ISSN 2616-5902 Vol. 5, Issue 3: 152-157, DOI: 10.25236/AJBM.2023.050323

Beyond Corporate Financial Disclosure: Impact of Abnormal Tone on Stock Price Crash Risk in China

Dongxiao Wu[1,a], Xuhui Peng[2,b,*]

[1]*Management School, Beijing Union University, Beijing, China*
[2]*School of Economics and Management, Hanshan Normal University, Chaozhou, China*
[a]*wudongxiao1991@163.com*, [b]*csr_mncs@sina.com*
**Corresponding author*

Abstract: *The abnormal tone of corporate financial disclosures has recently received much academic attention. Despite China's status as the world's second-largest economy, studies of abnormal tone in corporate financial disclosure, especially on its influence on stock price crash risk, remain scarce. Therefore, we investigated the corporate financial disclosure of Chinese listed enterprises using Python and empirically tested the relationship between abnormal tone and stock price crash risk. The results show a positive relationship between abnormal tone and stock price crash risk. Further, abnormal tone may signal potential stock price crash risk, and managers could conceal managerial opportunism by adopting an abnormal tone in financial disclosure. Therefore, Chinese policymakers must be aware of the disclosure of abnormal tones and thereby strengthen the relevant assessment of corporate financial disclosure.*

Keywords: *corporate financial disclosure; abnormal tone; stock price crash risk; China*

1. Introduction

Recently, academic concern on the relationship between investors' investment decisions and corporate financial disclosure, especially abnormal tone information, has emerged. Existing literature suggests that the textual tone of corporate financial disclosure not only helps investors improve the estimation of an enterprise's future performance (Cole & Jones, 2004)[1] and stock price tendency (Amir & Lev, 1996)[2] but also helps avoid forecast errors (Clarkson et al., 1999)[3]. Content information is a qualitative supplement for corporate financial performance (Demers & Vega, 2011)[4], which could effectively enhance corporate disclosure quality and be objectively provided to the financial market (Davis et al., 2012)[5]. This may increase investor confidence and affect enterprises' valuations. Previous studies have demonstrated that information disclosure tone can positively affect enterprises' future excess market share returns (Demers & Vega, 2011; Fu et al., 2021)[4][6] and market volume (Price et al., 2012)[7].

Meanwhile, the voluntary nature of corporate content information disclosure may provide an opportunity for top management to adopt abnormal tone disclosures motivated by individual opportunism. D'Augusta and DeAngelis (2020) argue that abnormal tone are abnormal information on corporate financial disclosure, which cannot be interpreted in the enterprise's financial performance[8]. These include increasing complexity of content information, reducing readability of statements (Lo et al., 2017)[9], exaggerating positive information, and avoiding negatives (Arslan-Ayaydin et al., 2016)[10], especially before business financial actions. However, managers may release negative information into the market when information has been accumulated to a certain extent. Moreover, the benefit cannot cover the cost of concealing this information (Jin & Myers, 2006)[11]. This may cause an enterprise's market stock price to plummet and increase risk of potential stock price crashes (Fu et al., 2021)[6]. This means that abnormal tone disclosures can directly affect shareholders' interests (Arslan-Ayaydin et al., 2016)[10] and harm the stability of the financial market. Thus, the influence of an abnormal tone in corporate financial disclosure on stock price crash risk should become a concern.

China is the world's second-largest economy, and the stability of the financial market is not only important to ensure domestic economic growth but also key in preventing global financial risk. However, few studies have examined the relationship between abnormal tone disclosure and market responses. Therefore, this study focuses on China's A-stock market listed non-ST (Special treatment) companies (2013-2018) to investigate the relationship between abnormal tone in corporate financial

ISSN 2616-5902 Vol. 5, Issue 3: 152-157, DOI: 10.25236/AJBM.2023.050323

disclosure and stock price crash risk. This study aims to enhance our understanding of the consequences of abnormal tone disclosure and to emphasize that the assessment of content information in corporate financial statements is as vital as that for corporate financial data. Moreover, this provides suggestions for Chinese policy makers to prevent stock price crash risk by reducing enterprises' abnormal tone disclosure and contributing to the world's economic recovery during the COVID-19 pandemic.

2. Materials and methods

2.1. Sample and data

To investigate the relationship between abnormal tone and stock price crash risk, we selected non-ST enterprises in China's A-stock market as samples. After excluding ST and financial sector samples and samples with missing data, we obtained 8,459 yearly observations.

For data collection, we adopted Li and Zhan's (2019)[12] approach to collect firm-specific characteristics, stock market, and macroeconomic data from the CSMAR[1] and WIND[2] databases. Moreover, we also referenced the approach of Wu et al. (2021)[13] to capture abnormal content from the samples' financial reports using Python and utilized Jieba[3] for abnormal content analysis.

2.2. Variables description

2.2.1. Stock price crash risk

We measure firm-level stock price crash risk following Jin and Myers' (2006) approach[11]. First, we estimate firm-specific weekly returns by removing the impact of market returns as follows:

$$r_{i,t} = \alpha_i + \beta_1 r_{m-2} + \beta_2 r_{m,t-1} + \beta_3 r_{m,t} + \beta_4 r_{m,t+1} + \beta_5 r_{m,t+2} + \varepsilon_{i,t} \quad (1)$$

Here, $r_{i,t}$ is the return on stock i in week t, and $r_{m,t}$ is the return on the value-weighted market index in week t. To account for nonsynchronous trading, we also include the lead and lag terms of market return ($r_{m,t-1}$, $r_{m,t-2}$, $r_{m,t+1}$, $r_{m,t+2}$). Firm-specific weekly return, $W_{i,t}$, is the natural log of one plus the residual return in equation (1).

We adopted Jin and Myers' (2006) approach[11] to construct two proxies for stock price crash risk using $W_{i,t}$.

First, we measured the negative conditional skewness of future returns. *Ncskew* is the negative of the third moment of each stock's firm-specific weekly returns divided by the cubed standard deviation:

$$Ncskew_{i,t} = -\left[n\,(n\text{-}1)^{3/2} \sum W_{i,t}^{3}\right] / \left[(n\text{-}1)\,(n\text{-}2)\,(\sum W_{i,t}^{2})^{3/2}\right] \quad (2)$$

Here, n is the number of firm-level weekly returns for firm i in fiscal year t. Higher *Ncskew* indicates more negatively skewed weekly returns and greater crash risk.

Second, we examine the down-to-up volatility (*Duvol*) of firm-specific weekly returns and define it as follows:

$$Duvol_{i,t} = \log\left\{\left[(n_{up} - 1) \sum_{Down} W_{i,t}^{2}\right] \Big/ \left[(n_{Down} - 1) \sum_{Down} W_{i,t}^{2}\right]\right\} \quad (3)$$

Here, n_{up} and n_{Down} are the number of weeks during which firm-level returns are above (below) the annual average return over fiscal year t. Moreover, we define weeks with weekly returns above (below) the mean of the "up" ("down") sample. *Duvol* is the log of the standard deviation of the "down" sample to the standard deviation of the "up" sample. High *Duvol* indicates high left-skewed weekly returns and greater crash risk.

2.2.2. Abnormal tone

We followed Price et al. (2012)[7] to capture content information from the sample's financial report

[1] China Stock Market & Accounting Research Database: https://www.gtarsc.com
[2] WIND Database: https://www.wind.com.cn
[3] "Jieba" (Chinese for "to stutter") Chinese text segmentation: https://github.com/fxsjy/jieba/

ISSN 2616-5902 Vol. 5, Issue 3: 152-157, DOI: 10.25236/AJBM.2023.050323

and to process information quantitatively using the following equation:

$$Tone_{i,t} = \frac{Pos_{i,t} - Neg_{i,t}}{Pos_{i,t} + Neg_{i,t}} \quad (4)$$

where $Pos_{i,t}$ and $Neg_{i,t}$ indicate positive and negative wards, respectively.

We then referenced the approach from Amoozegar (2020)[14] to constitute the equation for abnormal tone:

$$Tone_{i,t} = \alpha + \sum Controls_{i,t} + \varepsilon_{i,t} \quad (5)$$

where $Controls_{i,t}$ indicates the normal tone of firm-specific and stock market-related characteristics, and $\varepsilon_{i,t}$ is the abnormal tone (*Abnormal_Tone*).

2.2.3. Control variables

We followed Li and Zhan (2019)[12] to select monthly average excess turnover rate ($Dturn_t$), annual standard deviation of weekly specific return rate ($Sigma_t$), mean of weekly stock-specific returns (RET_t), firm size ($Size_t$), leverage ($Leverage_t$), profitability (ROA_t), and book-to-market (BM_t) as control variables. Macroeconomic factors and year and industry dummies are also controlled for in the regressions. (Table 1 and 2 provide further details and statistics results for the main variables respectively.)

Table 1 Variable definitions

VARIABLES	Definition
Ncskew	The negative skewness of firm-specific weekly returns during the fiscal year period.
Duvol	The natural logarithm of the ratio of the standard deviation of firm-specific weekly returns for down weeks to that for up weeks. Over a firm's fiscal year period, down (up) weeks are defined as all weeks with firm-specific weekly returns below (above) the annual mean.
AbnormalTone	The residual value in model (5).
Size	The natural logarithm of total assets.
Leverage	The ratio of long-term debts to total assets.
ROA	The ratio of earning before interest and tax to the total assets.
BM	The ratio of book value of equity divided to the market value of equity.
Dturn	The average monthly share turnover over the fiscal year.
Sigma	The standard deviation of the weekly firm-specific stock return over the fiscal year.

Table 2 Variable Statistics

VARIABLES	Mean	S.D.	Min	P25	P50	P75	Max
Ncskewt+1	-0.260	0.654	-2.293	-0.623	-0.217	0.155	1.350
Duvolt+1	-0.174	0.475	-1.348	-0.489	-0.177	0.149	1.008
Abnormal_Tonet	0.000	2.848	-5.057	-1.786	-0.603	1.045	37.970

2.3. Model specification

To empirically test the impact of abnormal tones on stock price crash risk, we established the following model:

$$Crash_{i,t+1} = \alpha_0 + \alpha_1 Abnormal\_Tone_{i,t} + \gamma \sum Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t+1} \quad (6)$$

where $Crash_{i,t+1}$ indicates *Ncskew* and *Duvol* of firm *i* in year *t*+1 and $Abnormal\_Tone_{i,t}$ indicates abnormal tone in the annual financial report for firm *i* in year *t*.

3. Empirical results

Table 3 shows the regression results. Columns (1) and (2) show that $Abnormal\_Tone_t$ positively relates to $Ncskew_{t+1}$ and $Duvol_{t+1}$, respectively, at the 1% significance level. The results of $Readability_t$ on $Ncskew_{t+1}$ [Column (3)] and $Duvol_{t+1}$ [Column (4)] are insignificant. Hence, stock price crash risk is not affected by readability of MD&A (Management discussion and analysis). Moreover, after adding MD&A abnormal tone to Models 3 and 4, the results show that $Abnormal\_Tone_t$ is positively related to $Ncskew_{t+1}$ [Column (5)] and $Duvol_{t+1}$ [Column (6)], respectively, at a 1% significance level. In contrast,

ISSN 2616-5902 Vol. 5, Issue 3: 152-157, DOI: 10.25236/AJBM.2023.050323

the impact of $Readability_t$ on $Ncskew_{t+1}$ and $Duvol_{t+1}$ remains insignificant. This means that with the increase in the MD&A abnormal tone, the stock price crash risk also increased. These results indicate that managers may conceal managerial opportunism by adopting an abnormal tone in financial disclosure.

Table 3 Regression results of baseline model

VARIABLES	Ncskewt+1 (1)	Duvol t+1 (2)	Ncskew t+1 (3)	Duvol t+1 (4)	Ncskew t+1 (5)	Duvol t+1 (6)
Abnormal_Tonet	0.010***	0.007***			0.008***	0.006***
	(3.851)	(3.786)			(2.783)	(3.003)
Readabilityt			-0.008	-0.014	-0.006	-0.015
			(-0.365)	(-0.976)	(-0.304)	(-0.915)
Dturnt	1.177***	0.711***	1.221***	0.746***	1.192***	0.727***
	(3.850)	(3.112)	(3.956)	(3.238)	(3.861)	(3.156)
RETt	0.106	-0.318	0.284	-0.160	0.161	-0.239
	(0.061)	(-0.244)	(0.161)	(-0.122)	(0.092)	(-0.182)
Sigmat	0.048***	0.038***	0.049***	0.039***	0.047***	0.038***
	(4.173)	(4.627)	(4.266)	(4.758)	(4.135)	(4.611)
Lag_Ncskewt	-0.077***	-0.061***	-0.080***	-0.063***	-0.077***	-0.061***
	(-9.156)	(-9.985)	(-9.455)	(-10.168)	(-9.101)	(-9.825)
Sizet	0.122***	0.083***	0.138***	0.093***	0.125***	0.085***
	(2.985)	(2.694)	(3.353)	(3.028)	(3.048)	(2.739)
Leveraget	0.020***	0.011***	0.019***	0.011***	0.020***	0.011***
	(4.681)	(3.395)	(4.420)	(3.147)	(4.667)	(3.379)
MBt	1.450***	0.740***	1.557***	0.824***	1.495***	0.777***
	(3.767)	(2.729)	(4.049)	(3.048)	(3.893)	(2.878)
ROAt	1.442***	0.734***	1.557***	0.824***	1.487***	0.772***
	(3.182)	(1.937)	(3.461)	(2.255)	(3.314)	(2.085)
Year/Industry/Robust/Cluster	Y	Y	Y	Y	Y	Y
Constant	1.322***	1.085***	1.354***	1.109***	1.3265***	1.088***
	(6.761)	(7.513)	(6.883)	(7.606)	(6.725)	(7.450)
Observations	8,459	8,457	8,440	8,438	8,435	8,433
R-squared	0.093	0.087	0.092	0.086	0.093	0.087

*** p<0.01, ** p<0.05,* p<0.1

We also test the robustness of the empirical results. First, we referenced the approach of Wu et al. (2021)[13] to use instrumental variables in Model 6 with a two-stage regression for the endogeneity test. Specifically, we adopt the average abnormal tone in the same industry (*IV_Industrty*) and location (*IV_Location*) as instrumental variables. Table 4 presents two-stage regression results, which are similar to our results.

Table 4 Regression results of endogeneity test

VARIABLES	Abnormal_Tonet	Ncskewt+1	Abnormal_Tonet	Duvolt+1
	(1)	(2)	(3)	(4)
Abnormal_Tonet		0.068**		0.045**
		(2.48)		(4.597)
IV_Industryt	1.085***		1.085***	
	(8.68)		(8.68)	
IV_Locationyt	0.055***		0.055***	
	(3.08)		(3.08)	
Year/Industry/Robust/Cluster	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Constant	1.935***	1.499***	1.941**	1.179***
	(-8.68)	(7.20)	(2.11)	(7.81)
Observations	8,457	8,457	8,455	8,455
Relevance Test:				
Minimum eigenvalue statistic	38.278		38.280	
R-squared	0.089		0.089	
Exogenous Test:				
Score chi square	0.613		0.425	
P-value	0.434		0.514	

*** p<0.01, ** p<0.05,* p<0.1

Moreover, we used a one-year lag between $Ncskew_{t+1}$ and $Duvol_{t+1}$ as alternative dependent variables for the additional robustness test. The results are similar to those of our empirical test (see Table 5 for further details).

ISSN 2616-5902 Vol. 5, Issue 3: 152-157, DOI: 10.25236/AJBM.2023.050323

Table 5 Regression results of robustness tests

VARIABLES	Ncskewt+1	Duvolt+1
	(1)	(2)
Abnormal_Tonet	0.0066**	0.0048**
	(2.549)	(2.323)
Dturnt	0.0306	0.0170
	(1.387)	(0.877)
RETt	0.9940***	0.8978***
	(3.946)	(4.073)
Sigmat	0.6755	1.8087
	(0.460)	(1.384)
Lag_Ncskewt	0.0313***	0.0161*
	(2.791)	(1.717)
Conttrols/Year/industry/Robust/Cluster	Y	Y
Constant	1.3020***	1.0596***
	(6.504)	(6.111)
Observations	8,362	8,357
R-squared	0.068	0.053

*** p<0.01, ** p<0.05, * p<0.1

4. Conclusion

This study investigates the relationship between abnormal tone and stock price crash risk in China. We found that in China, enterprises with high abnormal tones in corporate financial disclosures are riskier in stock price crashes. Our results enhance our understanding of this harbinger of stock price crashes for Chinese enterprises. Moreover, financial disclosure may be adopted by managers for the purpose of concealing managerial opportunism. Additionally, this study also emphasizes the importance of abnormal tone assessment in corporate financial disclosure. Therefore, we suggest that Chinese policymakers be aware of this abnormal tone and prevent stock price crash risk by strengthening the assessment of abnormal tone in annual financial reports.

Acknowledgments

Funding: This research was supported by Beijing Philosophy and Social Science Foundation (Grant numbers: 20GLC055).

References

[1] Cole CJ, Jones CL. (2004) The usefulness of MD&A disclosures in the retail industry. Journal of Accounting, Auditing & Finance 19(4): 361–388.
[2] Amir E, Lev B. (1996) Value-relevance of nonfinancial information: The wireless communications industry. Journal of Accounting and Economics 22(1-3): 3–30.
[3] Clarkson PM, Kao JL, Richardson GD. (1999) Evidence that management discussion and analysis (MD&A) is a part of a firm's overall disclosure package. Contemporary Accounting Research 16(1): 111–134.
[4] Demers E, Vega C. (2011) Linguistic tone in earnings announcements: News or noise. Fedearl Reserve Board International Finance Discussion Paper: 951.
[5] Davis AK, Piger JM, Sedor LM. (2012) Beyond the numbers: Measuring the information content of earnings press release language. Contemporary Accounting Research 29(3): 845–868.
[6] Fu X, Wu X, Zhang Z. (2021) The information role of earnings conference call tone: Evidence from stock price crash risk. Journal of Business Ethics 173(3): 643–660.
[7] Price SM, Doran JS, Peterson DR, Bliss BA. (2012) Earnings conference calls and stock returns: The incremental informativeness of textual tone. Journal of Banking & Finance 36(4): 992–1011.
[8] D' Augusta C, DeAngelis MD. (2020) Does accounting conservatism discipline qualitative disclosure? Evidence from tone management in the MD&A. Contemporary Accounting Research 37(4): 2287-2318.
[9] Lo K, Ramos F, Rogo R. (2017) Earnings management and annual report readability. Journal of

ISSN 2616-5902 Vol. 5, Issue 3: 152-157, DOI: 10.25236/AJBM.2023.050323

Accounting and Economics 63(1): 1–25.
[10] Arslan-Ayaydin Ö, Boudt K, Thewissen J. (2016) Managers set the tone: Equity incentives and the tone of earnings press releases. Journal of Banking & Finance 72: S132–S147.
[11] Jin L, Myers S. (2006) R2 around the world: New theory and new tests. Journal of Financial Economics 79(2): 257-292.
[12] Li S, Zhan X. (2019) Product market threats and stock crash risk. Management Science 65(9): 4011-4031.
[13] Wu DX, Yao X, Guo JL. (2021) Is textual tone informative or inflated for firm's future value? Evidence from Chinese listed firms. Economic Modelling 94: 513-525.
[14] Amoozegar A, Berger D, Cao X, Pukthuanthong K. (2020) Earnings conference calls and institutional monitoring: Evidence from textual analysis. Journal of Financial Research 43(1): 5-36.