tone			(1.58)			(1.06)
Firm Recognition Dum	-2.540302	-1.209267	-2.726703	-3.052078	-1.642739	-2.487290
	(0.98)	(1.07)	(1.68)*	(1.00)	(1.16)	(1.38)
R^2	0.20	0.20	0.22	0.24	0.25	0.24
N	149	149	149	109	109	109

Table 7: Interactions with Firm Recognition

Panel D: Abnormal CDS Relative Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact ($CARSC_{ijk}(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CARSC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.000277			0.000416		
	(1.11)			(1.44)		
Firm Recognition Dum *	-0.000059			-0.000004		
Net Negative Tone	(0.16)			(0.01)		
Uncertainty Tone		-0.000347			-0.001111	
		(1.03)			(3.03)***	
Firm Recognition Dum *		-0.000081			0.000254	
Uncertainty Tone		(0.14)			(0.37)	
Litigious Tone			0.000111			0.000395
			(0.50)			(1.46)
Firm Recognition Dum *			0.000536			0.000310
Litigious Tone			(1.48)			(0.77)
Firm Recognition Dum	-0.005512	-0.006500	-0.018329	-0.009372	-0.008573	-0.011484
	(0.25)	(0.69)	(1.46)	(0.41)	(0.78)	(0.90)
R^2	0.19	0.19	0.20	0.26	0.29	0.27
N	149	149	149	109	109	109

Table 8: Interactions with Regulatory Announcement

Panel A: Reputational Returns

This table reports the interaction terms of the OLS regression model estimating the equity-based reputational impact ($RCAR(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$RCAR(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	-0.000266			-0.000318		
	(1.83)*			(1.81)*		
Regulatory Announcement Dum *	0.000460			0.000436		
Net Negative Tone	(2.35)**			(1.84)*		
Uncertainty Tone		0.000381			0.000198	
		(1.60)			(0.74)	
Regulatory Announcement Dum *		-0.000569			-0.000634	
Uncertainty Tone		(1.54)			(1.33)	
Litigious Tone			-0.000200			-0.000316
			(1.42)			(2.02)**
Regulatory Announcement Dum *			0.000151			0.000259
Litigious Tone			(0.66)			(1.02)
Regulatory Announcement Dum	-0.028885	-0.000635	-0.010015	-0.028183	-0.001067	-0.014494
	(2.83)***	(0.15)	(1.53)	(2.32)**	(0.20)	(2.03)**
R^2	0.15	0.14	0.13	0.22	0.21	0.21
N	288	288	288	216	216	216

Table 8: Interactions with Regulatory Announcement

Panel B: The Odds of Reputational Damage

This table reports the interaction terms of the logit regression model estimating the odds of equity-based reputational damage ($\ln\left(\frac{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=1\right)}{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=0\right)}\right)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$\ln\left(\frac{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=1)}{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=0)}\right)$					
	Global Sample			English Sample		
Net Negative Tone	0.004229			0.000117		
	(0.33)			(0.01)		
Regulatory Announcement Dum * Net Negative Tone	-0.039030			-0.039479		
	(1.90)*			(1.56)		
Uncertainty Tone		-0.020083			0.005789	
		(0.81)			(0.23)	
Regulatory Announcement Dum * Uncertainty Tone		0.042006			0.064432	
		(1.10)			(1.41)	
Litigious Tone			0.012493			0.028720
			(0.86)			(1.55)
Regulatory Announcement Dum * Litigious Tone			-0.009115			-0.035644
			(0.40)			(1.28)
Regulatory Announcement Dum	2.434255	-0.053432	0.576978	2.611943	-0.084096	1.475349
	(2.14)**	(0.13)	(0.87)	(1.86)*	(0.16)	(1.87)*
R^2	0.08	0.07	0.06	0.12	0.12	0.12
N	288	288	288	216	216	216

Table 8: Interactions with Regulatory Announcement

Panel C: Abnormal CDS Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact $(CASC_{ijk}(0,+1))$ for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CASC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.041817			0.054871		
	(1.71)*			(1.84)*		
*Regulatory Announcement Dum * Net Negative Tone*	-0.044885			-0.028736		
	(1.13)			(0.53)		
Uncertainty Tone		-0.097456			-0.117613	
		(2.16)**			(2.11)**	
*Regulatory Announcement Dum * Uncertainty Tone*		0.113279			0.085117	
		(1.60)			(0.86)	
Litigious Tone			0.041452			0.050347
			(1.62)			(1.50)
*Regulatory Announcement Dum * Litigious Tone*			-0.018797			-0.004509
			(0.40)			(0.09)
Regulatory Announcement Dum	1.981757	-1.116408	0.529333	1.240429	-0.701154	0.552379
	(0.98)	(1.39)	(0.37)	(0.44)	(0.63)	(0.35)
R^2	0.21	0.22	0.20	0.24	0.25	0.24
N	149	149	149	109	109	109

Table 8: Interactions with Regulatory Announcement

Panel D: Abnormal CDS Relative Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact $(CARSC_{ijk}(0,+1))$ for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CARSC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.000332			0.000437		
	(1.41)			(1.90)*		
*Regulatory Announcement Dum * Net Negative Tone*	-0.000181			-0.000054		
	(0.51)			(0.13)		
Uncertainty Tone		-0.001068			-0.001541	
		(2.76)***			(3.51)***	
*Regulatory Announcement Dum * Uncertainty Tone*		0.001653			0.001598	
		(2.54)**			(1.79)*	
Litigious Tone			0.000543			0.000726
			(2.35)**			(2.36)**
*Regulatory Announcement Dum * Litigious Tone*			-0.000606			-0.000549
			(1.70)*			(1.21)
Regulatory Announcement Dum	0.003919	-0.016680	0.013848	-0.002200	-0.015766	0.014877
	(0.21)	(2.19)**	(1.29)	(0.10)	(1.59)	(1.17)
R^2	0.20	0.23	0.21	0.26	0.32	0.28
N	149	149	149	109	109	109

Table 9: Interactions with Settlement

Panel A: Reputational Returns

This table reports the interaction terms of the OLS regression model estimating the equity-based reputational impact ($RCAR(0,+1)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$RCAR(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	-0.000031			-0.000133		
	(0.24)			(0.85)		
*Settlement Dum * Net Negative Tone*	-0.000205			-0.000114		
	(0.95)			(0.45)		
Uncertainty Tone		0.000349			0.000124	
		(1.48)			(0.46)	
*Settlement Dum * Uncertainty Tone*		-0.000575			-0.000417	
		(1.76)*			(1.08)	
Litigious Tone			-0.000180			-0.000251
			(1.44)			(1.80)*
*Settlement Dum * Litigious Tone*			0.000215			0.000187
			(0.86)			(0.63)
Settlement Dum	0.011731	0.006788	-0.003468	0.006944	0.005239	-0.002323
	(0.90)	(1.50)	(0.52)	(0.45)	(1.02)	(0.29)
R^2	0.13	0.14	0.13	0.21	0.20	0.21
N	288	288	288	216	216	216

Table 9: Interactions with Settlement

Panel B: The Odds of Reputational Damage

This table reports the interaction terms of the logit regression model estimating the odds of equity-based reputational damage ($\ln\left(\frac{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=1\right)}{\Pr\left(Reputation\ Loss\ Dum_{ijk}(0,+1)=0\right)}\right)$) for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$\ln(\frac{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=1)}{\Pr(Reputation\ Loss\ Dum_{ijk}(0,+1)=0)})$					
	Global Sample			English Sample		
Net Negative Tone	-0.013474			-0.013026		
	(1.11)			(0.94)		
*Settlement Dum * Net Negative Tone*	0.007311			-0.004657		
	(0.36)			(0.21)		
Uncertainty Tone		-0.021937			0.012906	
		(0.89)			(0.49)	
*Settlement Dum * Uncertainty Tone*		0.056814			0.048034	
		(1.48)			(1.10)	
Litigious Tone			0.009177			0.014792
			(0.73)			(0.95)
*Settlement Dum * Litigious Tone*			-0.003650			-0.010277
			(0.12)			(0.30)
Settlement Dum	-0.773969	-0.974767	-0.313839	-0.284873	-1.043497	-0.378135
	(0.69)	(1.71)*	(0.39)	(0.23)	(1.57)	(0.42)
R^2	0.07	0.07	0.06	0.12	0.12	0.11
N	288	288	288	216	216	216

Table 9: Interactions with Settlement

Panel C: Abnormal CDS Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact $(CASC_{ijk}(0,+1))$ for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CASC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.033920			0.057183		
	(1.43)			(1.91)*		
*Settlement Dum * Net Negative Tone*	-0.046757			-0.049817		
	(1.10)			(1.14)		
Uncertainty Tone		-0.099338			-0.154724	
		(2.59)**			(3.25)***	
*Settlement Dum * Uncertainty Tone*		0.161639			0.257280	
		(2.53)**			(2.32)**	
Litigious Tone			0.037982			0.060305
			(1.64)			(2.17)**
*Settlement Dum * Litigious Tone*			-0.033961			-0.088395
			(0.65)			(1.31)
Settlement Dum	3.400431	-0.705235	1.462044	3.699824	-1.701677	2.553063
	(1.37)	(0.51)	(0.90)	(1.42)	(1.01)	(1.19)
R^2	0.21	0.23	0.21	0.24	0.29	0.24
N	149	149	149	109	109	109

Table 9: Interactions with Settlement

Panel D: Abnormal CDS Relative Spread Changes

This table reports the interaction terms of the OLS regression model estimating the debt-based reputational impact $CARSC_{ijk}(0,+1)$ for the 'Global Sample' in Models (1) to (3) and the 'English Sample' in Models (4) to (6). For the sake of brevity, the constant term and all other variables are not reported. Variables description is reported in the appendix. t-statistics based on heteroscedasticity-robust standard errors are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

	$CARSC_{ijk}(0,+1)$					
	Global Sample			English Sample		
Net Negative Tone	0.000347			0.000505		
	(1.63)			(2.09)**		
*Settlement Dum * Net Negative Tone*	-0.000381			-0.000322		
	(1.00)			(1.01)		
Uncertainty Tone		-0.000684			-0.001434	
		(2.01)**			(3.62)***	
*Settlement Dum * Uncertainty Tone*		0.001006			0.001695	
		(1.93)*			(2.27)**	
Litigious Tone			0.000267			0.000516
			(1.43)			(2.17)**
*Settlement Dum * Litigious Tone*			0.000082			-0.000174
			(0.19)			(0.37)
Settlement Dum	0.028243	-0.002701	0.003028	0.023758	-0.011756	0.004198
	(1.21)	(0.26)	(0.22)	(1.15)	(1.05)	(0.27)
R^2	0.20	0.21	0.19	0.27	0.32	0.27
N	149	149	149	109	109	109

Appendix: Variables Description

Variable Name	Definition	Data Source(s)
CAR (x,z)	Cumulative abnormal stock return in the event window (x,z) = $\sum_{i=x}^{z} Abnormal\ Stock\ Return_i$, where $Abnormal\ Stock\ Return_i = Firm\ Stock\ Return_i - Normal\ Stock\ Return_i$ Estimation window of the normal stock return is 250 trading days ending one calendar month before the announcement date. Estimation model is single-factor market model. Original stock prices are measured in US dollar.	DataStream
RCAR (x,z)	Reputational return in the event window (x,z) = Cumulative abnormal stock return + |(Disclosed operational loss amount / Market value of the loss firm one calendar week before the announcement date)|	- DataStream - ORIC - LexisNexis
Reputation Loss Dum (x,z)	1 if the reputational return RCAR(x,z) is negative; 0 otherwise	- DataStream - ORIC - LexisNexis
CASC (x,z)	Cumulative abnormal CDS spread change in the event window (x,z) = $\sum_{i=x}^{z} Abnormal\ CDS\ Spread\ Change_i$, where $Abnormal\ CDS\ Spread\ Change_i = (Firm\ CDS\ Spread_i - Firm\ CDS\ Spread_{i-1}) - (iTraxx\ Spread_i - iTraxx\ Spread_{i-1})$. It is measured in euros for five year duration (modified modified structure).	- DataStream
CARSC (x,z)	Cumulative abnormal CDS relative spread change in the event window (x,z) = $\sum_{i=x}^{z} Abnormal\ CDS\ Relative\ Spread\ Change_i$, where $Abnormal\ CDS\ Relative\ Spread\ Change_i = \frac{(Firm\ CDS\ Spread_i - Firm\ CDS\ Spread_{i-1})}{Firm\ CDS\ Spread_{i-1}} - \frac{(iTraxx\ Spread_i - iTraxx\ Spread_{i-1})}{iTraxx\ Spread_{i-1}}$ It is measured in euros for five year duration (modified modified structure).	- DataStream
Net Negative Tone	((Negative Words – Positive Words) / Total Financial Sentiment Words) * 100	- Loughran and McDonald (2011) - ORIC - LexisNexis
Uncertainty Tone	(Uncertainty Words / Total Financial Sentiment Words) * 100	- Loughran and McDonald (2011) - ORIC - LexisNexis
Litigious Tone	(Litigious Words / Total Financial Sentiment Words) * 100	- Loughran and McDonald (2011) - ORIC - LexisNexis
Loss Amount Disclosure Dum	1 if the operational loss amount is disclosed; 0 otherwise	- ORIC - LexisNexis
Firm Recognition Dum	1 if the operational risk event is recognised by the loss firm; 0 otherwise	- ORIC - LexisNexis
Regulatory Announcement Dum	1 if the operational risk event is announced by a regulatory body; 0 otherwise	- ORIC

		- LexisNexis
Settlement Dum	1 if the operational risk event is settled; 0 otherwise	- ORIC - LexisNexis
Different Country Dum	1 is the operational risk event takes place in a country different from the loss firm headquarters' country; 0 otherwise	- ORIC - LexisNexis
Top Figures Dum	1 if the operational risk event directly involves one or more of the board directors or chief executives; 0 otherwise	- ORIC - LexisNexis
Fraud Dum	1 if the operational risk event is classified as internal fraud or external fraud; 0 otherwise	- ORIC - LexisNexis
Basel Business Line Dum	1 id the operational risk event is classified under one of the eight Basel II business lines: Corporate finance, trading and sales, retail banking, commercial banking, payment and settlement, agency services, asset management, retail Brokerage; 0 otherwise	- ORIC - LexisNexis
Analyst Coverage	Number of equity analysts following the firm (i.e. issuing EPS estimates)	Bloomberg
Credit Rating	S&P long-term local issuer credit rating. It is measured in an ascending numerical scale ranging from AAA=1 to D or SD = 22	Bloomberg
StDev Ret	Standard deviation of daily stock returns for one trading year ending one calendar month before the announcement date	DataStream
Beta	Monthly stock's Beta (measured at the end of calendar month preceding the announcement date)	DataStream
Float%	The percentage of outstanding shares available to ordinary shareholders one week before the announcement date	DataStream
Ln(Volume)	The natural logarithm of the number of shares traded for the stock (in thousands) one week before the announcement date	DataStream
Ln(Total Assets)	Natural logarithm of total assets (in millions of US dollar) measured at the end of calendar quarter preceding the announcement date	DataStream
ROA	Return on assets (%); winsorized at the 1^{st} and 99^{th} percentiles	DataStream
Leverage	Long-term debt / Shareholders 'Equity (Decimals)	DataStream
Ln(MTBR)	The natural logarithm of market-to-book-value ratio plus one; winsorized at the 1^{st} and 99^{th} percentiles	DataStream
GDP Per Capita	GDP per capita (in US dollar)	World Bank