Risk Disclosure, Earnings Smoothing and Firm Perceived Risk

Abstract

Purpose – This paper examines the association between perceived firm risk and two reporting mechanisms: risk disclosure and earnings smoothing in the UK context.

Design/methodology/approach – This study juxtaposes three competing views, the "null", the "divergence" and the "convergence" hypotheses, and empirically investigates whether risk disclosure and earnings smoothing affect firm perceived risk for a sample of large UK firms with rich and poor information environments. This study also uses the global financial crisis as an external shock on overall risk in the economy to investigate when and how managers employ these two reporting mechanisms to shape the firm perceived risk.

Findings – This paper documents that risk disclosures have no significant effect on investors' risk perceptions, consistent with risk disclosures containing boilerplate and generic statements about firm risk. This paper also finds that earnings smoothing reduces investors' risk perceptions, reflecting investors' interpretations about future firm performance. Additional tests reveal that earnings smoothing is not associated with perceived firm risk for firms with rich information environments and expanded risk disclosures. Further, reporting smooth earnings decreases perceived firm risk following the global financial crisis. These findings are robust to alternative specifications and measures of earnings smoothing as well as post-filing perceived firm risk.

Research limitations/implications – This study does not distinguish between the garbling role and the informational role of earnings smoothing. The risk disclosure measurement used in this study, developed based on UK annual reports, may limit the generalizability of findings to other countries.

Practical implications – The findings suggest that managers should revise their risk disclosure strategies to provide in-depth details on firm risk. Investors might require information and thorough assessment to evaluate investment risks when firms provide generic risk disclosures and smoothed earnings by consulting sources like financial intermediaries. Regulators should keep an eye on firms reporting boilerplate risk disclosures and on how smoothing earnings impacts the firm perceived risk following economic turmoil, to guide interventions that promote market stability.

Originality/value – The findings provide new insights into when and how managers use their financial reporting discretion to make firms appear less risky and therefore, influence investors' risk perceptions.

Keywords Textual Analysis; Risk Disclosure; Earnings Smoothing; Perceived firm risk
Paper type Research paper

1. Introduction

This paper examines the association between risk disclosure, earnings smoothing, and perceived firm risk. The literature finds mixed evidence on the association between risk disclosure and perceived firm risk (e.g., Bao and Datta, 2014; Campbell et al., 2014; Elshandidy and Shrives, 2016). The current study expands on prior studies by examining whether UK firms' risk disclosures are sufficiently informative to influence investors' risk perceptions. Studying the informativeness of risk reporting in UK firms holds significant importance due to documented challenges and deficiencies in prior research regarding the quality of risk information disclosed in UK annual reports (e.g., Abraham and Cox, 2007; Linsley and Shrives, 2005; Mcchlery and Hussainey, 2021). Moreover, empirical evidence on the informativeness of risk disclosure among UK firms remains limited. This research aims to address this gap in the literature by investigating risk reporting practices in UK firms, contributing to a deeper understanding of corporate disclosure behaviour. Additionally, considering the unique regulatory environment and reporting requirements in the UK, studying risk disclosure within this context provides valuable insights into the effectiveness of regulatory frameworks and their impact on financial reporting practices.

Despite regulatory efforts to improve risk reporting in UK firms, the level and content of risk disclosures remain largely voluntary. Consequently, the degree to which investors perceive a firm's riskiness and future prospects varies depending on the information content of risk disclosures. Therefore, it remains an empirical question whether risk disclosures provided by UK firms are sufficiently informative to influence investors' risk perceptions. Investigating the usefulness of UK firms' risk disclosures is crucial to assess whether reported deficiencies obscure essential firm-specific risk information and hinder investors' understanding of firms' risk exposure.

Similarly, while the debate concerning the effect of earnings smoothing on perceived firm risk has been addressed by theoretical and empirical research in the US setting (e.g., Erickson et al., 2017; Kim et al., 2021; Yu et al., 2018), the consequences of UK firms reporting smoother earnings on perceived risk is still unknown. The UK provides a research setting characterised with weaker legal enforcement to directors' fiduciary duties (Leuz et al., 2003) and more concentrated ownership structures than the US (Leuz et al., 2003) where managers also follow a flexible principles-based approach in financial reporting. Hence, the UK context presents an interesting

setting to investigate how managers' incentives influence financial reporting practices and how investors perceive smooth earnings.

Understanding the impact of risk disclosures and earnings smoothing on firm perceived risk is crucial for investors and regulators alike. By empirically investigating these relationships within the context of large UK firms, this study sheds light on how management may strategically employ reporting mechanisms to shape investors' risk perceptions, particularly in varying information environments and economic conditions. Ultimately, this study aims to provide insights that can assist investors in making informed decisions and navigating uncertainties in the market, while also informing regulatory efforts aimed at promoting transparency and accountability in financial reporting.

Therefore, in this study we examine the impact of both risk disclosure and earnings smoothing on perceived firm risk using three competing arguments. The first is the null hypothesis, which expects that risk disclosure and earnings smoothing are not informative and therefore will not be useful to investors in the capital market. The second, the divergence argument, expects that risk disclosures inform investors about previously *unknown* risks and uncertainties which increase their perceived risk. The third, the convergence argument, expects that risk disclosures have a significant negative influence on investors' perceived risk and that reporting smooth earnings is likely to converge investors' interpretations about firm performance, thereby reducing their risk perceptions.

Using a sample of UK FTSE 100 firms over the period 2005-2015, we provide two main findings. First, we find that risk disclosures do not influence investors' risk perceptions, supporting prior studies' findings that risk disclosures contain symbolic, rather than substantive, risk narratives, in line with the null hypothesis. Second, we find that earnings smoothing reduces perceived firm risk, indicating that investors' expectations converge about future firm performance when managers' report a smooth stream of income. Further subsample analysis reveals that investors do not react to smooth reported earnings in firms with rich information environments and high-risk disclosure levels. Furthermore, reporting smooth earnings following the global financial crisis (2009-2015) lowers perceived firm risk. The results hold using several robustness measures.

The current study contributes to the literature by providing an integrated understanding on when and how managers use their financial reporting discretion to influence investors' risk perceptions by reporting smooth earnings and generic risk disclosures. In further analyses, we find a moderating effect of risk disclosure, whereby the negative effect of earnings smoothing on investors' risk perceptions is less pronounced for firms with high disclosure of risk information. This extends studies that investigate the choice between risk disclosure and earnings smoothing as alternative reporting mechanisms (e.g., Katmon and Farooque, 2017; Monjed and Ibrahim, 2020). The results also broaden our understanding of managerial motives for not providing a true and fair view of the firm's risk profile, through risk disclosure, as criticized by prior literature, thereby contributing to the literature showing the drawbacks of risk disclosure (e.g., Abraham and Shrives, 2014; Linsley and Shrives, 2005, 2006; Mcchlery and Hussainey, 2021). This research also contributes to the literature investigating earnings management practices during economic downturns and uncertain times (e.g., El-Feel et al., 2024; Habib et al., 2013; Persakis and Iatridis, 2016).

In practice, the findings inform managers that they need to reconsider their approach to risk disclosure and focus on providing more substantive and tailored information about firm risk. They also inform them that they can strategically influence investor perceptions by employing earnings smoothing techniques, especially in post-crisis periods. Investors may need to seek additional sources of information and conduct thorough due diligence to assess investment risk accurately when firms report generic risk statements and smoothed earnings. They should consider the broader context, such as the information from financial intermediaries and the timing of earnings reporting, when assessing firm risk. Policymakers should monitor the effects of earnings smoothing on perceived firm risk, particularly in the aftermath of financial crises. Understanding how firms manage earnings in response to economic turmoil can inform regulatory interventions aimed at maintaining market stability.

This paper proceeds as follows. Section 2 discusses related research and the main hypotheses. Section 3 outlines the research design and data. Section 4 reports the empirical results. Sections 5 and 6 present additional analyses and various robustness checks, respectively. Section 7 concludes.

2. Literature Review and Hypotheses Development

2.1 Risk Disclosure and Perceived firm risk

Signalling theory can be used to explain why firms provide useful risk disclosures voluntarily. This theory argues that managers provide higher levels of information to outsiders voluntarily to mitigate information asymmetry (Ross, 1977). Due to the information asymmetry exhibited in public firms, managers tend to reduce this problem by signalling more information on firm risk profile and risk management policies voluntarily to external stakeholders. The purpose of signalling is to attract investments where managers show the outsiders their ability to manage risks effectively (Elshandidy et al., 2013). Likewise, signalling through risk disclosure can reassure the outsiders about the apparent risks the firm faces to lower their concerns about the firm's underlying performance and therefore to lower firm perceived risk (Marshall and Weetman, 2007). Prior empirical studies on firms' risk disclosure provide some evidence on the usefulness of the level of risk disclosures to capital providers. For example, Campbell et al. (2014) document that the level of risk information disclosed in US firms' filings is negatively related to post-disclosure information asymmetry. Kravet and Muslu (2013) also show that annual changes in risk narratives is positively associated with changes in users' risk perceptions. Similarly, Wang (2021) provides evidence from the credit default swap market showing that the tone and amount of risk disclosures have different implications for debt market investors' risk perceptions. Using questionnaires, Koonce et al. (2005) find that investors respond differently to information about prospects of losses. This finding, however, suggests that unfavourable risk information is likely to make investors diverge in their predictions of a firm's future performance.

In contrast, limitations on the relevance of firms' risk disclosures have widely been reported in the literature (e.g., Jia et al., 2016). Bao and Datta (2014) find that two-thirds of risk types are deemed to be boilerplate disclosures with no significant impact on investors' risk perceptions. Similarly, Elshandidy and Shrives (2016) find that the aggregate level of risk disclosure (bad and good news) is boilerplate, and insufficiently useful to influence investors' risk perceptions. Khan et al. (2023) also find that voluntary risk disclosures are associated with investment inefficiency. The findings

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of these studies can be attributed to agency theory. According to this theory, managers might be reluctant to disclose risk information about the firm's underlying risk levels and future prospects voluntarily in the annual report. One reason could be due to their countervailing incentives arising from the threat of external effects such as litigation and competition (Linsley and Shrives, 2006; Lajili and Zéghal, 2005) which may result in economic disadvantages (Dobler et al., 2011). Agency theory therefore suggests that managers have weaker incentives to disclose more information, including risk information (Abraham and Cox, 2007) when their fiduciary duty could be subject to greater regulatory scrutiny (Leftwich et al., 1981).

Whether UK firms' risk disclosure is sufficiently informative to influence investors' risk perceptions remains an open question. Specifically, Abraham and Shrives (2014) and Mcchlery and Hussainey (2021) find that UK firms' risk disclosures contain less-detailed information, technical jargon and generic statements on internal control and risk management policies, and thereby, hardly reflect a firm's underlying, true risk profile. Given the mixed evidence on the association between risk disclosure and investors' risk perceptions, three possible competing arguments suggest whether and how the level of risk disclosure influences investors' perceived risk about firm performance. The first argument is that UK firms' risk disclosures have no significant influence on investors' perceived risk, contain boilerplate risk statements of *known* risks, thus lacking informativeness (null hypothesis). The second argument is that UK firms' risk disclosures have a significant positive influence on investors' perceived risk; they inform investors about previously *unknown* risks and uncertainties which increase their perceived risk (the divergence argument). The third argument is that UK firms' risk disclosures have a significant negative influence on investors' perceived risk; they introduce solutions to *known* risks and contingencies which reduce investors' risk perceptions (the convergence argument). To provide evidence on this unresolved issue, we examine the unconditional relation between risk disclosure and investors' perceived risk by testing the hypothesis in null form with no directional prediction. Thus, the hypothesis is formulated as follows:

H$_1$. *There is no association between the level of risk disclosure and perceived firm risk.*

2.2 Earnings Smoothing and Perceived firm risk

Signalling theory suggests that managers have incentives to smooth earnings to convey inside information about their firms' future prospects to external stakeholders (Tucker and Zarowin, 2006). Ronen and Sadan (1981) indicate, based on signalling theory, that managers are inclined to truthfully communicate their expectations of future performance through earnings smoothing. Signalling theory views earnings smoothing as advantageous for the capital market as it enhances the informativeness of earnings rather than distorts them. Prior research finds that managers attempt to reduce creditors' and investors' risk perceptions either through the opportunistic application of earnings smoothing or through the informational role of earnings smoothing (Amiram and Owens, 2018; Chen et al., 2017; Kim et al., 2021). On the one hand, managers may reduce investors' risk perceptions by signalling their honest expectations of future earnings through reporting smooth earnings. This is consistent with signalling theory and empirical evidence that earnings smoothing can be used by managers as a beneficial signalling tool to both current stockholders and prospective investors (Kim et al., 2021; Tucker and Zarowin, 2006; Wang and Williams, 1994).

On the other hand, managers may attempt to reduce investors' risk perceptions about their firms' performance through earnings manipulation. That is, earnings smoothing can be driven by managerial opportunism to hide firms' underlying risk, and thus make them appear less risky to the market (Burgstahler et al., 2006; Khurana et al., 2018; Ronen and Yaari, 2008). This is likely to be effective when investors lack sufficient information about firms' economic performance and prospects (Elitzur and Yaari, 1995). In line with this, Erickson et al. (2017) find that investors perceive minimal risk when earnings are smooth relative to the volatility of operating cash flows. However, investors no longer perceive lower risk when they are provided with additional information concerning the likelihood of earnings management. Similarly, Yu et al. (2018) find that earnings smoothing increases investors' perceived risk only when a firm subsequently reports losses around earnings announcements. Thus, this result lends credibility to prior studies that earnings smoothing through accruals management can be used as a technique to conceal a firm's underlying performance (Burgstahler et al., 2006), to increase earnings opacity (Lang et al., 2012) and to maintain artificially long strings of consecutive increases in earnings (Myers et al., 2007) because of career and compensation concerns. These findings contribute to agency and positive

accounting theories. The positive accounting theory posits that managers are rational individuals who make accounting choices to minimize political costs, avoid breaching debt covenants, and maximize personal utility (Watts and Zimmerman, 1986). According to this theory, managers are assumed to prioritize wealth maximization when choosing accounting methods to report the firm's economic earnings. It indicates that managers may opportunistically manage the firm's earnings through smoothing to obscure information about the firm's underlying risk.

Given prior research, the relation between earnings smoothing and investors' risk perceptions balances two managerial incentives: the signalling motive and opportunistic motive. Drawing on the signalling role, we anticipate that reporting smooth earnings will reduce investors' perceived risk. Conversely, for the opportunistic role, we expect earnings smoothing to lower risk perceptions only when the market cannot perfectly filter out noise in reported earnings. Investors may perceive minimal risk for firms with smooth earnings when lacking information on the likelihood of manipulation. Unlike prior studies examining risk perceptions and smoothing in response to shocks or additional information (Erickson et al., 2017), this study assumes limited post-filing information availability, contributing to the convergence argument. Overall, we hypothesize that investors perceive firms with smoother earnings as less risky, irrespective of managerial motives for smoothing – opportunistic or signalling. Thus, we formulate the second hypothesis as follows:

H₂. *There is a negative association between the extent of earnings smoothing and perceived firm risk.*

3. Data and Methodology

3.1 Sample Selection

Several prior studies document deficiencies in the relevance of FTSE 100 firms' risk disclosures (e.g., Abraham and Cox, 2007; Abraham and Shrives, 2014; Linsley and Shrives, 2006). Therefore, this study uses the same set of firms to examine the informativeness of those firms' risk disclosures and smooth earnings. Specifically, we examine whether risk disclosures and earnings smoothing influence investors' perceived risk using a sample of firms with at least three consecutive years of listing on FTSE 100 over the period 2005-2015.[1] Our final sample, after deleting firms in the

financial industry and those with missing data, is 74 firms and 814 firm-year observations from 9 different industries.

3.2 Empirical Model

Our hypotheses examine whether the level of risk disclosure and earnings smoothing affect post-filing investors' risk perceptions. To test our hypotheses, we estimate the following ordinary least squares (OLS) regression model on a pooled time-series cross-sectional basis:

$$\textbf{\textit{Perceived Risk}}_{it+1} = \beta_0 + \beta_1 \textit{Risk\_Disclosure}_{it} + \beta_2 \textit{Smoothing}_{it} + \beta_3 \textit{Perceived\_Risk}_{it} + \beta_4 \textit{Beta}_{it} +$$
$$\beta_5 \textit{ Leverage}_{it} + \beta_6 \textit{ Operational\_Risk}_{it} + \beta_7 \textit{ Size}_{it} + \beta_8 \textit{ Growth}_{it} + \beta_9 \textit{ Profitability}_{it} + \beta_{10}$$
$$\textit{Non\_Risk\_Disclosure}_{it} + \beta_{11} \textit{Readability}_{it} + \textbf{Year effects} + \textbf{Industry effects} + \varepsilon_{it} \qquad (1)$$

Where *i* refers to the firm and *t* to the year. β_0 is the intercept and β_{1-11} are the slope coefficients of $Risk\_Disclosure_{it}$, $Smoothing_{it}$ and control variables. $Perceived\_Risk_{it+1}$ is defined as the standard deviation of stock returns for the 60 trading-day period beginning one trading day after the filing date (e.g., Kravet and Muslu, 2013). This calculation excludes the first trading day following the filing date. $Risk\_Disclosure_{it}$ represents the natural logarithm of the total number of sentences containing at least one risk-related word. We explain specifics on this measure in the next section. $Smoothing_{it}$ is earnings smoothing which represents the ratio of a firm's standard deviation of operating income deflated by total assets divided by the standard deviation of its cash flow from operations deflated by total assets, multiplied by -1 (e.g., Yu et al., 2018).

We include a set of control variables, relating to firm characteristics and annual report characteristics, which are identified by prior research as being associated with investors' risk perceptions (e.g., Campbell et al., 2014; Donovan et al., 2021; Hope et al., 2016; Kothari et al., 2009). We first control for the volatility of stock returns for the 60 trading-day period ending one trading day before the filing date ($Perceived\_Risk_{it}$), in order to account for previous investors' risk perceptions as well as capture firms' information environment prior to their filings. Moreover, this provides further assurance that the model is capturing a response to risk disclosures and earnings smoothing. We also control for firm risk levels including systematic risk ($Beta_{it}$), financial leverage risk ($Leverage_{it}$) and operational risk ($Operational\_Risk_{it}$) which can cause changes in the firm's overall risk levels and thus affect capital providers' post-filing risk perceptions. $Beta_{it}$ is

estimated using firms' monthly stock returns compared to the value weighted market index, over a five-year period from a market model regression, based on capital asset pricing model. *Leverage$_{it}$* is calculated by dividing total debt by total equity, thus higher values of this ratio indicate higher leverage risk. *Operational_Risk$_{it}$* is the standard deviation of operating cash flows, estimated using annual data over a five-year period, deflated by total assets.

To address the concern that the change in post-filing stock returns volatility is not driven by the changes in a firm's underlying operating activities, we control for firm size, growth opportunities and profitability. Firm size (*Size$_{it}$*) is computed as the natural logarithm of total assets. Firm growth *(Growth$_{it}$)* is measured as market value to book value of equity. Higher values of this ratio indicate higher levels of growth, and thus lower risk. Firm profitability *(Profitability$_{it}$)* is calculated as earnings before interest, taxes, depreciation, and amortization divided by total assets.

In line with Kravet and Muslu (2013) and Campbell et al. (2014), we control for firms' annual report characteristics such as *Non_Risk_Disclosure$_{it}$ and Readability$_{it}$*. We control for *Non_Risk_ Disclosure$_{it}$* in the annual report by including the total number of statements disclosed on issues other than firm risk. This is because *Non_Risk_Disclosure$_{it}$* could include information content that may affect investors' risk perceptions. *Non_Risk_Disclosure$_{it}$* represents the natural logarithm of the total number of sentences that do not contain any of the 27 risk-related words. Specifically, it is calculated as the natural logarithm of the difference between the total number of sentences and risk-related sentences disclosed in the annual report. The total number of sentences in the annual report is collected from Nudist 6. Similarly, the level of annual report reading difficulty *(Readability$_{it}$)* may affect investors' risk perceptions in interpreting disclosures. Like Soepriyanto et al. (2021), we measure *Readability$_{it}$* as the natural logarithm of the fog index for firms' annual report. Finally, we include industry and year-fixed effects in the model to control for fluctuating macroeconomic factors across time and industry. All variable definitions are presented in Table I. Consistent with prior research, we use pooled OLS regression and estimated and clustered robust standard errors at the firm level to control for heteroscedasticity and serial correlation (e.g., Kravet and Muslu, 2016; Chen et al., 2017; Donovan et al., 2021).[2] We employed pooled OLS regression in this study because it is more appropriate for the analysis of panel data. It maximizes statistical power by effectively utilizing all available data points across time and firms.

Additionally, it accounts for both within-firm and between-firm variations, thereby providing more robust estimates of the relationship between variables over time.

<div align="center">**Insert Table I**</div>

3.3 Risk Disclosure Measure

The level of textual risk disclosure (*Risk_Disclosure*$_{it}$) in a firm's annual report is measured by the natural logarithm of the total number of sentences containing at least one risk-related keyword, similar to prior research (e.g., Ibrahim and Hussainey, 2019; Kravet and Muslu, 2013; Monjed et al., 2022).

We define risk disclosure as information released by the firm's management to the public concerning opportunities, prospects, threats or exposures which have already affected the firm's economic performance or may impact the firm's economic performance in the future (Linsley and Shrives, 2006). This is a broad definition of risk disclosure that could contain information with respect to potential losses due to risks and potential gains from managing risks.

We develop the initial 'risk' word list based on reading 30 randomly selected annual reports of firms from different industries using disproportionate stratified random sampling. As this research follows the sentence unit-of-analysis approach to identify risk-related sentences to measure risk disclosure scores, we use NVivo 11 only to display and highlight the keywords within the sentences of the imported annual reports in PDF format. NVivo 11 is a qualitative data analysis software which allows researchers to analyse report narratives (of different formats including PDF) in terms of coding, finding word frequency, word search query and constructing a word tree. Thus, we use NVivo 11 to generate a word tree for every risk-related word as it appears within the texts of all sample firms' annual reports. This helps us examine the context surrounding the keywords from across all the sample annual reports imported into NVivo 11 and thus determine whether sentences surrounding the selected keywords reflect risk information. Figure I presents an example of a word tree produced by NVivo 11 capturing all sentences containing the keyword 'detrimental' as disclosed in the sample firms' annual reports. Tables AI and AII in the Appendix exhibit the list of risk-related keywords and examples of risk disclosures taken from the sample firms' annual reports.

<div align="center">**Insert Figure I**</div>

This process also enables us to assess the relevance of these captured sentences to the definition of risk disclosure. Some words are found to be reported abundantly in statements across several sections of the annual report which potentially introduce noise beyond the risk disclosure choice (e.g., decline, decrease, increase, less, low, vary, etc.). These words appear within sentences that could also relate to describing operations management and historical financial results without necessarily implying risk. Although, some of these deleted words are used in prior research in measuring the level of risk disclosure (e.g., Elshandidy et al., 2013; Elshandidy and Shrives, 2016), we remove them from our keyword list to limit noise related to capturing operations-related narratives. Also, we find more words reported in texts describing IAS standards - particularly IAS 18 on revenue recognition - and shareholder information (e.g., can, cannot, subject to) and hence we remove them from our list. We also drop words occurring consistently in conjunction with another risk-related word whenever risk information is implied (e.g., likelihood, offset, hedge and pose). The final list consists of the most frequent 27 risk-related word roots presented in Table AI. Once the risk-related words are identified, we perform an automated content analysis using Nudist 6 to search and count the total number of risk-related sentences, containing at least one risk keyword, in each annual report. Nudist 6, also referred to as QSR N6, is an old version of NVivo 11.[3] Unlike NVivo 11, Nudist 6 permits different units of analysis such as words, sentences or texts. Also, manual instructions can be imported into Nudist 6 which enables researchers to design a programme accommodating their research requirements. Hence, we use Nudist 6 to count the total number of sentences containing at least one risk-related word and set up manual instructions through which we can avoid the problem of double counting the same sentence with more than one risk keyword. All annual reports in PDF format are first converted to text formatted files in order to be readable by Nudist 6. Table AII provides examples of textual risk disclosures - containing at least one risk-related keyword - collected by Nudist 6.

4. Empirical Results

4.1 Descriptive statistics and correlation analysis

Table II reports the descriptive statistics of all key variables. We find the mean of $Risk\_Disclosure_{it}$, is 5.5. The mean of $Smoothing_{it}$, is -1.26 suggesting that firms on average exhibit higher volatility in operating income relative to operating cash flows. The results also show that

the mean volatility of stock returns after the filings is 0.018 which is slightly lower than the value reported in prior research for US publicly traded firms, where Campbell et al. (2014) and Kothari et al. (2009) document a mean value of 0.031 and 0.027, respectively. This suggests that the UK firms in our sample are perceived, on average, as less risky following the filings. Similarly, the table shows that the mean volatility of stock returns prior to the release of the annual report (*Perceived_Risk*$_{it}$) is 0.018, indicating that investors have slightly lower risk perceptions, on average, concerning firm performance shortly before the filings.

Insert Table II

Table III displays pairwise Pearson and Spearman correlations for study variables, revealing no multicollinearity (Hair et al., 2006). Both coefficients demonstrate significant negative correlations between risk disclosure and perceived firm risk, as well as earnings smoothing and perceived firm risk, suggesting that higher levels of risk disclosure and earnings smoothing are associated with lower perceived firm risk.

Insert Table III

4.2 Hypotheses Testing

Table IV presents the results from testing H1 and H2. The results show that the coefficient on *Risk_Disclosure*$_{it}$ (β_1 = -0.0007) is not statistically significant at conventional significance levels. That is, the level of risk disclosures has no considerable influence on post-filing investors' risk perceptions. This result provides support to the null hypothesis (H1) consistent with risk disclosures reported in UK firms' annual report lack informativeness. This finding is consistent with prior studies which document that firms' aggregate risk information are likely to contain boilerplate and generalized statements of risk policy, not adequately useful to influence investors' decisions (e.g., Bao and Datta, 2014; Elshandidy and Shrives, 2016; Linsley and Shrives 2005, 2006). This finding also aligns with agency theory as it indicates that managers may have weaker incentives to disclose relevant risk information (Abraham and Cox, 2007), particularly when their fiduciary duty is subject to heightened regulatory scrutiny (Leftwich et al., 1981). Managers may provide boilerplate and generic statements on their firms' risk profile due to countervailing incentives stemming from external threats such as litigation and competition (Linsley and Shrives,

, 2006; Lajili and Zéghal, 2005; Li et al., 2019). Moreover, managers are reluctant to provide useful forward-looking disclosures about firm risk for fear of being sued by investors for decision making if such predictions turn out to be inaccurate (Huang et al, 2021).

Also, we find that the coefficient on earnings smoothing is negatively associated with *Perceived_Risk$_{it+1}$* (β_2 = -0.0007), statistically significant at the 1% level. In terms of economic significance, if smoothing is increased by one standard deviation, while other variables are held constant, investors' risk perceptions decrease by 0.063% ((-0.0007*0.9009) *100). This result supports H2 that a higher level of earnings smoothing leads to lower post-filing perceived firm risk. Consistent with the convergence argument, this finding indicates that reporting a smoother earnings stream results in convergent investors' interpretations about future firm performance. As expected, investors are likely to perceive firms with a smoother earnings path as less risky following the filing date, regardless of managerial motives for intentional smoothing, whether opportunistic or confidential information signalling incentives. This result is consistent with prior research that investors give managers the benefit of the doubt and perceive low risk when a firm's earnings stream appears smooth (Erickson et al., 2017).

In terms of the control variables, we find that, consistent with Campbell et al. (2014), post-filing perceived firm risk (*Perceived_Risk$_{it+1}$*) is positively correlated with pre-filing perceived risk (β_3 = 0.4690), statistically significant at the 1% level. The coefficients on beta and leverage risk are not statistically significant at conventional significance levels, while the coefficient on operational risk is positively and statistically significant at the 1% level (β_6 = 0.0349). This suggests that investors are more likely to react to a firm's cash-flow volatility and thus perceive higher risk. This result is in line with prior research suggesting that investors prefer firms with less volatile cash flows as they are associated with less uncertainty concerning future prospects (Rountree et al., 2008). In addition, perceived firm risk is negatively related to firm size (β_7 = -0.0006) and profitability (β_9 = -0.0063), statistically significant at the 5% and 10% level, respectively. However, the coefficients on firm growth and annual report characteristics, namely, *Non_Risk_Disclosure$_{it}$* and *Readability$_{it}$*, are not statistically significant at conventional levels. Though, these factors are used by prior research as control variables, prior studies on risk disclosure find insignificant associations between annual report readability and the market reaction, proxied by post-filing volatility of abnormal stock returns (Campbell et al., 2014).

5. Additional Analyses

5.1 Controlling for Post-Filing Market-level Economic Factors

Consistent with Kravet and Muslu (2013), we control for market-wide economic factors which could affect investor activity following the filings as market return volatility. Table V presents the results for estimating Equation (1) including an additional variable for $Market\_Volatility_{it+1}$ which is measured as the standard deviation of the market-level stock return during the 60 trading-day period following firm i's annual report filing date for fiscal year t. Panel 1 of Table V demonstrates qualitatively comparable results to those reported in Table IV. The coefficient on $Risk\_Disclosure_{it}$ remains insignificant while the significance of $Smoothing_{it}$ coefficient becomes weaker, at the 5% level. The coefficient on $Market\_Volatility_{it+1}$ is significantly and positively associated with investors' risk perceptions, at the 1% level. The volatility in market stock return provides a benchmark of a similar scale and measured over the same period as the volatility in firm i's stock return ($Perceived\_Risk_{it+1}$) – the dependent variable in Equation (1). Thus, we compare the effect of one standard deviation change in $Smoothing_{it}$ (0.9009) relative to the effect of one standard deviation change in $Market\_Volatility_{it+1}$ (0.0049). This indicates that increases in the level of $Smoothing_{it}$ have an effect on investors' risk perceptions that is 13.01% ((0.054%/0.415%)*100) of the effect of comparable increases in market-level return volatility.

5.2 Controlling for Corporate Governance Effects (Internal Monitoring)

The monitoring function of corporate governance has been found to play a crucial role in deterring opportunistic earnings management (e.g., Yami et al., 2023) and influencing the preparation of risk disclosures (e.g., Barakat and Hussainey, 2013; Radwan et al., 2023). Empirical research also finds that corporate governance attributes are likely to influence firm risk, particularly, the firm's volatility of stock returns (e.g., Mathew et al., 2016). Therefore, we test whether the effect of earnings smoothing and risk disclosure on perceived firm risk differ by further controlling for board attributes. Thus, corporate governance controls include chief executive officer duality ($CEO\_Duality_{it}$), board size ($Board\_Size_{it}$), proportion of independent directors' relative to the board size ($Ind\_Directors_{it}$) and insider ownership ($Insider\_Ownership_{it}$). Board size is measured

as the natural logarithm of the total number of board directors. CEO duality is measured using an indicator variable which equals to 1 if the CEO is also chair of the board of directors, and 0 otherwise. Insider ownership is measured as the percentage of outstanding shares held by executive board members. The results in Panel 2 of Table V reveal similar results to those reported in Table IV after including additional control variables, namely; $CEO\_Duality_{it}$, $Board\_Size_{it}$ and $Ind\_Directors_{it}$. Specifically, the results indicate that the coefficient on risk disclosure is statistically insignificant, while the coefficient on $Smoothing_{it}$ is significant and negative ($\beta_2 = -0.0007$), at the 1% level. Also, in the second column of Panel 2, we find that controlling for $Insider\_Ownership_{it}$ does not change the main results.[4] Thus, the results indicate that the association between risk disclosure (earnings smoothing) and perceived firm risk is unlikely to be affected by UK firms' board attributes.

Insert Table V

5.3 Examining the Moderating Effect of Risk Disclosure

We expect that risk disclosure is likely to moderate the association between earnings smoothing and perceived firm risk. Previous research finds that firms issuing expanded information about firm risk are less likely to engage in earnings management to hide a firm's underlying risk (Monjed et al., 2022). Therefore, we contend that the negative effect of earnings smoothing on investors' risk perceptions should be less pronounced for firms with high disclosure of risk information. Table VI examines the moderating role of risk disclosure in the association between earnings smoothing and perceived firm risk by adding the interaction term $D\_Risk\_Disclosure_{it}*Smoothing_{it}$ and the main effect $D\_Risk\_Disclosure_{it}$ in Equation (1). $D\_Risk\_Disclosure_{it}$ is measured using a dummy variable which equals to 1 for high risk-disclosure firms, and 0 for low risk-disclosure firms. To create this indicator variable, we follow Hussainey and Walker (2009) by ranking disclosure scores into quartiles. Firms in the top (bottom) two quartiles of the distribution of risk disclosure scores represent high (low) risk-disclosure firms.[5] Table VI indicates that the coefficient on $Smoothing_{it}$ is no longer significant ($\beta_2 = -0.0006$). Also, the coefficient on the interaction term $D\_Risk\_Disclosure_{it}*Smoothing_{it}$ is not significant ($\beta_{13} = -0.0002$), suggesting that high risk disclosure renders smoothing activities ineffective.[6] This finding indicates that for firms with

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high levels of risk disclosure, investors' assessments of the firm's fundamental risks do not come from reporting smooth streams of earnings.

Insert Table VI

5.4 Effect of Institutional Ownership and Analyst Following (Information Environment)

Healy and Palepu (2001) view financial analysts as intermediaries who process and synthesize a firm's financial reports to reduce agency costs arising from information asymmetry. Empirical research finds that financial analysts enhance financial reporting transparency, particularly for firms with high accruals-based income smoothing (Tan and Sidhu, 2012). Additionally, high institutional holdings have a role in monitoring (Cho and Ibrahim, 2022) and contribute to a richer information environment, thereby impacting a firm's future profitability impounded in stock prices by analysts and institutional investors (Tucker and Zarowin, 2006). Considering this, we expect the association between earnings smoothing and perceived risk to be weaker for firms with rich information environments and stronger for those with poor information environments.

To explore this, we conduct a subsample analysis based on institutional ownership and analyst following. We measure institutional ownership as the percentage of shares held by institutional investors and analyst following as the numbers of analysts following a firm. Consistent with Chen et al. (2017), we rank these two variables into quintiles; values falling into the lowest quintile represent firms with low institutional ownership (analyst following) while those falling into the highest quintile reflect firms with high institutional ownership (analyst following). Table VII presents the results for estimating Equation (1) for the subsample of firms with high and low information environments. Column 1 shows that firms with high institutional ownership, the association between earnings smoothing and perceived risk is not statistically significant, indicating no effect on perceived risk in rich information environments. However, Column 2 reveals that the coefficient on smoothing is statistically significant (β_2 = -0.0022), at the 5% level. Similarly, for firms with high analyst following, Column 3 shows that the association is not significant, while for those with low analyst following, Column 4 indicates that investors react to earnings smoothing, perceiving lower risk, statistically significant (β_2 = -0.0022), at the 5% level. Overall, the results suggest that financial analysts and institutional holdings make managers'

smoothing activities ineffective, especially in firms with rich information environments where investors do not react to reported smooth earnings.

Insert Table VII

5.5 Financial Crisis Effects

Empirical evidence, as indicated by Beatty et al. (2018), highlights significant differences in the level and informativeness of risk factor disclosures before and after the 2007/2008 financial crisis. To understand whether the informativeness of risk disclosure for UK firms changed around this crisis, we analyze the study period of 2005-2015, divided into pre-crisis (2005-2006), during-crisis (2007-2008), and post-crisis (2009-2015) sub-periods. Table VIII reveals that, consistent with the main results, the coefficient on $Risk\_Disclosure_{it}$ is insignificant across all periods, indicating a lack of risk disclosure informativeness despite increased regulatory requirements post-crisis. While no significant association between earnings smoothing and $Perceived\_Risk_{it+1}$ is observed for the pre-crisis and during-crisis periods (Columns 1 and 2), Column 3 shows a significant and negative relation after the crisis ($\beta_2 = -0.0009$) at the 1% level. This implies that reporting smoother earnings post-crisis retains investors' confidence, resulting in lower levels of perceived risk, supporting the convergence argument and consistent with H2.

Insert Table VIII

6. Robustness checks

6.1 Decile Ranks of Risk Disclosure and Earnings Smoothing

To account for outliers and control non-linearities, we substitute raw values with decile ranks for $Risk\_Disclosure_{it}$ and $Smoothing_{it}$ in the main empirical model. The results in Panel 1 of Table IX align with those in Table IV, confirming an insignificant association between $Risk\_Disclosure_{it}$ and, $Perceived\_Risk_{it+1}$, supporting H1. Similarly, results for $Smoothing_{it}$ and $Perceived\_Risk_{it+1}$ confirm H2, with a significant coefficient at the 1% level. The economic magnitude of this effect, with a coefficient estimate of -0.0003 in the decile rank regression, implies a 0.27% difference in

post-filing perceived firm risk between firms with the lowest and highest levels of earnings smoothing.

6.2 Alternative Model Specification using Fama-MacBeth Regressions

To test the sensitivity of the main results to the use of alternative model specifications, we use the Fama-MacBeth regression model which is also used to control for potential cross-sectional correlations in the error term. Panel 2 of Table IX shows that risk disclosure is statistically insignificant, while smoothing is negative and significant, at the 1% level. These comparable results to those reported in Table IV suggest that our original findings are not sensitive to alternative model specifications based on cross-sectional tests.

6.3 Alternative Measures of Perceived firm risk and Earnings Smoothing

We re-estimate the main regression using an alternative measure of post-filing perceived firm risk (*Idiosyncratic_Perceived_Risk$_{it+1}$*), substituting the volatility of stock returns with idiosyncratic volatility. The latter is calculated as the standard deviation of market-adjusted returns for the 60 trading-day period starting one trading day after the filing date. Panel 3 of Table IX shows results comparable to those in Table IV, indicating that our main findings remain robust to alternative specifications of *Perceived_Risk$_{it+1}$*. Additionally, we employ an alternative measure of earnings smoothing based on the correlation between changes in accounting accruals and cash flows from operations. Panel 4 of Table VII, using the alternative proxy produces similar inferences to those reported in Table IV, reinforcing the stability of our results under alternative earnings smoothing measures.

Insert Table IX

7. Conclusion

This paper examines whether and how risk disclosure and earnings smoothing affect investors' risk perceptions. The empirical analysis of this study presents two key findings. First, we are unable to reject the first null hypothesis (H1), that textual risk information disclosed in FTSE 100 firms' annual report lacks informativeness, consistent with no effect on investors' risk perceptions

although also consistent with low power leaving us unable to reject the null. This provides some empirical support to the evidence and criticism of prior research that UK FTSE 100 firms' risk disclosures contain generalized statements of risk policy and lacks relevance to firms' underlying risks, thereby creating difficulties for investors to assess firms' fundamental risks. Second, consistent with the convergence argument (H2), we find that earnings smoothing reduces investors' perceived risk about firms' future performance. This result contributes to the general debate in the US-based literature concerning the effects of earnings smoothing on perceived firm risk and is consistent with the finding of prior research that investors give managers the benefit of the doubt regarding the incentives underlying smoothing and therefore perceive minimal risk when reported earnings follow a smooth pattern.

Further analysis suggests that investors react to smooth earnings when the firm information environment is poor – low institutional ownership and analyst following. However, we find that investors do not react to smooth earnings for firms with rich information environments and high-risk disclosure levels. Moreover, additional analysis shows that smoothing earnings after the global fiscal crisis (2009-2015) restores investors' confidence in management by reducing firm perceived volatility. Further tests show that the negative association between earnings smoothing and perceived firm risk is unaffected to controls representing market-level stock return volatility and corporate governance structure.

In sum, the findings suggest that reporting uninformative generic risk disclosures and smoothing earnings are practices motivated by managerial opportunism in financial reporting to lower perceived firm risk and dampen news about events causing volatility in firm performance. The main findings are robust to using alternative measures of earnings smoothing and post-filing perceived firm risk and estimating alternative model specifications.

The findings suggest that managers should improve risk disclosure by providing more thorough details regarding firm risk. The results also inform managers that using earnings smoothing strategies can sway investor perceptions about firm risk, especially following crises. Investors might need more details and extensive due diligence to properly evaluate investment risk when firms provide general risk statements and smoothed results. The results help regulators obtain greater insights into the drivers of reporting smooth earnings and providing boilerplate risk

narratives, which call for placing financial reporting choices under greater scrutiny, particularly under poor information environments and in times of financial market turmoil.

As a limitation, this study does not distinguish between the garbling role and the informational role of earnings smoothing. Hence, future studies could examine internal and external factors which can help investors' acquisition of additional information, concerning managers' incentives underlying earning smoothing, to filter noise in reported earnings. Furthermore, the generalizability of findings to other countries may be limited due to the risk disclosure measurement used in this study, which was developed based on UK annual reports. More specifically, the applicability of the study's conclusions could be affected by variations in keyword selection across different contexts.

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Notes

1. The data collection for the level of earnings smoothing starts from 2001 as this variable requires data for a rolling window of 5 years to estimate the standard deviation of operating income/cash flows from operation. For example, to calculate earnings smoothing for the first sample year 2005, the observations for operating cash flows and operating income have to be collected for the following years 2001, 2002, 2003, 2004 and 2005. Also, the data collection for the level of investors' risk perception ends in 2016, specifically 60 trading days beginning one trading day after firm i's filing date.
2. Our inferences remain unchanged when we cluster standard errors by both firm and year.
3. Several empirical studies use Nudist 6 to collect firm textual disclosures, see Elshandidy et al. (2013), Hassanein and Hussainey (2015), and Ibrahim and Hussainey (2019).
4. We run a separate regression for $Insider\_Ownership_{it}$ by re-estimating Equation (1) for the period 2010-2015, because historical data for equity ownership by executive directors is not available on Bloomberg before 2010. Excluding the years 2005-2009 results in 444 firm-year observations.
5. The inferences remain the same when the dummy variable is derived based on the sample median of risk disclosure scores.
6. Removing $Risk\_Disclosure_{it}$ from the regression in Table VI does not change our conclusions (untabulated).