

Internal Control, Negative News, and Corporate Performance

An Empirical Analysis Based on China's Strategic Emerging Enterprises

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Abstract

In the information age, negative news affects corporate performance due to its powerful ability to spread and disrupt. Existing studies examine the linear relationship between negative news and corporate performance and explore the ex-post response mechanism of negative news. However, the nonlinear relationship between negative news and corporate performance and the role and mechanisms of ex-ante prevention of negative news by corporate control factors are unclear. We explore these issues using a sample of Chinese strategic emerging companies from 2012 to 2020. Our results show that: there is an inverted U-shaped effect of negative news intensity on corporate performance; internal control dampens negative news intensity; corporate shareholder responsibility and corporate violations degree partially mediate the negative relationship between internal control and negative news intensity, with the joint mediation effect of the two accounts for 39% of the total effect. Our study identifies an 'optimal range' of negative news intensity that is beneficial to corporate performance and finds the role of internal control in the governance of negative news intensity and the mechanisms of action, which contributes to further understanding of the impact of negative news on firm performance and has important implications for the governance of corporate opinion.

JEL classification numbers: G30, M10, M20.

Keywords: Corporate performance, Corporate shareholder responsibility, Corporate violation degree, Internal control, Negative news intensity.

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1. Introduction

In the age of information explosion, media journalists often add their viewpoints to the news to resonate with readers. As a result, media news carries different value orientations. The public pays close attention to negative news out of loss aversion. Negative news can also significantly impact corporate performance due to its powerful ability to guide public opinion and change the attitudes of corporate stakeholders.

In August 2019, Cody Dairy was exposed by the media for defaulting on employee wages and alleged violations of the law. Continuous negative news sparked a public outcry, resulting in a net profit loss of 49.62 million yuan, down 138% year-on-year. In the first quarter of 2019, Jingdong was exposed by the media in successive negative news, including the civil lawsuit case against CEO Liu Qiangdong, the '996' incident, and the collection of user privacy by financial apps. However, its net income in the first quarter far exceeded market expectations, with net profit attributable to common shareholders up 5.8 billion yuan, up 379% year-on-year. Under the damaging news crisis, Cody Dairy suffered considerable losses in its performance, while Jingdong's performance increased rather than decreased. The inconsistency of the impact of negative news on firm performance in the above examples foreshadows the nonlinear relationship between negative news and firm performance.

In studies on the impact of negative news on corporate performance, some scholars have suggested that disclosing corporate violations in negative news may trigger 'non-cooperation' of stakeholders, which may worsen the business turnover and reduce corporate performance (Huang, 2013). It may also trigger the intervention of administrative agencies, which may increase the cost of corporate violations (Li and Wang, 2013) and further reduce corporate performance. On the other hand, some scholars have suggested that the reputational damage caused by negative news to firms and managers can inversely constrain managers' opportunistic behavior and make them strive to improve firm performance (Zheng et al., 2011). The divergence in practice and theory leads us to explore further the nonlinear relationship between negative news and firm performance. At the same time, it is necessary to further explore the antecedents of negative news as a factor that potentially affects corporate performance. Sorting out the relationship between 'antecedent influences-negative news-corporate performance' can help us gain managerial insights into the impact of corporate performance.

The exploration of the factors influencing negative news uncovered post hoc coping mechanisms for negative news. Examples include timeliness of CEO attention (Gamache and McNamara, 2019) and timeliness of communication (Elliott et al., 2018), and changes in the board, executives, and auditors (Johnstone et al., 2011). However, few studies have analysed the factors that prevent negative news from arising in terms of the causes of negative news. To summarize the existing literature, the causes of negative corporate news come from three primary sources: business conditions: companies that are in poor business conditions or have experienced

crises are more likely to attract negative media news (Graf-Vlachy et al., 2020); corporate moral hazard to the public: significant misleading public statements by management (Miller, 2006) and inappropriate handling of corporate crises (Jahn and Bruehl, 2019) will attract negative media news; high agency costs: accounting fraud and misappropriation of funds by managers triggered by high agency costs will attract negative media coverage (Miller, 2006).

To improve the accuracy of corporate accounting information and ensure the safety of assets, the Committee of Sponsoring Organizations in the United States proposed Internal Control - A Holistic Framework in 1992 (Chan et al., 2020), which offers internal control. As an essential corporate governance mechanism, internal control can dynamically monitor a company's operating shortcomings and develop and implement solutions. High-quality internal controls effectively reduce agent moral hazard and enhance financial statements (Chan et al., 2020), while corporate agent moral hazard and accounting statement issues are often the sources of negative media news. Regarding the impact mechanism of internal control, Alabdullah et al. suggest that corporate internal control can effectively mitigate agency costs between managers and shareholders through mutual monitoring and communication, thus making managers more attentive to shareholders' interests (Alabdullah and Maryanti, 2021). At the same time, Fernandhytia et al. find that high-quality internal controls dampen illegal corporate transactions, corporate fraud, and other irregularities (Fernandhytia and Muslichah, 2020). Then, whether internal control can lead to a reduction in negative news and whether corporate shareholder responsibility and the degree of corporate violations play a mediating role in the relationship between internal control and negative news remain to be explored.

Thirdly, Synthesizing the existing studies on the relationship between negative news and corporate performance and the antecedent influences of negative news, we conclude the following: Firstly, most scholars have tried to explain the relationship between negative news and corporate performance by looking for mediating factors, such as worsening the business turnover situation and triggering the involvement of government agencies, but still lack the necessary theoretical basis to deconstruct the mechanisms by which negative news affects corporate performance. Secondly, the nonlinear relationship between negative news and corporate performance still deserves further investigation. Theoretically, negative news has both positive and negative effects on firm performance. In empirical studies, different scholars have reached opposite conclusions, which makes it necessary to verify the nonlinear relationship between negative news and corporate performance. Thirdly, most existing studies focus on the response to negative news that has occurred, ignoring the role of internal control in preventing negative news beforehand while lacking the investigation of the mechanism of the role of internal control on negative news.

Given this, this paper uses a generalized linear mixed model, taking strategic emerging companies as a sample, to explore the nonlinear relationship between negative news intensity and corporate performance, the inhibiting effect of internal control on negative news intensity, and the mediating effect of corporate

shareholder responsibility and the degree of corporate violations.

The central significance of this paper is that: firstly, it analyses the role of negative news on corporate performance and its mechanism from the perspective of reputation theory, which fills the theoretical gap in the existing research on negative news; secondly, based on the research on the linear relationship between negative news and corporate performance, it further explores the nonlinear relationship between the two, which enriches the research on the impact of negative news on corporate performance; thirdly, based on exploring the relationship between negative news and corporate performance, it further analyses the inhibiting role of corporate internal control on negative news and the mediating role of corporate shareholder responsibility and the degree of corporate violations, which can provide practical suggestions for the governance of corporate opinion.

The conceptual framework of this paper is illustrated below:

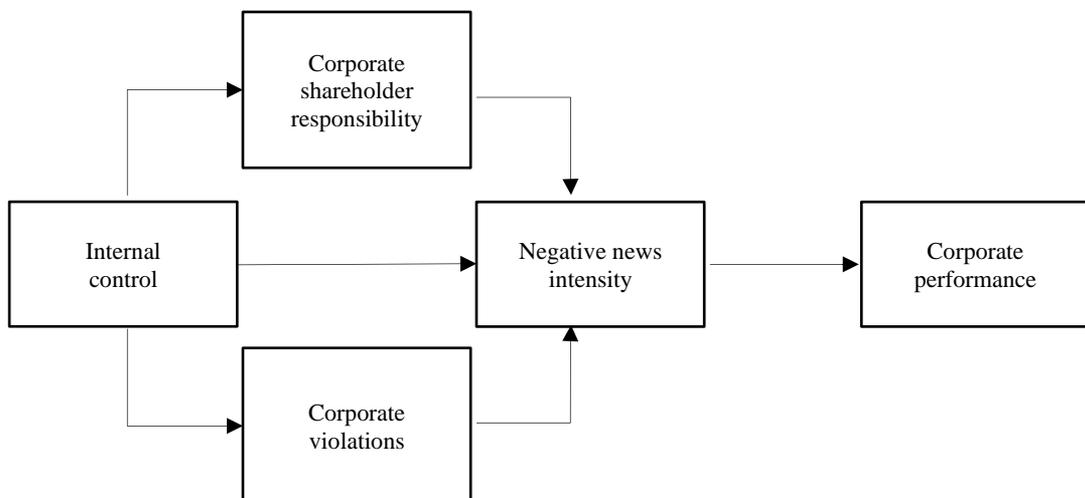


Figure 1: Conceptual framework diagram

The remaining chapters are organised: Part II analyses the theory and formulates hypotheses; Part III designs the research proposal; Part IV analyses the empirical results and implements robustness tests; Part V concludes and makes recommendations.

2. Theoretical Analysis and Research Hypothesis

2.1 Impact of negative news intensity on corporate performance

Negative news has an impact on company performance by triggering reputation mechanisms. News plays a vital role in the establishment and maintenance of corporate reputation. The company's historical activities shape the corporate image, which is disseminated to social groups through the media, and the group's

communication and comments shape the corporate reputation.

Reputation theory suggests that reputation acts as a binding incentive for individuals and organizations. According to reputation theory, in a repeated game with incomplete information, if a firm does not cooperate, it will be retaliated by the other party with 'an eye for an eye' (Kreps and Wilson, 1982; Li et al., 2010). Therefore, for a considerable period, firms will restrain their opportunistic behavior and maintain an excellent reputation to seek long-lasting and stable benefits from cooperation with stakeholders (Pi, 2009).

However, negative press exposes the 'uncooperative' behavior of the company. Non-cooperative behavior will trigger retaliation from the company's stakeholders and increase the cost of reputational damage to the company itself and its 'reputation community.' The corporate 'reputation community' refers to people sharing a company's reputation in a common incident (Li and Wang, 2013). By incorporating the 'reputation community' into the corporate reputation damage model, the final cost of reputational damage to the company is equal to the sum of the cost of damage to the company's reputation and the cost of transferring the damage to the company's 'reputation community.' In other words, the company will bear the cost of damage transferred by its associated auditors, accounting firms, local governments, and other 'reputation communities' (Li and Wang, 2013).

As discussed above, negative news may trigger a transfer of the cost of reputational damage to the firm's 'reputation community.' However, two conditions need to be met for this effect to occur: (1) the widespread dissemination of negative news and (2) the reputation community's aggressiveness of punishment (Li and Wang, 2013). Thus, when there is a difference in the intensity of negative news, the cost of damage to a firm's reputation varies. In the case of less harmful news intensity, the wide spread of negative news is weak, the cost of damage to the firm's reputation is small, and there is less incentive for the reputation community to punish. The occurrence of negative news instead motivates the firm to make efforts to improve corporate performance in order to meet stakeholder expectations and seek long-term cooperative gains. At this point, the higher the intensity of negative news, the more significant the performance improvement made by the firm and the better the firm's performance. Where the intensity of negative news is high, the conditions for widespread dissemination of negative news are met, and the 'reputation community' is motivated to punish, the 'reputation community' will transfer the costs of its damage to the firm, causing the firm's performance to suffer. The higher the intensity of negative news, the greater the incentive for the 'reputation community' to punish the firm, the greater the cost of damage transferred to the firm, and the worse the firm's performance.

Combined with the above analysis, the hypothesis is proposed:

Hypothesis 1: Negative news intensity has an 'inverted U' effect on firm performance, positively affecting firm performance at lower levels of negative news intensity and negatively affecting firm performance at higher levels of negative news intensity.

2.2 Impact of internal controls on the intensity of negative news

Internal control can reduce the intensity of negative news by reducing corporate agency costs, improving the transparency of corporate information and the credibility of financial statements, and improving the accuracy of managers' decisions to prevent significant adverse corporate events.

The separation of powers in modern enterprises has led to divergent interests between shareholders and managers. As owners, shareholders are more concerned about the company's long-term profitability. They can afford to lose money from short-term underperformance. However, managers tend to focus more on the gains that short-term performance improvement can bring to their compensation because they cannot enjoy long-term corporate earnings (Yang et al., 2017). As a result, managers tend to conceal negative news in corporate operations and whitewash financial statements through surplus management and other means to improve short-term performance (Ng et al., 2021). Moreover, some managers will conspire with the board of directors for their benefit (Cambinia et al., 2018). Managers' irregularities lay the excellent potential for the company, making it riskier to operate, and will attract much negative press when negative news cannot be covered up.

On the other hand, internal control can reduce corporate agency costs, discouraging managers from abusing their power, accepting bribes, accepting gratuities, and other profit-making behaviors (Chan et al., 2020), and reducing the negative publicity that may arise from incidents of non-compliance. Good internal controls can also improve the level of board oversight over managers and reduce the bias of managers' decisions (Feng et al., 2009), thereby reducing the negative news arising from major corporate decision failures. In addition, high-quality internal control can also improve the transparency of enterprise information and the credibility of financial statements (Xue and Ying, 2020), which directly enhances the trust of external media in the supervision results of the enterprise and improves the positive media evaluation of the company.

Based on the above analysis, the following hypothesis is formulated:

Hypothesis 2: Internal control negatively affects the intensity of negative news. The higher the quality of internal control, the lower the intensity of negative news.

2.3 Intermediary effects of corporate shareholder responsibility

Internal control can effectively promote enterprises to fulfill their shareholder responsibilities. First, high-quality internal control can make the distribution of authority and responsibility within the enterprise clearer and form an organizational structure of mutual supervision and checks and balances, which is conducive to the rationality of the enterprise's decision to improve shareholder responsibility (Liu, 2010); next, reasonable internal control can improve the level of information exchange and communication within the enterprise, which is conducive to the improvement of the execution of the fulfillment of corporate shareholder responsibility; then, internal control can monitor and exclude the malpractice in the

business process in real-time, thus improving the level of corporate governance and making the level of fulfillment of corporate shareholders' responsibility rise (Zhang and Wang, 2016); finally, effective internal control can create an excellent corporate culture, which is conducive to improving the sense of belonging and cohesion of corporate employees, thus creating a suitable environment for the fulfillment of corporate shareholder responsibility and improving the efficiency and quality of the fulfillment of corporate shareholder responsibility.

A high corporate shareholder responsibility level can reduce negative news intensity. First, good corporate shareholder responsibility represents higher ethical standards of management, which can lead to increased trust among corporate shareholders. Long-term shareholder ownership of corporate shares will stabilize corporate stock prices (Quan et al., 2015), leading to less harmful news about share price volatility and more positive media coverage about the firm's long-term value. Furthermore, higher corporate shareholder responsibility implies lower agency costs, reducing enterprise managers' self-interest behavior (Kim et al., 2012), thereby reducing the likelihood of major negative news related to managerial irregularities and financial statement omissions.

Synthesis of the above, internal control facilitates the fulfillment of corporate social responsibility, and good social responsibility can reduce the occurrence of negative news.

Based on this, the following hypothesis is formulated:

Hypothesis 3: Corporate shareholder responsibility mediates the negative effect of internal control on the intensity of negative news. In other words, internal control can dampen the intensity of negative news by increasing corporate shareholder responsibility.

2.4 The role of intermediaries in the extent of corporate violations

Internal control can inhibit corporate violations for three main reasons: First, internal control can urge companies to strictly implement laws and regulations, such as: establishing a strict food safety monitoring system, implementing environmental resource protection measures, and legally protecting employees' rights and interests, thus reducing the occurrence of corporate violations (Liu, 2010). Second, internal control clarifies the organizational structure of mutual checks and balances and mutual supervision among the board of directors, supervisors, and managers, which in turn reduces possible fraud and accounting fraud by management (Chalmers et al., 2019). Third, internal control regulates the processes of capital borrowing and lending, commodity procurement, sales, and other operations, which can effectively reduce the potential for significant fraud and irregularities by corporate employees (Liu, 2010), resulting in a lower level of corporate irregularities.

The degree of corporate violation can increase the intensity of negative news. From the perspective of the news audience, the problem of information asymmetry makes the public pay more attention to the illegal information deliberately hidden by

enterprises and is detrimental to the public interest (Damstra and Boukes, 2018). Thus, media people from a rational economic perspective will actively explore and report violation information about companies to increase the total media audience and improve their competitiveness in the industry. Therefore, the higher the degree of violation, the more likely it is to trigger a media scramble to increase the intensity of negative news.

In summary, internal corporate controls inhibit the level of corporate violation, and an increase in corporate violation increases the intensity of negative press.

Based on this, the following hypothesis is formulated:

Hypothesis 4: The degree of corporate violation mediates the negative effect of internal controls on the intensity of negative news. Internal controls can dampen the intensity of negative news by reducing the degree of corporate violation.

3. Study Design

3.1 Sample selection and data sources

As the media news data is only updated until 2020, this article uses the period from 2012 to 2020 for A-share listed companies in Shanghai and Shenzhen. The data is collated as follows: firstly, the sample of ST and *ST companies are excluded. These companies are not comparable to others as their corporate accounting is based on liquidation and bankruptcy; the financial samples are excluded. The unique asset and liability structure and high operational risk of the financial samples make them a unique accounting practice, which is not comparable with other companies; finally, missing data and extreme samples are excluded. The treatment of missing data is divided into two methods: direct exclusion and filing. Filled data may result in biased regression results, standard errors, or both, and the exclusion method ensures the authenticity of the sample data. Extreme values can cause significant bias in the regression results, and excluding extreme values benefits the robustness of the regression results.

Internal control data are obtained from the DIB database, harmful news data are obtained from the financial news database of listed companies in China, and other data are obtained from the CSMAR and WIND databases. The companies involved in the strategic emerging industries are manually collated as follows: first, the secondary codes of the industries involved in the strategic emerging industries are compiled concerning the 'Classification of Strategic Emerging Industries (2018)'; then, the companies' stock codes are matched according to the secondary codes; finally, the companies are matched with the essential products and services involved in the strategic emerging industries according to their officially disclosed business scope. A total of 14155 observations are obtained from 3031 companies over 9 years, with an average of 5 observations per company. Most of the companies in the sample are in the fields of new energy, new materials, high-end equipment, and biomedicine.

3.2 Variable design

3.2.1 Explained variables

Referring to Zheng et al. (2011) and Ji et al. (2020), we use Tobin's Q to measure firm performance. Tobin's Q is the ratio of market value to replacement cost. Tobin's Q is chosen as a proxy for corporate performance for three reasons: First, compared with the return on assets (ROA and ROE) measures, Tobin's Q judges corporate performance from a market perspective, which can avoid the bias of ROA and ROE performance measures caused by managers' whitewashing of financial statements. Secondly, Tobin's Q measures the market value of a company, which is an indicator closely related to shareholders' interests and is closely watched by shareholders. Thirdly, Tobin's Q links the real economy (replacement cost) and the virtual economy (market value). Therefore, Tobin's Q reflects the level of corporate performance and provides essential indications to stakeholders and corporate investment decisions. In this paper, Tobin's Q is used to measure corporate performance.

3.2.2 Explanatory variables

(1) Negative press intensity

We use the negative news ratio (all negative news in newspapers/ (all negative news in newspapers + all positive news in newspapers)) to measure the intensity of negative news. The negative news data are obtained from the database of financial news of listed companies in China, which not only covers eight mainstream newspapers, such as China Securities Journal, with high quality, strong influence, and timely dissemination, but also collects the importance Central newspapers, local morning, daily and evening newspapers, with broad coverage and credible data. The newspaper type covers both online and newspaper reporting modules. The reason for using the newspaper module is that online reporting is not entirely written by professional journalists and is often mainly entertaining, leaving the authenticity of the disclosures to be tested (Graf-Vlachy et al., 2020)

(2) Internal control

Internal control variable is used to test the inhibitory effect of internal control on the intensity of negative news, the mediating effect of corporate shareholder responsibility, and the degree of corporate violation on internal control and the intensity of negative news. Referring to the study of Chen et al. (2018), we use the logarithm of the internal control index to measure internal control. The internal control index is obtained from the DIB database. The database selects internal control impact indicators by considering internal control-related regulations and guidelines, determines the weights by the coefficient of variation method and hierarchical analysis (AHP), and obtains the internal control index by weighting the average of all indicators (the range of values is [0,1000]). The higher the value of the index, the better the quality of the company's internal control.

3.2.3 Intermediate variables

The mediating variables in the text are corporate shareholder responsibility and the degree of corporate violation. Referring to Wu et al. (2021) and Zhang et al. (2022), the corporate shareholder responsibility index disclosed by hexun.com is used to measure corporate shareholder responsibility. The index consists of five secondary indices: earnings, debt service, returns, information disclosure, and innovation. The index is then specified into 5 secondary and 18 tertiary indicators, weighted according to the characteristics of different industries, to obtain the Corporate Shareholder Responsibility Index—the larger the index, the better corporate shareholder responsibility performance.

The data on the degree of violation is obtained from the CSMAR database, which contains information on violations by listed companies issued by the China Securities Regulatory Commission, Shenzhen Stock Exchange, Shanghai Stock Exchange, and other regulatory bodies. In this paper, the degree of violation of enterprises is valued according to punishment mode. The degree of violation of enterprises subject to criticism (P2601) and other (P2699) punishments is valued as 1. Warning (P2602), reprimand (P2603), fine (P2604), confiscation of illegal income (P2605), cancellation of business permit (order to close) (P2606), market prohibition (P2607) are taken as value 2-7. The value of 0 is taken as the value of no violation. The scores of different penalties for the same incident are then stacked. Finally, the scores of different incidents in the same year are summed up to obtain the enterprise's annual degree of violation value. The higher the value, the higher the degree of violation.

3.2.4 Control variable

Referring to the studies of Chen et al. (2016), Yin et al. (2018), we use the logarithm of total assets to control the impact of enterprise size; the operating income asset ratio to control the profitability of enterprises; the sustainable growth rate to control the development ability of enterprises; the cash flow asset ratio to control the cash flow status of enterprises; the asset-liability ratio to control the impact of enterprise leverage; the introduction of the equity nature dummy variable to control for the nature of equity; introduction of CEO duality to control for corporate governance status; introduction of corporate violation dummy variable to control for the impact of corporate violation, in addition, in the regression with corporate performance as the dependent variable, percentage of outstanding shares is used to measure the impact of corporate stock price stickiness; and the fixed asset growth rate is introduced to control for the impact of new investment. The variables are defined in the manner shown in Table 1 below.

Table 1: Definition of variables

Nature of variable	Variable name	Variable Symbols	Variable definitions
Dependent variable	Corporate Performance	TBQ	$\frac{\text{Market Value}}{\text{Total assets} - \text{net intangibles} - \text{net goodwill}}$
Independent variable	Negative News Intensity	NNI	$\frac{\text{Number of negative news}}{\text{Number of negative news} + \text{Number of positive news}}$
	Internal Control	IC	Internal Control Index plus the natural logarithm of 1
Intermediate variable	Shareholder Responsibility	SR	Corporate Shareholder Responsibility Index (hexun.com)
	Violation Degree	VD	Total annual violations of enterprise
Control variable	Enterprise size	Size	Natural logarithm of the total assets
	Profitability	Prof	$\frac{\text{Total income}}{\text{Total assets}}$
	Development ability	Growth	$\frac{\text{Return on Net Assets} \times \text{Earnings Retention Rate}}{1 - \text{Return on Net Assets} \times \text{Earnings Retention Rate}}$
	Status of Cash Flow	Cash	$\frac{\text{Net cash flows from operating activities}}{\text{Total assets}}$
	Leverage	Lev	$\frac{\text{Total liabilities}}{\text{Total assets}}$
	Nature of Equity	Equity	1 for state-owned holdings, 0 for others (Dummy variable)
	CEO Duality	Dual	1 for Chairman and CEO combined, 0 otherwise (Dummy variable)
	Status of Violation	Viol	1 if the enterprise had a violation during the year, 0 otherwise (Dummy variable)
	Stock Price Stickiness	SPS	$\frac{\text{Number of shares outstanding}}{\text{Total number of shares}}$
	New Investment	NI	$\frac{\text{Net incremental fixed assets of the period}}{\text{Net fixed assets at the beginning of the period}}$
	Industry	Ind	Industry (Dummy variable)

3.3 Empirical mode

We developed the following five models to test the relevant hypotheses:

$$TBQ_{i,t+1} = \beta_{10} + \beta_{11} NNI_{i,t} + \beta_{12} NNI_{i,t}^2 + \sum_{j=3}^{12} \beta_{1j} \text{variables}_{i,t} + \mu_i + v_{t+1} + \varepsilon_{i,t+1} \quad (1)$$

$$NNI_{i,t+1} = \beta_{20} + \beta_{21} IC_{i,t} + \sum_{j=2}^{10} \beta_{2j} \text{variables}_{i,t} + \mu_i + v_{t+1} + \varepsilon_{i,t+1} \quad (2)$$

$$SR_{i,t+1} = \beta_{30} + \beta_{31} IC_{i,t} + \sum_{j=2}^{11} \beta_{3j} \text{variables}_{i,t} + \varepsilon_{i,t+1} \quad (3)$$

$$VD_{i,t+1} = \beta_{40} + \beta_{41} IC_{i,t} + \sum_{j=2}^{11} \beta_{4j} \text{variables}_{i,t} + \varepsilon_{i,t+1} \quad (4)$$

$$NNI_{i,t+1} = \beta_{50} + \beta_{51} IC_{i,t} + \beta_{52} SR_{i,t+1} + \beta_{53} VD_{i,t+1} + \sum_{j=4}^{13} \beta_{5j} \text{variables}_{i,t} + \varepsilon_{i,t+1} \quad (5)$$

In the Equation, i represents the firm, t represents the year, μ_i is the firm random effect, v_t is the year random effect, and $\varepsilon_{i,t+1}$ is the individual random effect. Equation (1) and Equation (2) use the Crossed Random Effect in the Generalized Linear Mixed Model (GLMM) to set firm and year random effects, which can solve the problem of correlation between different observations of the same year and observations of different years. Referring to Wen and Ye (2014), Hayes (2013), Equation (3)-(5) mediating effects were tested using Ordinary Least Squares (OLS) and controlling for industry and year-fixed effects. Forward all the dependent variables by one period to prevent endogeneity issues arising from possible two-way causality.

Equation (1) is used to verify the ‘inverted U’ effect of negative news intensity on firm performance. β_{11} and β_{12} are the primary and secondary coefficients of NNI . If β_{11} is significantly positive and β_{12} is significantly negative, it indicates an ‘inverted U’ effect of negative news intensity on firm performance.

Equation (2) is used to verify the negative effect of internal control on the intensity of negative news. β_{21} is the coefficient of the main explanatory variable IC , and if β_{21} is significantly negative, internal control can suppress the intensity of negative news.

Equation (3)-(5) are tests for the mediating effects of corporate shareholder responsibility and the degree of corporate violation.

The test procedure is shown in Figure 2 below, in which the positive influence coefficient β_{31} of IC on SR in Equation (3), the negative influence coefficient β_{41} of IC on VD in Equation (4), and the negative influence coefficient β_{52} of SR on NNI , the positive influence coefficient β_{53} of VD on NNI , and the negative influence coefficient β_{51} of IC on NNI in Equation (5) are examined in turn. If β_{31} 、 β_{41} 、 β_{52} 、 β_{53} are significant, this indicates a significant indirect effect, and if β_{51} is significant, this indicates a significant direct effect, with the mediating variable playing a partially mediating role.

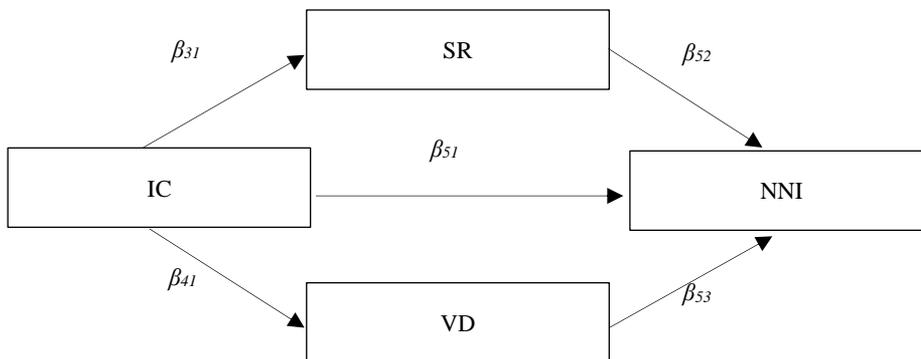


Figure 2: Flow of the intermediate effect test

4. Empirical Results and Analysis

4.1 Descriptive statistics

Table 2 shows the results of the statistical analysis of 3031 enterprises for the most recent year of observation. The mean value of TBQ is 2.59, indicating that the market capitalization of the sample companies in the most recent period is two times the replacement cost of the companies, indicating that the overall value of the sample companies is high and has good development prospects. The mean value of NNI is 0.23, representing a ratio of positive news to negative news of approximately 4:1, which means that the media reputation of the sample companies is generally good. NNI ranges from 0 to 1, indicating that the sample companies' negative news intensity varies greatly. The mean value of CI is 6.31, with an actual value of 549, which is in the middle of the range of 0-1000 for the internal control index, indicating that the overall quality of internal control of the sample companies is not high. The mean value of SR is 14.20, accounting for half of the maximum value of 30, indicating that the performance of corporate shareholder responsibility of the sample strategic emerging companies is in the middle on average. The minimum value of SR is -10.72, and the maximum value is 25.74, indicating a wide range in the fulfillment of shareholder responsibility among the sample companies. The minimum value of VD is 0, and the maximum value is 17, indicating that the degree of violation of the sample firms is uneven.

Table 2: Descriptive statistics

Variables	Mean	Variance	Min	Max
TBQ	2.59	2.34	0.69	29.78
NNI	0.23	0.24	0	1
IC	6.31	1.06	0	6.85
SR	14.20	5.82	-10.72	25.47
VD	0.24	0.95	0	17
Size	22.41	1.34	17.95	28.51
Prof	0.62	0.41	0.02	4.89
Growth	0.06	0.10	-1.84	1.08
Cash	0.06	0.07	-0.40	0.65
Lev	0.42	0.19	0.01	0.98
Equity	0.32	0.47	0	1
Dual	0.29	0.46	0	1
Viol	0.12	0.32	0	1
SPS	0.79	0.24	0.04	1
NI	0.24	1.39	-1.00	31.51

Number of observations: 3031

To avoid regression bias caused by multicollinearity, we test the correlations of the variables, as shown in Table 3 below. The maximum correlation coefficient is the correlation coefficient between Lev and Size, with a value of 0.58, less than 0.70, while all other correlation coefficients are less than 0.50. Further testing the variance inflation factor (VIF) between the variables, the VIF values of the variables are all less than 2, indicating no severe covariance problems.

Table 3: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)TBQ														
(2)NNI	0.04													
(3)IC	0.00	-0.03												
(4)SR	-0.01	0.04	-0.18											
(5)VD	-0.01	0.06	-0.22	0.67										
(6)Size	-0.40	-0.06	0.03	-0.02	-0.03									
(7)Prof	-0.05	0.002	0.02	-0.02	-0.01	0.03								
(8)Growth	0.09	-0.005	0.02	-0.04	-0.02	0.10	0.14							
(9)Cash	0.14	-0.02	0.03	-0.06	-0.02	0.02	0.12	0.23						
(10)Lev	-0.36	-0.01	-0.03	0.05	0.03	0.58	0.15	0.07	-0.16					
(11)Equity	-0.23	0.004	0.00	-0.07	-0.05	0.38	0.07	0.02	0.003	0.28				
(12)Dual	0.13	-0.002	0.01	0.02	0.01	-0.17	-0.05	-0.02	-0.02	-0.12	-0.28			
(13)Viol	-0.03	0.01	-0.14	0.14	0.14	-0.02	-0.01	-0.04	-0.05	0.04	-0.04	0.02		
(14)SPS	-0.19	-0.01	-0.03	-0.002	0.00	0.29	0.07	-0.03	0.02	0.26	0.35	-0.18	0.01	
(15)NI	0.04	0.02	0.001	0.01	0.01	-0.04	-0.05	0.02	-0.04	-0.01	-0.06	0.04	-0.01	-0.09

4.2 Analysis of the empirical results

4.2.1 The ‘inverted U’ shape of negative press intensity on corporate performance

The empirical results are shown in Table 4 below. Column (1) of Table 4 tests the ‘inverted U’ relationship between negative news intensity and firm performance. The coefficients of the primary and secondary terms of NNI on TBQ are 0.77 and -1.07, respectively, both significant at the 1% level, indicating an ‘inverted U’ shape effect of negative news intensity on firm performance, and Hypothesis 1 is tested. Figure 3 below shows the marginal prediction curve of the 95% confidence interval of negative news intensity on firm performance.

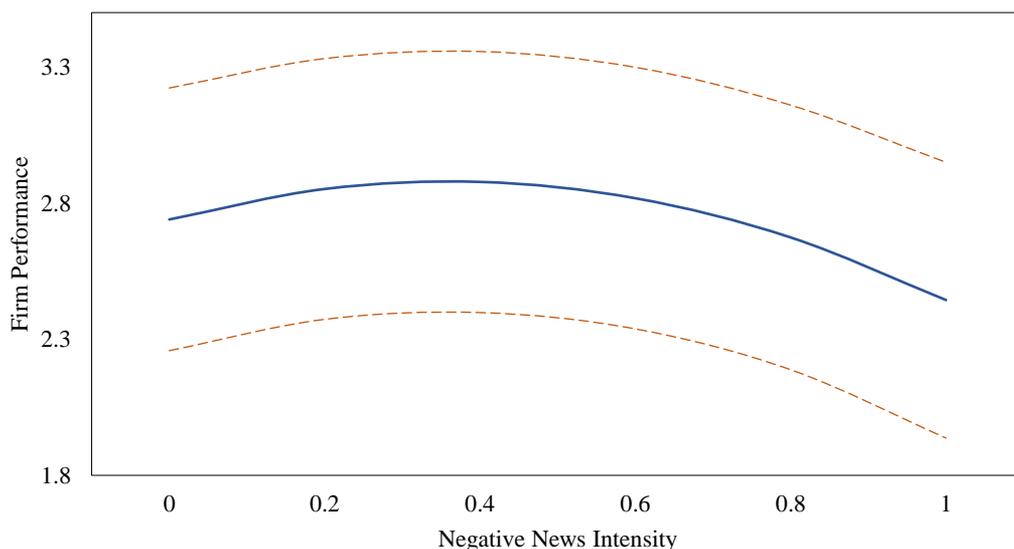


Figure 3: 95% confidence interval marginal prediction curve of negative news intensity on firm performance

4.2.2 The dampening effect of internal controls on the intensity of negative news intensity

Column (2) of Table 4 presents the results of the validation of the negative relationship between internal control and negative news intensity. The coefficient of the effect of IC on the NNI is -0.01, which is significantly negative at the 1% level, indicating that internal control suppresses the intensity of negative news, and hypothesis 2 is verified.

4.2.3 The mediating role of corporate shareholder responsibility and the degree of corporate violation

Columns (3)-(5) of Table 4 examine the mediating effect of corporate shareholder responsibility and the degree of corporate violation on the negative relationship

between internal control and the intensity of negative news. In column (3), the coefficient of the effect of IC on SR is significantly positive, indicating that internal control can increase corporate shareholder responsibility. In column (4), the coefficient of the effect of IC on VD is significantly negative, indicating that internal control can reduce the degree of corporate violation. In column (5), RS significantly and negatively affects NNI, indicating that the better the corporate shareholder responsibility, the lower the intensity of negative news. VD significantly positively affects NNI, indicating that the higher the degree of corporate violation, the higher the intensity of negative news. In summary, internal control can suppress the intensity of negative news by increasing corporate shareholder responsibility and suppress the intensity of negative news by reducing the degree of corporate violation. Hypothesis 3 and Hypothesis 4 are verified. In column (5), controlling for the intermediary variables SR and VD, internal control remains significant and negatively affects NNI, indicating that shareholder responsibility and the degree of corporate violation partially mediated the effect of internal control on the intensity of negative news. Further examining the mediated effect of corporate shareholder responsibility and the degree of corporate violation, the mediated effect of corporate shareholder responsibility is 14.87%. The mediated effect of the degree of corporate violation is 24.61%, with the combined mediated effect of the two accounting for 39.39% of the total effect, meaning that corporate shareholder responsibility and the degree of corporate violation explain approximately 39% of the path of the effect of internal control on the negative news intensity.

Table 4: Empirical results

	GLMM	GLMM	OLS	OLS	OLS
	F.TBQ	F.NNI	F.SR	F.VD	F.NNI
	(1)	(2)	(3)	(4)	(5)
NNI	0.77***				
	(4.17)				
(NNI*NNI)	-1.07***				
	(-4.92)				
IC		-0.01***	0.57***	-0.20***	-0.01***
		(-4.64)	(11.67)	(-23.87)	(-3.06)
F.SR					-0.003***
					(-7.03)
F.VD					0.01***
					(6.82)
Size	-0.55***	-0.01***	1.11***	-0.02**	-0.004**
	(-23.93)	(-3.22)	(27.85)	(-2.37)	(-2.35)
Prof	-0.19***	0.002	0.54***	-0.02	0.004
	(-3.38)	(0.32)	(5.09)	(-1.15)	(0.82)
Growth	1.68***	-0.04**	9.43***	-0.09	-0.01
	(11.71)	(-2.27)	(23.44)	(-1.34)	(-0.56)
Cash	2.06***	0.01	18.12***	0.07	0.07**
	(9.41)	(0.34)	(29.90)	(0.70)	(2.53)
Lev	-0.80***	-0.01	-9.02***	0.22***	-0.04***
	(-6.23)	(-0.58)	(-34.18)	(4.81)	(-3.39)
Equity	-0.24***	-0.02***	-0.29***	-0.07***	-0.01***
	(-3.97)	(-2.95)	(-3.07)	(-4.40)	(-3.42)
Dual	0.10**	0.005	0.23**	-0.01	0.004
	(2.32)	(1.02)	(2.48)	(-0.70)	(1.13)
Viol	-0.13***	0.01	-1.09***	0.30***	0.004
	(-2.95)	(1.04)	(-8.19)	(13.09)	(0.76)
SPS	-0.39***				
	(-5.71)				
NI	0.01				
	(1.57)				
Ind	Yes	Yes	Yes	Yes	Yes
Year			Yes	Yes	Yes
R2			0.26	0.07	0.11
μ_i	1.70	0.01			
ν_i	0.46	0.004			
$\varepsilon_{i,t+1}$	1.78	0.03			
Obs	14,155	14,155	14,155	14,155	14,155

Note: t-values in brackets, *, ** and *** indicate significant at the 10%, 5% and 1% levels, respectively.

4.3 Robustness tests

For Hypothesis 1, a possible problem in testing the ‘inverted U’ effect of negative news intensity on firm performance is that the impact of the same intensity of negative news on firm performance varies from firm to firm. At this point, controlling for differences between firms using only a random intercept may cause bias in the regression coefficients, a combination of a random intercept and a random slope will be used to test Hypothesis 1.

A possible problem with the testing of Hypothesis 2, the dampening effect of internal controls on the intensity of negative news, and Hypothesis 3 and 4, the mediating effect of corporate shareholder responsibility and the degree of corporate violation, is that there are more 0 values for the intensity of negative news. The possible reason for the 0 value of negative news intensity is that the problems in the business process are not small enough to warrant negative media coverage. To deal with possible bias in the regression coefficients arising from the deletion of the explanatory variables, Hypothesis 2, Hypothesis 3, and Hypothesis 4 were tested using the Tobit model.

A possible problem with testing Hypothesis 4, the partial mediating effect of the degree of corporate violation on the negative relationship between internal control and the intensity of negative news, is the presence of a large number of 0 values in the corporate violation data. In order to avoid regression errors due to a large number of zeros in the corporate violation data, this paper tests the relationship between internal control and corporate violation using a zero-inflated model. Comparing the variance of the degree of violation with the mean, we find that the degree of violation is more significant than the mean, and the Z-statistic of the Vuong test is significantly greater than 0. Therefore, the Zero-inflated Negative Binomial (ZINB) regression is used to test Hypothesis 4.

For those parts of the paper where the degree of corporate violation is 0, we interpret it in terms of low corporate willingness to violate (WTV) and use the transparency of information disclosed by the Shanghai and Shenzhen stock exchanges to measure corporate willingness to violate. The Shanghai and Shenzhen Stock Exchanges measure the transparency of listed companies' annual reports in five categories: whether the company has hired the Big Four as auditors, corporate disclosure, corporate surplus, the accuracy of analysts' surplus forecasts, and the number of analysts following the company. A high level of completion of these five indicators indicates a low willingness to break the law.

Table 5 shows the results of the robustness test. Comparing the regression results in Table 4 with those in Table 5, we can find that the main explanatory variables are still significant at the 1% level, and the signs of the coefficients remain unchanged. The coefficient changes are relatively small, indicating that the results of this empirical study are relatively robust (For space reasons, the full robustness test results will be presented in the Appendix).

Table 5: Robustness test

	GLMM	Tobit	ZINB	Tobit
	F.TBQ	F.NNI	F.VD	F.NNI
	(1)	(2)	(3)	(4)
NNI	0.73***			
	(3.67)			
(NNI*NNI)	-1.07***			
	(-4.92)			
IC		-0.01***	-0.24***	-0.01***
		(-4.94)	(-12.78)	(-2.89)
F.SR				-0.003***
				(-6.37)
F.VD				0.02***
				(6.65)

Note: Column (1) shows t-values in parentheses, columns (2)-(4) show z-values in parentheses, and *, **, and *** indicate significant at the 10%, 5%, and 1% levels, respectively.

Based on the ‘inverted U’ regression results in Table 5(1), the marginal prediction curves of the impact of negative news intensity on firm performance are further plotted using R. As shown in Figure 4, the stock codes of the companies are shown on the right-hand side, and the order of stock codes corresponds to the order of the right endpoints of the ‘inverted U’ curve from top to bottom.

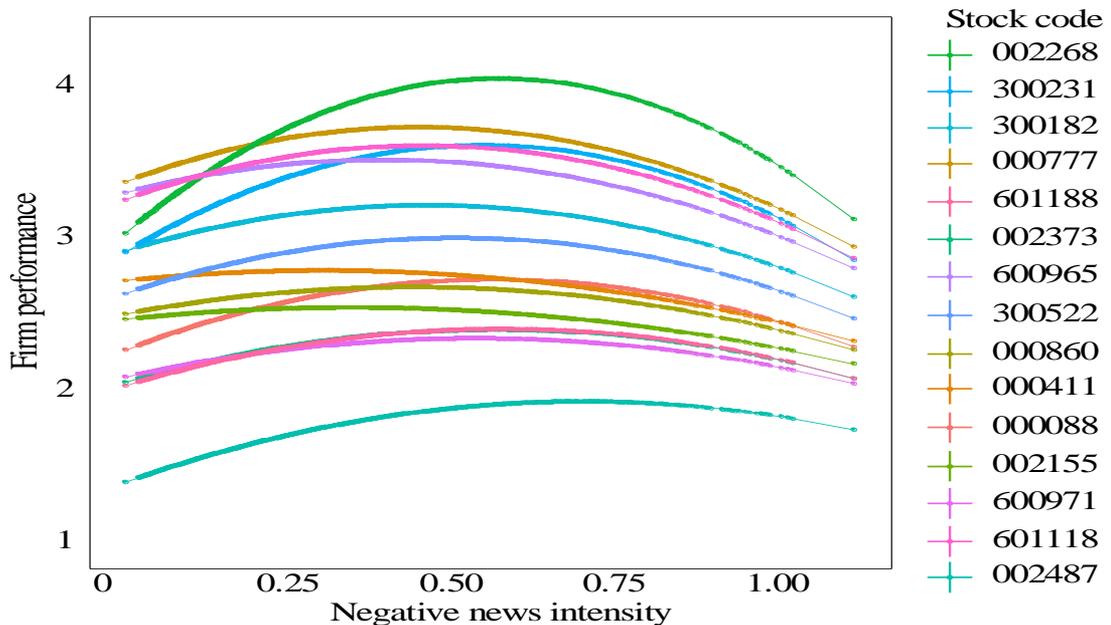


Figure 4: Marginal prediction curve of negative news intensity on firm performance (Some business individuals)

5. Theoretical Implications and Management References

The theoretical implications of this paper are:

Firstly, this paper applies reputation theory and the concept of 'reputation community' to the analysis of the impact of the intensity of negative news on corporate performance, remedying the lack of a theoretical basis for the existing research on the impact of negative news. From the perspective of reputation theory, corporate reputation creates constraints and incentives for managers to restrain their opportunistic behaviors and improve their performance in the face of negative news to counteract the potential loss of reputation. This theory explains the previous research that suggests negative news inhibits managerial misbehavior through 'monitoring mechanisms' (Yu et al., 2011; Ye et al., 2017). Reputation theory enriches the theoretical basis for the positive impact of negative news on firm performance. The introduction of the 'reputation community' concept explains the mechanism of negative news that triggers corporate performance loss through government agencies' involvement, as suggested by previous studies (Ye et al., 2017). By introducing the concept of 'reputation community,' this paper suggests that the main reason for the loss of corporate performance due to negative news is the transfer of the cost of reputation damage from the 'reputation community.' The introduction of the concept of 'reputation community' enriches the theoretical basis for the negative impact of negative news on corporate performance.

Secondly, this paper finds an 'inverted U' shaped relationship between the intensity of negative news and firm performance, with negative news positively contributing to firm performance when it is less intense and inhibiting it when it is more intense. This finding expands the research on the nonlinear relationship between negative news and firm performance and adds to the literature on negative news and firm performance. The inverted U-shaped relationship between negative news intensity and firm performance supports the view that: (1) Negative news improves firm performance by exerting reputational market pressure on management (Zheng et al., 2011; Dong and Liu, 2018). (2) Negative news inhibits firm performance by exerting influential institutional pressure on firms (Yang et al., 2017; Ji et al., 2020). The difference from previous studies is that in the empirical study, it is demonstrated that both positive and negative mechanisms of negative news on firm performance exist, and the strength of the different mechanisms is related to the intensity of negative news. When the intensity of negative news is low, the reputational incentives of negative news play a significant role in improving firm performance. In contrast, when the intensity of negative news is high, negative news triggers the cost of reputational damage transferred by the 'reputation community,' which dampens firm performance. The inconsistency between this paper's 'inverted U' findings and those of previous linear (Ji et al., 2020) studies may be due to the different indicators of negative news measurement. Compared to the direct measure of total negative news, the intensity of negative news is a better indicator of the overall reputation of a firm in the media. It can reflect the impact of negative news on the firm. In addition, this paper uses data from strategic emerging companies,

and differences in the data and the year may also cause different results.

Thirdly, the paper finds the inhibiting effect of internal controls on the intensity of negative news and the effect of corporate shareholder responsibility, corporate violation degree of partial mediating role. This distinguished from previous studies that mostly treated negative news as an effective external governance mechanism (Fernandhytia and Muslichah, 2020) and studied its corporate governance role. This paper considers negative news as one of the objectives of corporate governance and finds that internal control can have a significant dampening effect on the intensity of negative news, enriching the study of the internal corporate influences on negative news. In addition, this paper verifies that adequate internal control partially suppresses the intensity of negative news by increasing corporate shareholder responsibility and reducing the degree of corporate violation. This finding is in line with Zhang et al.'s suggestion that corporate internal control contributes to CSR performance (Zhang and Wang, 2016) and Fernandhytia et al.'s suggestion that internal control can inhibit corporate fraud (Fernandhytia and Muslichah, 2020), differing in that it complements the path of internal control on negative news. It enriches the study of the internal corporate governance path of negative news.

The management implications of this paper are:

Firstly, we find an inverted U-shaped relationship between negative news intensity and corporate performance, with low negative news intensity contributing to corporate performance and high negative news intensity inhibiting corporate performance. An inverted U-shaped relationship suggests that there is an 'optimal range' of negative news intensity on corporate performance, which suggests that companies should plan to prevent significant losses in performance when negative news intensity falls outside the 'optimal range.' When the intensity of negative news is less than the 'optimal range,' the increase in negative news will trigger a reputation mechanism that will cause managers to discipline their behavior and strive to improve performance to meet market expectations. There is good scope for improving corporate performance. When the intensity of negative news is greater than the 'optimal range,' it means that negative news may trigger the cost of reputation damage to be transferred to enterprises. Therefore, when the intensity of negative news is high, enterprises should quickly conduct an internal investigation and publicize the results. Suppose irregularities are found in the business process. In that case, they should admit their mistakes and show determination to rectify them the first time to prevent reputational damage transferred by the 'reputation group.'

Secondly, we find that internal controls can dampen the intensity of negative news. Therefore, companies can prevent negative news intensity from being reduced by strengthening internal controls. They can also adjust the strength of internal controls to keep the intensity of negative news within an 'optimal range' that benefits corporate performance. The result demonstrates the need for high-quality internal controls and supports companies in proactively strengthening their internal control systems. However, the theoretical foundation of internal control in China is so weak that most companies are unaware of the urgency of internal control. Some

companies that have established internal control systems are inefficient and costly. Improving internal control construction is the focus of future work.

Thirdly, we find that internal control suppresses negative news intensity by urging managers to fulfill their shareholder responsibility and avoiding major corporate violation incidents. The managerial significance of the finding is that it emphasizes the importance of reasonable internal control for enterprises to fulfill their shareholder responsibilities and reduce operational risks. It inspires managers to improve internal control by improving the internal environment, strengthening risk assessment, implementing risk control, enhancing communication and exchange, and improving supervision to prevent operational risks and improve the efficiency and quality of fulfilling corporate shareholder responsibilities.

There are still some shortcomings in this paper that need to be improved in subsequent studies. Firstly, the type of negative news (e.g., negative policy news, negative financial news) and the degree of negative news (in-depth coverage, moderate coverage, shallow coverage) is not carefully differentiated. Further research could analyse the impact of different types of negative news on firm performance in detail. Secondly, only the impact of paper-based news on firm performance was considered, and the impact of online news on firm innovation was not considered. Although the authenticity and originality of online news are yet to be investigated, it is undeniable that online news has an increasing impact on corporate performance, and how online news will affect corporate performance may become a precious research direction. Thirdly, this paper only explores the inhibiting effect of internal control on the intensity of negative news, the degree of corporate non-compliance, and the promoting effect on corporate shareholder responsibility. However, internal control has two sides, moderate internal control is beneficial to the efficiency of corporate decision-making, and excessive internal control inhibits management rights. So, whether there is a nonlinear relationship between internal control and corporate performance and through what channels it works are questions that remain to be explored. Fourthly, the article actively calls for enterprises to establish an appropriate internal control system. Still, due to its lack of capacity and limited energy, it has not been able to conduct a systematic analysis of the internal control framework of enterprises. Subsequent scholars can use case studies as examples of how to establish and improve the enterprise's internal control system.

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Appendix

Table 5: Robustness test

	GLMM	Tobit	ZINB	Tobit
	F.TBQ	F.NNI	F.VD	F.NNI
	(1)	(2)	(3)	(4)
NNI	0.73*** (3.67)			
(NNI*NNI)	-1.07*** (-4.92)			
IC		-0.01*** (-4.94)	-0.24*** (-12.78)	-0.01*** (-2.89)
F.SR				-0.003*** (-6.37)
F.VD				0.02*** (6.650)
Size	-0.56*** (-24.29)	-0.001 (-0.55)	-0.07* (-1.88)	0.002 (1.06)
Prof	-0.18*** (-3.33)	0.004 (0.71)	-0.17* (-1.89)	0.01 (1.06)
Growth	1.64*** (11.62)	-0.04* (-1.79)	-0.20 (-1.29)	-0.01 (-0.45)
Cash	1.93*** (8.90)	0.04 (1.24)	0.47 (0.99)	0.08*** (2.72)
Lev	-0.79*** (-6.18)	-0.01 (-0.98)	0.83*** (3.57)	-0.04*** (-2.97)
Equity	-0.24*** (-3.92)	-0.02*** (-3.59)	-0.25*** (-2.63)	-0.02*** (-3.52)
Dual	0.08** (2.04)	0.004 (0.95)	-0.007 (-0.09)	0.005 (1.13)
Viol	-0.12*** (-2.91)	0.01** (2.19)		0.01 (1.01)
SPS	-0.37*** (-5.53)			
NI	0.01 (1.61)			
Inflate				
2.WTV			-1.45*** (-10.56)	
3.WTV			-17.62*** (-29.43)	
4.WTV			-34.17*** (-149.90)	
Ind	Yes	Yes	Yes	Yes
Year		Yes	Yes	Yes
Pseudo R2		0.39		0.41
Inalpha			0.68*** (8.14)	
μ_i	2.40			
v_i	0.46			
$\varepsilon_{i,t+1}$	1.67			
Obs	14,155	14,155	14,155	14,155

Note: Column (1) shows t-values in parentheses, columns (2)-(4) show z-values in parentheses, and *, **, and *** indicate significant at the 10%, 5%, and 1% levels, respectively.