The Impact of "Irrelevant Answers" in Earnings Briefings on Stock Price Crash Risk

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Abstract. With the continuous improvement of capital market interactive mechanisms, earnings briefings have become a core information exchange platform for listed firms and investors. To conceal adverse news, management frequently adopts irrelevant, vague replies, aggravating market information asymmetry. Based on 2013–2023 earnings briefing Q&A texts of China's A-share listed firms, this paper employs deep learning word vectors and soft cosine similarity to construct an indicator measuring irrelevant reply degrees. Empirical results show that higher irrelevant reply levels significantly raise stock price crash risks in both the current and subsequent years. Such evasive language essentially constitutes a typical form of bad news hoarding; temporarily hidden negative information leads to sharper stock declines after delayed release. Dynamic analysis verifies the risk-boosting effect is stronger in the following year, and core conclusions stay valid after PSM treatment to ease self-selection bias. This research expands bad news hoarding theory to real-time interactive scenarios, optimizes unstructured financial text measurement, and provides references for investors' risk identification and regulators' information disclosure supervision.

Keywords: Earnings Briefings, Stock Price Crash Risk, Irrelevant Answers, Semantic Similarity.

1 Introduction

With the implementation of the comprehensive registration system reform in China's capital market, the communication mode between listed companies and investors has gradually shifted from one-way static financial report disclosure to two-way communication on the network interactive platform. These dynamic interactions not only improve the efficiency of communication but also give management more freedom in response content. Faced with questions from investors, if there is undisclosed negative information within the company, management often faces the dilemma: truthful disclosure triggers a stock price decline, while refusing to answer sends negative signals. In this case, management often uses strategic responses to avoid key issues and risks. However, this phenomenon seriously weakens the quality of information transmission, and the continuous accumulation of negative market

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reactions to such evasion easily leads to serious consequences. Based on this background, this paper focuses on the text of the company's earnings briefings, trying to explore whether the frequent irrelevant responses by management imply the continuous accumulation of adverse factors in the company, thus pushing up the risk of future stock price crashes, and further tests the timeliness characteristics of the predictive effect.

Existing literature mostly examines the bad news hoarding mechanism from traditional disclosure perspectives, including annual report tone and earnings management, while few studies explore the linkage between managerial reply strategies and stock price crash risk within dynamic interactive settings. Taking the unstructured text of the earnings briefings of listed companies as an example, this paper uses the deep learning word vector model and the soft cosine algorithm to analyze the semantic deviation between the management's reply and the investor's question, and concludes that the management's irrelevant answers will significantly increase the risk of future stock price crashes. Theoretically, this paper expands the application scenario of bad news hoarding theory to a dynamic question-and-answer environment, confirms that semantic deviation is also the key representation of concealing negative information, and enriches the relevant literature on the causes of stock price crash risk. In practice, the conclusion of this paper helps to guide investors to break their dependence on financial statements and capture potential risks from management's words and also provides a reference for regulators to carry out intelligent information disclosure supervision.

2 Theoretical Analysis and Research Assumptions

Under the modern corporate governance mechanism, the separation of ownership and management rights will lead to principal-agent conflict. Based on the theory of information asymmetry, the company's management, as an internal controller, has private information about the real business situation and potential risks of the enterprise. The information barrier between management and external investors provides sufficient space for their opportunistic behavior [1]. Motivated by self-interest motives such as maintaining high pay levels, seeking promotion, or avoiding the risk of dismissal, management tends to deliver good news to the market and delay the disclosure of negative information. According to the bad news hoarding hypothesis, if management immediately discloses risks to the outside world, it will face a direct impact of a sharp decline in stock prices and damage to personal reputation [2]. Therefore, maintaining short-term performance prosperity and deliberately concealing adverse fundamentals have become a rational strategic choice for management. In the practice of information disclosure, this concealment is often achieved through complex linguistic strategies. The language confusion hypothesis suggests that when corporate fundamentals perform poorly, management strategically uses complex or vague text features to disguise real negative information [3]. Negative information deliberately hidden by management will eventually explode in the market in extreme forms [4].

With the development of digital technology, interactive communication channels such as earnings briefings have reshaped the traditional information disclosure model. High-frequency network interaction provides investors with a more direct way to inquire [5]. Unlike static annual report documents prepared beforehand by management, Q&A sessions feature high immediacy and unpredictability. Faced with sharp questions, management will release extreme negative signals if they directly refuse to answer. Conversely, if they answer truthfully, they will expose internal disadvantages [6]. In response to this dilemma, management will widely use deceptive language features that deviate from the theme or evade crucial issues to avoid confrontation and cover up the real disadvantage [7]. In view of China's capital market environment, it is confirmed that the essence of irrelevant answers is the defensive language manipulation adopted by management to delay the disclosure of negative information [8]. The accumulated bad news does not disappear out of thin air, and the cost of continuing to hide it will rise exponentially over time. When the negative information accumulated internally exceeds the control threshold of the management, or encounters sudden external audit and regulatory inquiries, the long-term suppressed bad news will be released centrally, resulting in instant revaluation and panic selling of investor expectations, and eventually triggering a sharp fall in stock prices. Consequently, this paper proposes the following research hypotheses:

H1: Holding other factors constant, higher levels of irrelevant managerial replies correspond to greater future stock price crash risk.

Further investigation of the dynamic process of the stock price crash risk forecast can be found that there are obvious timeliness characteristics in information transmission and market digestion. In the initial stage of the end of the earnings briefings, the management's language avoidance strategy causes strong confusion, so that the market cannot immediately see through the real intention behind the text, and the stock price can remain stable for a short time. However, over time, the gradual disclosure of real financial data and the intervention of external supervision forces have made the management's verbal camouflage unsustainable [9]. The bad news covered up in the early stage was gradually detonated in the medium-term development stage, when the probability of triggering a stock price crash reached its peak. When the time span of investigation is further extended, the marginal information content of a specific interactive text will be greatly attenuated, and the market pricing mechanism will be subject to new macroeconomic fluctuations and subsequent major events of the company, which will naturally weaken the predictive effectiveness of early language manipulation. Therefore, the risk prediction effect of management language avoidance behavior shows significant life cycle characteristics. Based on this, this paper proposes the following research hypotheses:

H2: The predictive influence of irrelevant replies on stock price crash risk is time-sensitive and diminishes as the observation window expands.

3 Study Design

This study selects China's A-share firms listed on the Shanghai and Shenzhen Stock Exchanges as samples and crawls full earnings briefings and investor Q&A texts from the official interactive platforms of the two exchanges via Python over 2013–2023. Through the data cleaning module, this paper eliminates the samples of unanswered, chaotic, and invalid questions and answers and finally extracts standardized question-answer text pairs. The financial characteristics of the company and the macro data of stock trading involved in this paper are obtained by invoking the interface of the Tiny soft financial quantitative database.

In this paper, the dependent variable is set as the risk of stock price crash, which is measured by the upward and downward volatility of returns. The calculation process first eliminates the systemic risk of the market through the regression model, obtains the unique weekly return of individual stocks, and then calculates the corresponding indicators based on this. In terms of the measurement of the degree of irrelevant answers of the core explanatory variable, the traditional research usually adopts the hard cosine similarity method based on word frequency. This method requires absolute word-literal matching, and it is easy to produce metric distortion when respondents use synonyms. In order to reduce such errors, referring to the existing literature, this paper uses a deep learning word vector model and a soft cosine similarity algorithm to calculate the continuity index of irrelevant answers. In addition, considering that investors tend to make qualitative judgments when dealing with question-and-answer texts, this paper converts the continuous index into a dummy variable according to the annual median. The dummy variable takes the value of one if a firm's irrelevance score surpasses the annual median, and zero otherwise. To control the interference of other potential factors on the risk of stock price crash, this paper incorporates control variables such as company size, asset-liability ratio, return on total assets, book value ratio, nature of property rights, proportion of independent directors, and concurrent appointment of chairman and general manager [10].

To examine how managerial irrelevant replies during earnings briefings affect subsequent stock price crash risk, this paper constructs the following benchmark panel data regression model (1):

$$DUVOL_{i,t+n} = \beta_0 + \beta_1 Irrelevant_{i,t} + \sum \lambda_k \, Controls_{i,t}^{k} + \sum Year + \sum Industry + \varepsilon_{i,t+n} \quad (1)$$

Here, $\mathrm{DUVOL}_{\mathrm{i,t+n}}$ captures the risk for periods T and T+1 to evaluate both immediate and lagged effects. $\mathrm{Irrelevant}_{\mathrm{i,t}}$ is the evasion dummy, and Controls represent the aforementioned firm-level covariates. The primary coefficient of interest is β_1, while $\varepsilon_{\mathrm{i,t+n}}$ is a random error term.

4 Empirical Results

4.1 Descriptive Statistics

Descriptive statistics for core variables are calculated before empirical regression and summarized in Table 1. The number of observations is 11583, and the descriptive statistical results of each variable are similar to those in the previous literature, indicating that the data selected in this paper have high reliability.

Table 1. Descriptive statistics.

	Observations	Mean	Std	Min	Median	Max
Irrelevant_Score	11583	0.8192	0.0564	0.5024	0.8214	0.9961
Irrelevant_Dummy	11583	0.5048	0.5	0	1	1
Size	11583	22.1615	1.2064	20.0736	21.9868	26.259
Lev	11583	0.3941	0.195	0.057	0.3838	0.8997
ROA	11583	0.0321	0.0662	-0.276	0.0301	0.216
BM	11583	0.6031	0.2382	0.1382	0.5903	1.1885
SOE	11583	0.2068	0.405	0	0	1
Indep	11583	0.3804	0.054	0.3333	0.3636	0.5714
Dual	11583	0.3423	0.4745	0	0	1

4.2 Benchmark Regression and Dynamic Effect Analysis

In the benchmark regression, this paper strictly controls for heterogeneous financial characteristics and governance structure at the company level and adds the two-way fixed effects of industry and year to test the current and cross-period impact of management's irrelevant answer behavior at the earnings briefings on the risk of stock price crash. The regression results are shown in Table 2. As shown in Column (1), the coefficient on Irrelevant_Dummy is 0.0200, which is significantly positive at the 5% level, indicating a positive relationship with concurrent crash risk. This empirical result supports the research hypothesis based on bad news hoarding theory that when managers adopt strategically vague responses at earnings briefing meetings, they are essentially masking the potential risks of corporate fundamentals. Once the information concealment behavior is gradually recognized by the market in the year, it is easy to trigger a centralized selling of funds, which significantly pushes up the risk of a stock price crash in the current period.

Table 2. Rules to format sections.

Level	(1) DUVOL (T)	(2) DUVOL (T+1)
Irrelevant_Dummy	0.0200**	0.0212**
Irrelevant_Dummy_t	(2.103)	(2.192)
Size	-0.0142***	0.0100*

	(-2.642)	(1.828)
Lev	-0.0898***	-0.0314
	(-3.057)	(-0.963)
ROA	-0.1668**	0.0344
	(-2.147)	(0.428)
BM	0.1768***	-0.1134***
	(7.117)	(-4.337)
SOE	-0.0496***	-0.0387***
	(-4.094)	(-2.880)
Indep	0.1366*	0.075
	(1.656)	(0.846)
Dual	-0.0159	-0.0057
	(-1.586)	(-0.552)
Intercept	0.1763	-0.5253
	(1.190)	(-0.896)
Year FE	Yes	Yes
Ind FE	Yes	Yes
Observations	11583	9916
Adj. R-squared	0.0301	0.0324

Column (2) further estimates the cross-year influence of irrelevant replies on subsequent stock price crash risk. The coefficient of the core explanatory variable, Irrelevant _Dummy is 0.0212, which was also significantly positive at the 5% level. This shows that the negative economic consequences of the management's language concealment strategy are highly persistent. As the release of negative information and the full digestion of the market require a certain period of time, the downside risk caused by information concealment will not only break out in the current period, but also spread and exacerbate the volatility of stock prices in the next year.

4.3 Robustness Check

To mitigate endogeneity arising from self-selection bias, the propensity score matching method is adopted. Since financially distressed firms naturally have stronger incentives to evade pointed inquiries, this non-random selection could bias baseline estimates. All covariates are utilized to estimate propensity scores via logistic regression, and one-to-one nearest-neighbor matching is applied to pair high-evasion treatment firms with observationally similar control firms. Re-estimating the panel regression on this matched sample, as shown in Table 3, yields a coefficient of 0.0242 for the irrelevant answers dummy. This coefficient remains significantly positive at the 10% level with a t-value of 1.919. This confirms that after balancing fundamental firm differences, the positive impact of managerial linguistic evasion on concurrent crash risk remains highly robust.

Table 3. PSM robustness check.

	PSM robustness check
Irrelevant_Dummy	0.0242*
	(1.919)
Controls	Yes
Year FE	Yes
Ind FE	Yes
Observations	2719
Adj. R-squared	0.0311

5 Conclusion

This paper makes a quantitative analysis of the question-and-answer text of the earnings briefings of Listed Companies in China by using the deep learning word vector model and empirically tests the impact of management's irrelevant answer behavior on the risk of stock price crash. The results show that the management's irrelevant answers behavior significantly promotes the downward volatility of the company's stock price in the current period and the next year, and the risk push effect is stronger in the next year. The internal reason for this result is that management, motivated by seeking advantages and avoiding disadvantages, tends to adopt vague avoidance language strategies to hide adverse information within the company in the face of sharp questions. Although this information masking behavior delays the complete exposure of risks in the short term, it does not eliminate the fundamental hidden dangers, but leads to the continuous accumulation of negative information within the enterprise. Over time, when the masked real performance or underlying risks emerge in full the next year, the huge expectation gap will trigger a stronger panic selling by investors, resulting in a more severe stock price crash crisis. Based on the above conclusions, it is suggested that the regulatory authorities should strengthen the dynamic supervision of the substantive quality of interactive communication between listed companies, and investors should also improve their long-term screening ability of management language characteristics and be alert to the fundamental risks of subsequent development behind fuzzy response.

This study's primary contribution lies in expanding the application scope of bad news hoarding theory from traditional static financial reporting to the dynamic question-and-answer interaction of earnings briefings. In terms of research methods, this paper introduces a model in the field of natural language processing to calculate the soft cosine similarity of question-and-answer texts, which overcomes the measurement error caused by synonym substitution. This provides a reference for follow-up scholars to tap into the soft information of the capital market. The practical significance of this paper is to confirm that strategic avoidance at the language level is also an important cross-period risk warning signal, which is conducive to guiding market participants to pay more attention to the substantive quality of information

disclosure. There are still some shortcomings in the current research, such as the failure of text similarity calculation to further distinguish the specific business themes asked by investors, and the lack of in-depth analysis of the specific transmission path of the cross-period spillover effect under the role of different information intermediaries. Future research can combine topic mining and machine learning technology to accurately characterize the response characteristics of management under specific sensitive topics and introduce variables such as external supervision mechanisms to further improve the theoretical framework of the economic consequences of interactive information disclosure.

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