

Annual Report Tone, Internal Controls and the Risk of Share Price Collapse--Empirical evidence from A-share listed companies in China

Wenxin Guan^{1, a}, Bo Liu^{1, b}

¹*School of Accounting, Anhui University of Finance and Economics, Bengbu, Anhui Province, 233030, China*

^agwx434603331@163.com, ^b120081103@aufe.edu.cn

Keywords: Data mining, annual report text analysis, tone manipulation, share price collapse risk, internal control

Abstract: In recent years, annual report tone has become one of the stock price volatility factors, and the excessive control of management's tone discretion under the agency problem has gradually become a risk factor threatening the stability of financial markets. Based on this, a study sample of A-share listed companies in China from 2007 to 2020 was used to empirically analyse whether annual report tone would lead to the risk of share price collapse. It is found that: firms with low information transparency tend to have a more positive annual report tone, while the positive tone tendency of annual reports shows a positive correlation with the risk of share price collapse, indicating that there is intentional management behaviour of manipulating tone among listed companies in China. Compared to companies with a higher degree of internal control, companies with a lower degree of internal control have a more significant positive correlation between positive annual report tone and share price crash analysis. Clarifying the internal logic and mechanism of the risk of share price collapse due to the tone of annual reports is an important insight for further understanding tone manipulation, strengthening the construction of internal control system, enhancing the regulation of accounting information disclosure and maintaining the stability of financial markets.

1. Introduction

As companies continue to diversify their information, investors' access to capital market information is gradually shifting from digital to text-based, with investment propensity influenced by external text-based information. For example, Ealing Group's share price fluctuated sharply after the media disclosed that Lotus Clear plague had a curative effect on New Crown. As the primary and most official carrier of corporate textual information - the annual report of an enterprise, reflecting the current stage of business performance, strategic deployment and future planning, provides a better investment reference for small and medium-sized investors. However, the authenticity of the tone of textual information is constrained in many ways, and management fabricates a "thriving" picture for investors in order to whitewash negative information and package their own performance. When bad

information accumulates to a certain extent, the degree of information asymmetry intensifies, which eventually leads to the occurrence of stock price collapse results (Zhou Bo et al., 2019).

Positive tone tendencies are associated with positive company development and are a reflection of management's performance in building the company (Demers et al., 2011; Xie, Deren et al., 2015). However, companies that have experienced share price crashes in recent years have engaged in deliberate behaviour of deliberately packaging text positivity to mislead investors (Brockman et al., 2013), presenting the company's performance through visuals and structures, and employing causal inference and attribution fallacies to tailor narrative language, leading to increased empirical risk and ultimately to share price crashes.

For inaccurate expressions of sentiment in the tone of annual reports, listed companies can be restrained through reasonable mechanisms (Zhang Xinmin and Qing Chen, 2022) in order to restrain management narrative discretion (Chhaochharia et al., 2007), improve corporate governance (Ayes et al., 2019), and improve the quality of accounting information (Altamuro et al., 2010), thus enhancing information transparency. High quality internal controls will therefore be effective in controlling the share price collapse caused by inaccuracies in the tone of annual reports.

To this end, this paper uses annual report text sentiment analysis and panel regression models to study the relationship between management disclosure of annual report text information tone and the risk of stock price collapse, using China's A-share listed companies from 2007-2020 as a research sample. The empirical evidence finds that the lower the transparency of information disclosed by managers in annual reports, the higher and more manipulative the positive tone of the company's annual reports, deepening the information asymmetry of small and medium-sized investors and causing the burden of negative information hiding to eventually lead to stock price collapse in the long run cumulatively. However, when a company's internal control system is well established, the monitoring role of major shareholders and independent directors will significantly weaken the correlation between tone manipulation and the risk of share price collapse, when the tone tends to better the true performance of management and improve information asymmetry.

The possible contributions of this paper are as follows: Firstly, existing studies on the correlation between annual reports, internal control and share price collapse mainly fall on the length and number of words in annual reports. This paper further investigates the link between the extent of tone manipulation by management and share price collapse from the perspective of tone, enriching the studies related to tone manipulation. Secondly, the existing studies vary in their claims on the correlation between tone manipulation and share price crashes, with one claim suggesting that there is no significant correlation between the two. This paper expands the sample time horizon and also tests the model with a variety of different tone measures to further inform the robustness of the tone research field. Finally, the findings of this paper serve as a cautionary tale that listed companies should be cautious about the objectivity of their textual disclosures when uncertain about their transparency, and that small and medium-sized investors in particular should screen for management manipulation tendencies when part of the "truth is revealed".

2. Theoretical Analysis and Research Hypothesis

2.1 The Stone of annual reports and the transparency of corporate information

Jin (2006) argue that the stock price collapse is mainly caused by the intentional concealment of bad news by the company's management, and when the accumulated bad news exceeds a certain threshold, the company's stock price will plummet in the short term. Bloomfield (2002) proposes the incomplete reflection hypothesis, which speculates that managers have increased their discretion in handling negative information to prevent share price declines. Since the content of annual reports cannot be substantially modified, managers often release positive information, such as a vision of the

future and major strategies, to indirectly reduce the cost of negative information. To analyse the authenticity of tone from the management's perspective, Xie Deren and Lin Le (2015) use tone content to show that although the retracted text can convey content that cannot be conveyed by numbers, there is a biased information orientation such as "language inflation" and low level of validation.

Further, Bloomfield (2002) found that when companies are in distress, managers also make it more difficult for the market to understand them by using complex semantics and increasing the avenues of verbal expression to prevent share price volatility. Often this is when investment misunderstandings are created for investors; furthermore, Brockman (2013) argues that when faced with major events such as corporate mergers and acquisitions, financing, etc., companies will take a positive and welcoming perspective to actively present themselves to the market, thus affecting corporate valuations. In general, the existence of a large amount of biased information in China's capital market has led to low information transparency. Therefore, this paper proposes the first hypothesis that

Hypothesis 1: The lower the transparency of corporate information, the more positive the tone of the annual report.

2.2 Annual Report Tone and the Risk of Share Price Collapse

Although there is a bias in the neutrality of capital market information, there are still companies in the market with high information quality and precise information expression, which express the company's operating performance and survival status to investors in an unbiased manner without concealment and fabrication, and the subsequent collapse of such companies is less likely. However, Hutton et al. (2009) conclude in the empirical process that listed companies with hidden information, through tone manipulation, allow managers to escalate the accumulation of negative news. The cost of hiding negative news is too high as the accumulated negative news reaches a critical value over time; Jin and Mayers (2006) find that when forced to disclose negative information due to pressure, audits or reasons that cannot be concealed, management is implicated by multiple interests in having to show the true performance, which is instantly released in the stock market, causing the individual stock market to suffer a huge blow and eventually leading to a stock price crash.

When analyzing management's motivation for tone manipulation, Symbolic Liang et al. (2021) suggested the need to analyze the tendency of tone in terms of purpose. Tone is divided into positive and negative tone. The bias of negative tone is contrary to the purpose of showing goodwill to listed companies, i.e. managers will rarely embellish their business performance and attract investors' investment intention by making the tone negative; only positive tone can serve the purpose of hiding negative news and misleading investors, generating bubbles leading to stock price collapse. Therefore, a second hypothesis is presented here.

Hypothesis 2: All else being equal, the more positive the tone of the annual report, the greater the risk of a future share price collapse.

2.3 Annual Report Tone, Internal Controls and the Risk of Share Price Collapse

According to the previous analysis, the main reason for management's intentional whitewashing behaviour in the annual report text due to the principal-agent problem is due to the inadequate supervision of the internal control of the enterprise, which leads to excessive opaque information and finally to the collapse of the share price. Zhang Xinmin and Qing Chen (2022) suggest that companies with quality internal control have higher quality accounting information, and under an effective internal control system, all financial and non-financial information of the company can be fully, reliably and timely responded to investors, improving the accuracy of information quality and

reducing the tendency of management to "deliberately" manipulate the tone of the tendency for management to "deliberately" manipulate tone is reduced.

At the same time, internal control helps to limit the incentive and ability of managers to enrich themselves. Kim et al. (2016), in a corporate governance perspective, suggest that high quality internal control gives companies a better governance structure and clarifies the rights and obligations of each executive through an effective decision-making process; at the same time, through the checks and balances and supervisory relationship of the major shareholders, multiple levels of heads take turns to control the approval and avoid insiders excessive manipulation of tone of voice discretion to reflect the overall interests of the company. Therefore, internal control is an effective bridge to corporate governance, controlling managers' intentional or unintentional manipulation of share prices and preventing share price collapse due to the concealment of unfavourable information. Based on this, this paper proposes a third hypothesis.

Hypothesis 3: All else being equal, internal controls can dampen the positive relationship between the positive tone of annual reports and the risk of a share price crash

3. Study design

3.1 Sample selection and data sources

This paper selects A-share listed companies from 2007-2020 as the research sample. The information for the construction of tone indicators was obtained from the WinGO financial text data platform, and other data was obtained from the Guotaian database.

With reference to existing studies, the data were first processed in the following steps: exclude financial companies; exclude ST companies; exclude samples with missing data; and Winsorize all continuous variables at the 1% and 99% levels. During the analysis, year and industry fixed effects were controlled for to ensure the robustness of the model. Among them, industry classification was installed CSRC2012 classification standard classification. After data processing, the final sample of 15826 observations was obtained.

3.2 Variable definitions

3.2.1 Explanatory variables: measurement of share price crash risk variables

By drawing on the methodology of Nian-Hsing Hsu et al. (2013) and Chun-Sheng Yuan et al. (2021), this paper uses two variables, the negative return skewness coefficient (NCSKEW) and the ratio of upward and downward volatility of returns (DUVOL), to measure stock crash risk, with the variables being measured manually and processed using STATA software.

First, regressions were conducted to estimate firm-specific weekly earnings returns for each firm and year using the following market model regressions on weekly stock return data.

$$r_t = \alpha_1 R_{t-1} + \alpha_2 R_t + \alpha_3 R_{t+1} + \alpha_4 R_{t+2} + \alpha_5 R_{t+3} + C + \epsilon_t \quad (1)$$

Where r is the weekly return of listed companies collected after removing ST, financial sector, and listed companies with missing data, and R is the average stock return adjusted by weighting. The adjusted return L is calculated through the residual term of the regression model.

$$L_t = \ln(1 + \epsilon_t) \quad (2)$$

Secondly, two crash risk variables are constructed based on the weekly-specific return $W_{i,t}$: NCSKEW and DUVOL.

$$NCSKEW_{i,t} = -\frac{[n(n-1)^{\frac{3}{2}} \sum L_{i,t}^3]}{[(n-1)(n-2)(\sum L_{i,t}^2)^{\frac{3}{2}}]} \quad (3)$$

Where n is the number of trading weeks in year t for a stock with ticker i. The meaning of this variable is that the higher its value, the greater the risk of a share price crash.

$$DUVOL_{i,t} = \log - \frac{[(n_u - 1) \sum_{down} L_{i,t}^2]}{[(n_d - 1) \sum_{up} L_{i,t}^2]} \quad (4)$$

Before calculating the indicator, it is necessary to determine the adjusted weekly return of stock i, compare it with the annual average return, divide it into two categories, up weeks and down weeks, and calculate the standard deviation for different sub-samples. DUVOL reflects the extent to which stock returns have shifted to the left. The higher the value, the greater the drift and the higher the risk of a stock crash.

3.2.2 Explanatory variables: Annual report tone indicators

This paper is based on the L&M financial sentiment English vocabulary as defined by Loughran and McDonald (2011), translating the vocabulary into Chinese as a basis for definition. There are two ways to quantify tone in the existing literature: one is the net tone defined by Xie, Deren and Lin, Le (2011): measured by the difference between positive and negative words within the annual report as a proportion of the sum of positive and negative words; the second is Davis et al.'s (2012) definition of net tone: measured by the difference between positive and negative words within the annual report as a proportion of the total number of words in the annual report. The variable under the first definition (LmTone), which measures the correlation between tone and stock price collapse, is used here for robustness testing using the variable under the second definition (Tone). Residuals were obtained from cross-sectional regressions by year, based on the work of Huang et al. (2013), as defined in (5).

$$tone = \alpha_1 size + \alpha_2 lev + \alpha_3 roa + \alpha_4 roe + \alpha_5 ato + \alpha_6 growth + \alpha_7 indep + \alpha_8 dual + \alpha_9 soe + \alpha_{10} big4 + \epsilon \quad (5)$$

3.2.3 Internal controls

Table 1: Variable definition table

	Variable name	Variable markers	Variable Description
Explained variables	<i>NCSKEW</i>	Risk of share price collapse 1	Negative return skewness coefficient for company stock <i>NCSKEW</i>
	<i>DUVOL</i>	Risk of share price collapse 2	Company stock return up/down ratio <i>DUVOL</i>
Explained variables	<i>LmTone</i>	Annual Report Tone Indicator 1	The difference between the net tone of the current year's annual report and the net tone of the previous year's annual report, a measure of how positive the tone of the annual report is
	<i>Tone</i>	Annual Report Tone Indicator 2	The difference between the number of positive and negative terms in the annual report as a percentage of the total number of terms in the annual report
Control variables	<i>IC</i>	Internal controls	Internal Control Index for A-share listed companies in China
	<i>Size</i>	Company size	Natural logarithm of the company's total assets
	<i>IEV</i>	Gearing ratio	Total liabilities/total assets
	<i>ROA</i>	Return on total assets	Net profit/total assets
	<i>ROE</i>	Return on net assets	Net profit/average balance of shareholders' equity
	<i>ATO</i>	Total asset turnover ratio	Operating income/average total assets
	<i>Growth</i>	Operating income growth rate	Operating income for the year / Operating income for the previous year - 1
	<i>Indep</i>	Percentage of independent directors	Independent directors divided by the number of directors
	<i>Dual</i>	Two jobs in one	Chairman and Managing Director are the same as 1, otherwise 0
	<i>Soe</i>	Nature of ownership	State-controlled enterprises take the value of 1, others 0
	<i>BIG4</i>	Audit quality	1 if audited by the Big 4 (PwC, Deloitte, KPMG, Ernst & Young), 0 otherwise.
<i>AbsdisACC</i>	Transparency of information	The Jones model calculates total accrued profit based on the balance sheet, the model does not include an intercept and takes the residuals as manipulated accrued profit	

In this paper, internal control is measured by the "Internal Control Index of Chinese Listed

Companies" constructed by Zhang Xinmin and Qing Chen (2022) and Chen et al. (2013), and the relevant variables are defined in Table 1.

3.3 Model construction

For intonation authenticity, it is measured here by information transparency (AbsdisACC), and the relationship between Tone and AbsdisACC is observed in the equation (6):

$$LmTone = \alpha_0 + \alpha_1 AbsdisACC + \sum \alpha_i Control_{i,t} + \sum Indusrty_{i,t} + \sum Year_{i,t} + \epsilon_{i,t} \quad (6)$$

where the explanatory variable is LmTone and AbsdisACC is used as the explanatory variable. With reference to existing literature, firm size (Size), gearing (Iev), return on total assets (ROA), return on net assets (ROE), total asset turnover (ATO), turnover of operating income (Growth), proportion of independent directors (Indep), dual role (Dual), nature of ownership (Soe) and audit quality (BIG4) are used.

The relationship between the tone of the annual report and the risk of share price collapse is examined according to equations (7) and (8).

$$NCSKEW_{i,t+1} = \alpha_0 + \alpha_1 LmTone_{i,t} + \sum \alpha_i Control_{i,t} + \sum Indusrty_{i,t} + \sum Year_{i,t} + \epsilon_{i,t} \quad (7)$$

$$DUVOL_{i,t+1} = \alpha_0 + \alpha_1 LmTone_{i,t} + \sum \alpha_i Control_{i,t} + \sum Indusrty_{i,t} + \sum Year_{i,t} + \epsilon_{i,t} \quad (8)$$

where the explanatory variables are NCSKEW and DUVOL, the explanatory variable is LmTone, α_0 is the intercept term, α_1 is the coefficient of effect of the tone of the annual report, α_i is the regression coefficient of each control variable, and ϵ is the disturbance term.

4. Empirical Results and Analysis

4.1 Descriptive statistics

From the descriptive statistics for each variable given in Table 2, it can be seen that the mean value of Net Tone Tone is 0.022, indicating that the general tone of the annual report is positive and all positive (min=0.002). the minimum and maximum values of LmTone are -0.005 and 0.039 respectively. the mean and median values of NCSKEW and DUVOL are -0.278 (- 0.230) and -0.186 (-0.180) respectively, in line with the findings of other studies.

Table 2: Descriptive statistics (N=15826)

variable	mean	p25	p50	p75	sd	min	max	variance
<i>NCSKEW</i>	-0.278	-0.624	-0.230	0.116	0.691	-5.109	3.958	0.478
<i>DUVOL</i>	-0.186	-0.490	-0.180	0.119	0.472	-2.238	2.276	0.223
<i>Tone</i>	0.022	0.006	0.016	0.038	0.010	0.002	0.048	0.000
<i>LmTone</i>	0.010	-0.004	0.009	0.060	0.075	-0.005	0.339	0.006
<i>AbsdisACC</i>	0.061	0.017	0.038	0.074	0.090	0.000	1.771	0.008
<i>IC</i>	6.525	6.474	6.533	6.584	0.129	5.838	6.834	0.010
<i>Size</i>	22.499	21.636	22.391	23.279	1.217	19.350	26.395	1.480
<i>Iev</i>	0.484	0.349	0.497	0.628	0.185	0.027	0.925	0.034
<i>ROA</i>	0.048	0.017	0.038	0.069	0.051	-0.373	0.245	0.003
<i>ROE</i>	0.091	0.038	0.083	0.135	0.093	-0.759	0.446	0.009
<i>ATO</i>	0.742	0.395	0.627	0.930	0.512	0.054	3.106	0.262
<i>Growth</i>	0.160	-0.010	0.102	0.241	0.385	-0.651	4.806	0.148
<i>Indep</i>	0.366	0.333	0.333	0.375	0.049	0.250	0.600	0.002
<i>Dual</i>	0.124	0.000	0.000	0.000	0.330	0.000	1.000	0.109
<i>Soe</i>	0.624	0.000	1.000	1.000	0.484	0.000	1.000	0.235
<i>BIG4</i>	0.085	0.000	0.000	0.000	0.278	0.000	1.000	0.077

4.2 Multiple regression results and analysis

4.2.1 Authenticity of tone of annual report

Table 4 presents the regression results obtained according to model (6). The results show that the coefficients are -0.021 and -0.003 respectively, which are highly significant at the 1% level, and the values of ROA and ROE are also significantly positive. This indicates that the tone of the annual report is positively correlated with corporate performance and return on assets, suggesting that the tone is a reasonable measure. Further, the lower the information transparency (AbsdisACC), the higher the degree of dual directorship (Dual) and the lower the gearing ratio, the more positive the tone of the annual report, at which point Hypothesis 1 can be proved to be valid.

Table 3: Hypothesis 1 regression results

VARIABLES	<i>LmTone</i>	<i>Tone</i>
<i>AbsdisACC</i>	-0.021***	-0.003***
	(-2.26)	(-2.34)
<i>ATO</i>	-0.018***	-0.002***
	(-9.3)	(-8.96)
<i>BIG4</i>	0.042***	0.005***
	(13.47)	(12.21)
<i>Dual</i>	0.008***	0.001***
	(3.19)	(3.4)
<i>Growth</i>	0.006***	0.001***
	(2.85)	(2.74)
<i>Indep</i>	0.027***	0.004***
	(1.55)	(1.76)
<i>Iev</i>	-0.031***	-0.004***
	(-4.49)	(-4.53)
<i>ROA</i>	0.025***	0.002***
	(2.52)	(2.35)
<i>ROE</i>	0.071***	0.01***
	(2.89)	(3.08)
<i>Size</i>	-0.002***	0.001***
	(-1.64)	(-1.77)
<i>Soe</i>	-0.011***	-0.002***
	(-6.41)	(-6.3)
<i>_cons</i>	0.059***	0.008***
	(2.83)	(2.85)
Year	Control	Control
Industries	Control	Control
<i>observations</i>	15826	15826
<i>R-squared</i>	0.318	0.315
<i>F</i>	11.229	13.412

Note: *, ** and *** denote 10%, 5% and 1% statistical significance levels respectively, with t-values in brackets. ols regression results are adjusted for firm-level Cluster.

4.2.2 Annual Report Tone and the Risk of Future Share Price Collapse

Table 4 presents the results of the data regressions based on model (7) and model (8), where the estimated standard errors are adjusted for firm-level clustering (Cluster) to ensure robustness of the results, controlling for industry effects and year effects, with a one-period lag of the data. The coefficients are 3.207 and 2.031 respectively, which are highly significant at the 5% level. As can be seen from both indicators, annual report tone increases a firm's risk of share price collapse, and the

regression results for the two variables of share price collapse risk, NCSKEW and DUVOL, show consistency, suggesting that there is a risk of share price collapse due to the accumulation of bad news over time as a result of management hiding news through manipulation of annual report tone, leading to reduced information transparency and misleading investors.

Among the control variables, the degree of truth in tone (AbsdisACC), gearing (Iev) and return on total assets (ROA) were significantly and positively associated with the risk of future share price collapse, in line with previous studies, and hypothesis 2 held.

Table 4: Hypothesis 2 regression results

VARIABLES	NCSKEW	DUVOL
<i>LmTone</i>	3.207** (2.59)	2.031** (2.29)
<i>AbsdisACC</i>	0.117** (2.11)	0.058** (2.82)
<i>ATO</i>	-0.043*** (-1.96)	-0.028*** (-1.88)
<i>BIG4</i>	-0.023*** (-0.64)	-0.013*** (-0.53)
<i>Dual</i>	-0.016*** (-0.56)	-0.004*** (-0.22)
<i>Growth</i>	0.023*** (0.9)	0.012*** (0.72)
<i>Indep</i>	-0.08*** (-0.4)	-0.04*** (-0.29)
<i>Iev</i>	0.028*** (2.35)	0.036*** (2.66)
<i>ROA</i>	1.273*** (2.33)	0.848*** (2.29)
<i>ROE</i>	0.049*** (0.18)	-0.022*** (-0.12)
<i>Size</i>	-0.014*** (-1.26)	-0.011*** (-1.55)
<i>Soe</i>	-0.002*** (-0.09)	0.018*** (1.27)
<i>_cons</i>	-0.006*** (-0.02)	0.03*** (0.18)
<i>Year</i>	Control	Control
<i>Industries</i>	Control	Control
<i>observations</i>	15826	15826
<i>R-squared</i>	0.828	0.795
<i>F</i>	17.348	27.192

Note: *, ** and *** denote 10%, 5% and 1% statistical significance levels respectively, with t-values in brackets. ols regression results are adjusted for firm-level Cluster.

4.2.3 Annual Report Tone, Internal Controls and the Risk of Future Share Price Collapse

The internal control index (IC) was introduced to observe the degree of control, as shown in Table 5. As can be seen, the cross-sectional term between the quality of internal control (IC) and the tone of the annual report (Tone) is negative at the 5% level with coefficients of -0.231 and -0.450 when controlling for other variables, and remains significant when controlling for other variables, supporting the hypothesis: the results indicate that the risk of a share price crash due to the tendency to tone the annual report is significantly reduced with high quality internal control. In firms with stable internal controls, there is a high degree of checks and balances on the ability of managers to

"dominate", as well as well-developed risk assessment and risk defence mechanisms and a more rigorous disclosure process. At the same time, the discretionary power of managers is somewhat curtailed and information cannot be communicated to the outside world 'at will'. This proves that internal control is one of the most important ways of addressing the positive tone of voice.

Table 5: Hypothesis 3 regression results

VARIABLES	NCSKEW	DUVOL
<i>LmTone</i>	2.772** (2.51)	1.226** (2.23)
<i>IC*LmTone</i>	-0.231*** (-2.34)	-0.450*** (-2.97)
<i>IC</i>	0.013 (0.02)	0.021 (0.15)
<i>Controls</i>	Control	Control
<i>Year&Ind</i>	Control	Control
<i>Adj_R</i>	0.48	0.52
<i>N</i>	15826	15826

Note: *, ** and *** denote 10%, 5% and 1% statistical significance levels respectively, with t-values in brackets. ols regression results are adjusted for firm-level Cluster.

4.3 Robustness tests

4.3.1 The endogeneity problem test

To control for the effect of endogeneity issues on the findings, this paper uses an instrumental variables approach to test, drawing on symbol Liang et al. (2021), to select the revision of the content format guidelines for information disclosure as an exogenous shock to compare the impact of text tone on share price collapse before and after the revision. Here, the sample is divided into two segments, with the year 2012 as the cut-off into two groups, the version before the 2012 revision and the version after the 2012 revision (inclusive) for empirical analysis. The results show that both remain highly significant. suggesting that the hypothesis still holds after controlling for endogeneity.

Table 6: Endogeneity test results

VARIABLES	(1) <i>NCSKEW</i>	(2) <i>DUVOL</i>	(3) <i>NCSKEW</i>	(4) <i>DUVOL</i>
<i>LmTone</i>	2.732** (3.51)	3.216** (2.23)	4.372** (2.13)	2.918** (2.11)
<i>IC*LmTone</i>	-0.212** (-2.34)	-0.342** (-2.47)	-0.321** (-2.11)	-0.310** (-2.23)
<i>IC</i>	0.001 (0.01)	0.002 (0.14)	0.011 (0.12)	0.032 (0.01)
<i>Controls</i>	Control	Control	Control	Control
<i>Year&Ind</i>	Control	Control	Control	Control
<i>Adj_R</i>	0.32	0.23	0.68	0.77
<i>N</i>	4452	4452	11374	11374

Note: *, ** and *** denote 10%, 5% and 1% statistical significance levels respectively, with t-values in brackets. ols regression results are adjusted for firm-level Cluster.

4.3.2 Robustness tests: replacing the tone measure variable

The LmTone variable was measured by replacing it with Tone, with Tone = the difference between positive and negative words within that text data as a proportion of the total words in the annual report.

Replacing Tone remains a significant positive correlation for share price crash risk, indicating that annual report tone tends to increase share price crash risk, consistent with Hypotheses 2 and 3.

5. Research findings and insights

Based on the textual information within the annual reports of listed companies in China's A-shares from 2007 to 2020, the risk between the degree of positive management tone discretion in annual reports and the risk of share price collapse is empirically analysed after tone analysis. The study finds that firms with low transparency of annual report information have a stronger tendency to disclose positive tone. This leads to a reduction in information transparency and misleads small and medium-sized investors. When negative information accumulates to a certain level, it will be released to the market and lead to a share price collapse. At the same time, the higher the degree of internal control of the company, the lower the degree of text tone manipulation, indicating that the better the degree of internal management, the more standardised the information disclosure of the company, the more realistic the text tone information the lower the risk of share price collapse.

According to the study of this paper, the following insights are drawn: (1) Enterprises should conduct annual report disclosure in accordance with the requirements of the Securities and Futures Commission to fairly and accurately describe the operating conditions of the enterprise without misleading statements. (2) Enterprises should strengthen their internal control construction and improve their internal control system, which can effectively prevent the adverse impact of annual report tone on the risk of share price collapse. (3) Regulatory authorities should further screen and supervise the information disclosure of listed companies to improve the information environment of China's capital market and contribute to the sustainable development of the capital market. Reference.

Acknowledgements

This article is the research result of the research innovation fund project of Anhui University of Finance and Economics, project number: XSKY22037ZD

References

- [1] Altamuro J, Beatty A. How does internal control regulation affect financial reporting? [J]. *Journal of Accounting and Economics*, 2010, 49(1): 58-74
- [2] Arping S, Sautner Z. Did SOX section 404 make firms less opaque? Evidence from cross-listed firms [J]. *Contemporary Accounting Research*, 2013, 30(3): 1133-1165.
- [3] Ashbaugh-Skaife H, Collins DW, Kinney WR, et al. The effect of SOX internal control deficiencies and their remediation on accrual quality [J]. *The Accounting Review*, 2008, 83(1): 217-250.
- [4] Ayres DR, Neal TL, Reid LC, et al. Auditing goodwill in the post-amortization era: Challenges for auditors [J]. *Contemporary Accounting Research*. 2019, 36(1): 82-107.
- [5] Chen H, Dong W, Han H, et al. A comprehensive and quantitative internal control index:
- [6] Doyle JT, Ge W, McVay S E. Accruals quality and internal control over financial reporting [J]. *The Accounting Review*, 2007, 82(5): 1141-1170.
- [7] Gao X, Jia Y. Internal control over financial reporting and the safeguarding of corporate resources: Evidence from the value of cash holdings [J]. *Contemporary Accounting Research*, 2016, 33(2): 783-814.
- [8] Goh B W, Li D. Internal controls and conditional conservatism [J]. *The Accounting Review*, 2011, 86(3): 975-1005.
- [9] Symbol Liang, Li Keo-Bo, Lu Yin. Annual report text tone manipulation and the risk of share price collapse [J]. *Finance and Accounting Newsletter*, 2021(17): 72-77.
- [10] Jiang Jie, Wang Zhengbei, Gong Xinyu. A multidimensional empirical study on information transparency and stock price crash risk [J]. *Economic and Management Research*, 2021, 42(02): 53-65.
- [11] Li Fei, Shi Zhongyi, Yang Sunlei. R&D manipulation, disclosure of key audit matters and the risk of share price collapse [J]. *Finance and Accounting Newsletter*, 2022(07): 37-41.
- [12] Shen Juqin, Li Shuqin, Sun Fuhua. Annual report tone and corporate financial performance: heartfelt or heartless? [J]. *Audit and Economic Research*, 2022, 37(01): 69-80.

- [13] Xie, D. R., Lin, L. *Can management tone predict the future performance of a company? -- A textual analysis based on annual earnings presentations of listed companies in China* [J]. *Accounting Research*, 2015(2): 20-27.
- [14] Xiong Hao, Qian Runhong. *Annual report length and stock price collapse risk: information redundancy or information transmission*[J]. *Journal of Zhongnan University of Economics and Law*,2022(01):26-37.
- [15] Xu Chenxi, Du Yong, Lu Yao. *A study on the impact of annual report tone on capital market pricing efficiency* [J]. *China Soft Science*, 2021(09): 182-192.
- [16] Yao Jiaquan, Feng Xu, Wang Zanjun, Ji Rongrong, Zhang Wei. *Tone, sentiment and market impact:based on financial sentiment dictionary* [J]. *Journal of Management Science*, 2021, 24(05): 26-46.
- [17] Zhang Xinmin, Qing Chen. *Goodwill impairment concealment, internal control and share price collapse risk - empirical evidence from A-share listed companies in China* [J]. *Journal of Social Sciences of Jilin University*, 2022, 62(02): 82-95+236-237.
- [18] Zhou Bo, Zhang Cheng, Zeng Qingsheng. *Annual report tone and share price crash risk - empirical evidence from Chinese A-share listed companies* [J]. *Accounting Research*, 2019(11): 41-48.
- [19] Zhou Lei, Shi Yuguang, Zhang Jingxin. *Is executive compensation restructuring a signal of company share price collapse risk* [J]. *Finance and Accounting Monthly*, 2021(11): 59-68.
- [20] Gong Yifei. *The impact of internal control deficiencies and rectification on the risk of share price collapse* [J]. *Journal of Zhongnan University of Economics and Law*, 2020(1): 37-45