Short-Term Loans and Long-Term Investments Impact on Stock Price Collapse Risk

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Abstract: This paper examines the period from 2007 to 2020 using Chinese A-share listed companies as a research sample. From the perspectives of operational risk and information quality, the empirical analysis investigates the influence of short-term loans for long-term investments on the risk of stock price collapse. The results indicate that short-term loans for long-term investments exacerbate the risk of stock price collapse. The impact is primarily achieved through increasing corporate operational risk and earnings management, thereby intensifying the risk of stock price collapse. Simultaneously, the quality of internal control and managerial capabilities can, to a certain extent, moderate the influence of short-term loans for long-term investments on the risk of stock price collapse. This paper contributes to the research in the field of short-term loans for long-term investments and sheds light on the factors influencing the risk of stock price collapse, offering valuable insights for corporate governance and the mitigation of the risk of stock price collapse.

Keywords: short-term loans for long-term investments, operational risk, earnings management, stock price collapse risk.

1. Introduction

Since the global financial crisis of 2008 triggered a worldwide stock market collapse, the study of factors and mechanisms influencing the risk of stock price collapse has garnered widespread attention in academic circles. Simultaneously, in China, following the 18th National Congress of the Communist Party, the central leadership has placed high importance on identifying and mitigating risks in the financial sector. There has been a clear directive to prioritize the prevention and control of financial risks, staunchly upholding the baseline of preventing systemic financial risks. Within the financial domain, the risks of stock price collapse and mismatched financing periods, specifically the juxtaposition of short-term loans for long-term investments, have attracted considerable scholarly interest and extensive research. Based on existing studies in the field of stock price collapse risk, numerous scholars have focused on the influencing factors such as information disclosure quality [1], social trust [2], and corporate overinvestment [3]. In the realm of short-term loans and long-term investments, researchers have delved into the resulting operational risks [4] and their impact on company performance [5]. In the current landscape of the Chinese financial market, research in these

two areas has contributed positively to corporate governance, management, and other stakeholders. However, there has been limited effort among scholars to establish a connection between these two areas. Therefore, this paper aims to explore the practical significance of the impact of the level of short-term loans for long-term investments on stock price collapse.

Based on this, this paper selects data from Chinese A-share listed companies for the years 2007 to 2020 as the research sample. Using empirical analysis methods, the study reveals that a higher level of short-term loans for long-term investments (SFLI) intensifies corporate operational risk and further elevates the risk of stock price collapse. Simultaneously, a higher SFLI level prompts management to engage in earnings management to reduce information transparency, thereby exacerbating the risk of stock price collapse. The present study may contribute in the following aspects: (1) Expanding the research perspective on short-term loans for long-term investments (SFLI) and deepening the understanding of the associated risks. Existing studies on SFLI primarily focus on exploring influencing factors [6-8], with a limited number analyzing potential economic consequences [4]. While current literature suggests that SFLI may alleviate financial pressure to some extent, it could also bring internal operational risks. In comparison to existing perspectives, this study reveals that SFLI can trigger external capital market risks. It provides new evidence from the perspective of stock price collapse risk, offering crucial insights for the reasonable regulation of SFLI behavior in enterprises and the prevention of systemic financial risks. (2) Clarifying the specific pathway through which internal risks, such as SFLI, transmit to external risks. This study finds that SFLI increases internal operational risks, lowers internal information quality, and the accumulation of negative internal risk messages ultimately leads to higher stock price collapse risk. Based on the SFLI scenario, this study provides tangible evidence of the transmission of internal risks to external market risks, aiding in better understanding, governing, and preventing micro and macro risks. (3) Enriching the relevant literature on corporate institutional development and governance improvement. The study discovers that better internal control quality and higher managerial capability can mitigate the negative impact of SFLI. Affirming the value of internal control and managerial team development from the perspective of SFLI risk governance, this conclusion provides empirical references for enhancing corporate governance and strengthening managerial team construction. It further enriches the series of literature on institutional development and corporate governance.

The remaining sections of this paper are organized as follows. The second section comprises theoretical analysis and research hypotheses. Scholarly studies are systematically analyzed to propose hypotheses regarding the relationship between short-term loans for long-term investments (SFLI) and the risk of stock price collapse. The third section outlines the research design, encompassing sample selection, variable definitions, and model construction. In the fourth section, empirical analysis is conducted through descriptive statistics, correlation analysis, and regression analysis, exploring two pathways. The fifth section involves further analysis from the perspective of moderating effects. The sixth section encompasses robustness tests, including the replacement of explanatory and dependent variables, cluster adjustments, and the introduction of additional control variables. Finally, the seventh section presents conclusions and insights.

2. Theoretical Analysis and Research Hypotheses

2.1. SFLI and Stock Price Collapse Risk

Stock price collapse risk refers to the likelihood of a significant drop in stock prices occurring without warning. Based on a review of existing research, scholars have primarily focused on factors influencing the risk of stock price collapse. These factors can be broadly categorized into two dimensions: the company's own risk level and the quality of information provided by the company.

Firstly, focusing on the dimension of information quality provided by the company, scholars have predominantly based their research on the "information hiding hypothesis." This hypothesis posits that stock collapse originates from the continuous accumulation and subsequent concentrated release of hidden negative information. Subsequently, scholars have explored the influencing factors of stock price collapse risk from the perspective of information hiding. The occurrence of such behavior is found to be closely related to information regulation, collective behavior of information users, and information dissemination. At the level of information regulation systems, a more stringent tax collection system is believed to inhibit managers from adopting non-compliant tax avoidance measures and encroaching on interests, simultaneously reducing earnings management and improving information transparency, thereby promoting stock price stability [9]. Regarding the collective behavior of information users, such as institutional investors engaging in collective behavior, multiple institutional investors may collectively influence a company's actions, concealing internal problems based on shared interests, diminishing information quality, and exacerbating the risk of stock price collapse [10]. In terms of information dissemination entities and the speed of information transmission, analysts acting as information intermediaries in the capital market are theoretically expected to provide objective and unbiased analyses of companies. However, analysts may unavoidably consider their own characteristics, such as optimistic bias and conflicts of interest [11], leading to the concealment of negative information about companies. Additionally, geographical differences between the location of a company and information users, such as investors, analysts, and media, affect the speed of information circulation and dissemination, increasing information asymmetry, elevating the level of hidden bad news, and further intensifying the risk of stock price collapse [12].

Secondly, based on the company's inherent risk level. Operating in a volatile market environment, from the internal perspective of the company, management, driven by professional pressure, career advancement, and issues related to personal interests such as stock options, may, for short-term gains, overlook the long-term interests of the company. This inevitably leads to the adoption of aggressive financing and investment behaviors, exacerbating the financial and operational risks of the company, diminishing corporate performance, and hastening the collapse of the company's stock price [3]. Faced with financing constraints, many companies opt for equity pledges by controlling shareholders, causing fluctuations in actual control rights and, in reality, planting hidden risks for the company. To conceal this issue, managers may resort to inappropriate operational methods, raising the company's risk level and increasing the risk of stock price volatility [13-14]. Additionally, in weaker corporate governance environments, management's overinvestment behavior can impact company performance and value, subsequently affecting stock prices, resulting in stock price volatility or even collapse risk [15]. However, several studies have found that adopting more robust accounting policies [16], engaging female executives [17], and improving corporate governance levels have mitigated operational risks to some extent, enhanced company performance, and reduced the risk of stock price collapse.

In recent years, with changes in the policy environment, there has been a heightened national focus on identifying risks in the financial sector. In the realm of corporate fund procurement within the financial sector, the financing period mismatch, specifically the investment approach of short-term loans for long-term investments (SFLI), has gradually gained attention from scholars, leading to an increase in research on this topic. SFLI refers to the utilization of short-term funds for supporting activities with weaker liquidity but longer durations, representing a relatively aggressive investment approach [6].

From a short-term perspective, this more aggressive investment approach can meet the short-term funding needs of companies. However, over the long term, it brings various hidden risks and crises to companies. Liu Xiaoguang et al. [18] pointed out the prevalent occurrence of SFLI in domestic

companies, which exacerbates operational difficulties, triggers liquidity risks, and consequently has adverse effects on the company's operational performance and financial condition, impacting overall company development. Zhao Yanming et al. [19] found that companies employing a higher degree of financing period mismatch may face negative consequences, as it not only fails to strengthen performance but also reduces investment efficiency, lowers the company's risk-bearing capacity, and may lead to financial crises or even bankruptcy. Zhong Kai et al. [7] also argue that SFLI can intensify a company's financial risks, influence its performance, and even increase the operational risks of the real economy. Additionally, Zhong Kai et al. [4], combining liquidity needs with agency costs, further analyzed that SFLI weakens the governance effect of liabilities, exacerbates a company's liquidity risk, affects normal operations, and brings negative effects to the company.

Therefore, it is evident that the series of negative impacts resulting from SFLI can harm corporate value and represent an inefficient investment. Over time, this may lead to the unfavorable development of a company's performance, affecting its long-term strategic goals. The performance of a company is one of the causes of stock price volatility [20], and poor financial conditions can lead to a company facing bankruptcy crises. High operational risks can also cause turbulence in the company, all of which are significant factors contributing to the risk of stock price collapse. Furthermore, these negative effects will ultimately be reflected in stock prices, exacerbating the risk of stock price collapse.

Combining the above analysis, the short-term loans for long-term investments (SFLI) behavior of companies can intensify operational risks, ultimately influencing the risk of stock price collapse. Therefore, this paper proposes the following hypotheses:

H1: The SFLI behavior exacerbates the risk of stock price collapse for companies.

H2: The SFLI behavior increases operational risks for companies, subsequently further increasing the risk of stock price collapse.

2.2. Impact of Earnings Management on the Relationship Between SFLI and Stock Price Collapse Risk

Based on the analysis above, considering the dimension of information quality provided by the company, the direct cause of the risk of stock price collapse is more likely to originate from the hidden risk of negative information. Combining this with the aggressive investment approach of SFLI, it is easy to analyze that the primary goal of the management is to consider their own interests, focusing more on maximizing self-interest. Consequently, they often adopt various means to conceal the company's actual situation.

The financing period mismatch, i.e., the aggressive behavior of short-term loans for long-term investments, inherently carries significant risks [4, 18]. Despite the considerable inherent risks, management still chooses to take this risk due to personal motives. It can be inferred to some extent that there is a possibility of management manipulating company information, i.e., choosing "information hiding," to safeguard their own interests. To mitigate the negative financial impacts brought about by SFLI, management, utilizing their advantage of possessing private information about industry prospects, market conditions, etc., often resorts to increased earnings management. They manipulate external information disclosures, deviating them from reality to conceal the company's operating conditions, thereby reducing information transparency [21]. In doing so, they also secure excess returns for themselves.

According to existing research, management, driven by self-interest, conceals bad news. Under the influence of information asymmetry, shareholders and other information users can only base their judgments on surface-level appearances, paying less attention to the authenticity of deeper information and whether the company's value is undervalued [22]. This situation accumulates over

time, and when negative information reaches a certain threshold, it is released instantly, ultimately triggering stock price collapse and causing damage to the company.

In summary, the SFLI behavior of companies prompts managers to manipulate earnings management to reduce the disclosure of negative information. This accumulation eventually leads to stock price collapse risk. Therefore, this paper proposes the following hypothesis:

H3: The SFLI behavior increases earnings management for companies, subsequently further increasing the risk of stock price collapse.

3. Research Design

3.1. Sample Selection

In accordance with the issuance of the new accounting standards in 2007 and considering the relatively complete, standardized, and publicly available financial data of listed companies in China, this study selects the sample from A-share listed companies in China for the years 2007-2020. Stock data and financial data are sourced from the CSMAR database, while internal control quality data come from the Dibo database. The sample is screened following the steps below: (1) Exclude ST and *ST companies; (2) Exclude companies in the financial industry; (3) Exclude companies with an asset-liability ratio greater than 1; (4) Exclude samples with missing data. To avoid the influence of extreme values on regression results, a winsorize procedure is applied to all continuous variables, limiting them to the upper and lower 1%. The final dataset comprises 23,799 observation samples.

3.2. Variable Definitions

3.2.1. Stock Price Collapse Risk

Drawing on the studies of Xu Nianxing et al. and Luo Jinhui et al. [11,23], this paper employs the NCSKEW to measure the stock price collapse risk of companies. The specific method is as follows:

Step 1: Conduct the following regression using the weekly returns of stock i to calculate residuals:

$$r_{i,t} = \alpha_i + \beta_{1,i} * r_{m,t-2} + \beta_{2,i} * r_{m,t-1} + \beta_{3,i} * r_{m,t} + \beta_{4,i} * r_{m,t+1} + \beta_{5,i} * r_{m,t+2} + \varepsilon_{i,t} \quad (1)$$

Where, $r_{i,t}$ represents the return rate of stock i in the t-th week, considering the reinvestment of cash dividends; $r_{m,t}$ represents the average return rate of the A-share stock market in the t-th week, considering the reinvestment of cash dividends; $\varepsilon_{i,t}$ represents the residual. To mitigate the potential impact of asynchronous trading in stocks, the model (Equation 1) includes the lagged two periods and leading two periods of the market's average return rate.

Step 2: Calculate the stock-specific return $W_{i,t}=Ln(1+\varepsilon_{i,t})$ for stock i in week t.

Step 3: Construct the NCSKEW based on $W_{i,t}$:

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

Where, n represents the number of trading weeks per year for stock i. The larger the value of NCSKEW, the more severe the negative skewness, indicating a higher degree of stock price collapse risk.

3.2.2. SFLI

Drawing on the research of Frank et al., Zhong Kai et al., and Ma Hong et al. [7, 24-25], this study adopts the measurement of the level of SFLI as (Fixed asset and long-term investment cash expenditure - (Long-term loan increment + Equity increment + Operating cash flow + Cash inflow

from disposal of fixed assets and long-term assets)). The ratio is then calculated by dividing it by the initial total assets to eliminate the size effect, as follows:

$$SFLI = \frac{INV - (\Delta LONGDEBT + \Delta EQUITY + OCF + SCF)}{ASSET}$$
(3)

Where, SFLI represents Short-Term Loans for Long-Term Investments; INV represents fixed asset and other long-term investment cash expenditure; $\Delta LONGDEBT$ represents the increment of long-term loans; $\Delta EQUITY$ represents the increment of equity; OCF represents net cash flow from operating activities; SCF represents cash inflow from the disposal of fixed assets and other long-term assets; ASSET represents initial total assets. If the SFLI data is positive, it indicates the existence of SFLI behavior in the company. If SFLI data is negative, it suggests the absence or weak presence of SFLI behavior in the company.

3.2.3. Controls

Drawing on the studies of Wang Huacheng et al., Li Xiaorong et al., and Xu Nianxing et al. [11, 17, 26], this paper introduces control variables, including average weekly individual stock return rate (Ret), weekly individual stock return rate standard deviation (Sigma), enterprise size (Size), number of directors (Board), proportion of independent directors (Indep), duality of roles (Dual), book-to-market ratio (BM), proportion of the largest shareholder's holdings (Top1), monthly average excess turnover rate (Turnover), and negative skewness coefficient (NCSKEW). Additionally, the paper controls for year and industry. The main variable definitions are presented in Table 1.

Table 1: Main Variable Definitions

Variable Type	Variable	Variable Name	Definition
Dependent Variable	Stock Price Collapse Risk	NCSKEW	Negative skewness coefficient, measuring stock price collapse risk. The calculation method is referred to in Equation (2). A larger NCSKEW indicates a higher risk of stock price collapse.
Independent Variable	Short-term Loans for Long-term Investments	SFLI	Calculated as (Fixed asset and long-term investment cash expenditure - (Long-term loan increment + Equity increment + Operating cash flow + Cash inflow from disposal of fixed assets and long-term assets)) divided by the initial total assets to eliminate size effects.
Intermediate Variables	Corporate Operating Risk	Risk	The standard deviation of the rolling values of the pre-interest, tax, depreciation, and amortization margin for the four years from t-4 to t-1 is used to calculate operating risk. Considering different company sizes, it is divided by the total assets of the previous year.
	Earnings Management	DA	Earnings management is measured using discretionary accruals estimated from the modified Jones model.
Control Variables	Average Weekly Individual Stock	Ret	The average weekly individual stock return rate of stock i in the t-th year.

Return Rate Weekly Individual Stock Return Rate Standard Deviation	Sigma	The standard deviation of the individual stock return of stock i in year t.
Enterprise Size	Size	The natural logarithm of the year-end balance of assets.
Number of Directors	Board	The natural logarithm of the number of directors.
Proportion of Independent Directors	Indep	The number of independent directors divided by the total number of directors on the board.
Duality of Roles	Dual	If the chairman and general manager are the same person, it is assigned 1; otherwise, it is assigned 0.
Book-to-Market Ratio	BM	Book value of equity divided by total market value.
Proportion of the Largest Shareholder's Holdings	Top1	The number of shares held by the largest shareholder divided by the total number of shares in the company.
Monthly Average Excess Turnover Rate	Turnover	The difference between the monthly average turnover rate of stock i in year t and the monthly average turnover rate of stock i in year t-1.
Negative Skewness Coefficient	NCSKEW	The skewness coefficient of negative returns in year t, with detailed calculation methods outlined in Model (2).
Year Fixed Effects	Year	Year dummy variables.
Industry Fixed Effects	Industry	Industry dummy variables.

3.3. Basic Model Construction

This study employs the following regression model to empirically examine the impact of short-term loans for long-term investments on stock price collapse risk:

$$NCSKEW_{i,t+1} = \beta_0 + \beta_1 SFLI_{i,t} + \beta_2 Controls_{i,t} + \Sigma Year + \Sigma Industry + \varepsilon_{i,t} \qquad (4)$$

Here, NCSKEW represents the stock price collapse risk of stock i in period t+1; SFLI represents the short-term loans for long-term investments of the i-th firm in period t; Controls represents the control variables of the i-th firm in period t, including Ret, Sigma, Size, Board, Indep, Dual, BM, Top1, Turnover, and NCSKEW.

4 Empirical Analysis

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the main research variables. The data reveals that, among the A-share listed companies in China from 2007 to 2020, the average value of NCSKEW is -0.412, with a standard deviation of 0.5. This data is generally consistent with existing literature [27]. The average value of SFLI is -0.087, with a standard deviation of 0.243. The 75th percentile is 0.012, and since the 75th percentile is close to 0, it indicates that approximately one-quarter of the companies are engaged in short-term loans for long-term investments. This characteristic aligns with previous research [7,25], further emphasizing the practical significance of studying the impact of short-term loans for long-term investments on companies. Additionally, the data for control variables are in line with relevant literature.

Table 2: Descriptive Statistics

Variable	Observations	Mean	Minimum	p25	Median	p75	Maximum	Standard Deviation
NCSKEW	23799	-0.411	-1.770	-0.715	-0.408	-0.094	0.904	0.504
SFLI	23799	-0.120	-1.573	-0.165	-0.074	-0.002	0.252	0.249
Ret	23799	0.004	-0.021	-0.005	0.002	0.010	0.040	0.012
Sigma	23799	0.066	0.026	0.047	0.060	0.079	0.152	0.026
Size	23799	22.260	19.890	21.38	22.130	22.95	26.250	1.269
Board	23799	2.164	1.609	2.079	2.197	2.197	2.708	0.194
Indep	23799	0.369	0.308	0.333	0.333	0.400	0.571	0.052
Dual	23799	0.200	0	0	0	0	1	0.400
BM	23799	1.084	0.109	0.436	0.739	1.275	6.920	1.107
Top1	23799	0.361	0.091	0.245	0.343	0.462	0.750	0.149
Turnover	23799	-0.095	-1.848	-0.260	-0.041	0.121	0.942	0.450

4.2. Correlation Analysis

Table 3 displays the correlation coefficients among the main variables in this study, measured by the negative skewness coefficient (NCSKEW) representing stock price collapse risk. The results reveal a significantly negative correlation coefficient between Short-Term Loans for Long-Term Investments (SFLI) and the NCSKEW in the t+1 period. In other words, there is a significant negative correlation between SFLI and stock price collapse risk, which contradicts the original hypothesis. However, as this analysis only considers the two variables themselves without excluding the influence of other variables, a more precise analysis is needed to confirm the original hypothesis.

Table 3: Correlation Analysis

	NCSKEW$_{t+1}$	SFLI	Ret	Sigma	Size	Board	Indep	Dual	BM	Top1	Turnover	NCSKEW$_t$
NCSKEW$_{t+1}$	1											
SFLI	-0.035***	1										
Ret	0.055***	-0.173***	1									
Sigma	-0.037***	-0.089***	0.432***	1								
Size	-0.012*	-0.094***	-0.081***	-0.244***	1							
Board	-0.027***	-0.014**	-0.00300	-0.048***	0.220***	1						
Indep	0.00600	0.016**	-0.015**	-0.023***	0.062***	0.473***	1					
Dual	0.030***	0.00300	-0.00100	0.011*	-0.124***	-0.180***	0.120***	1				
BM	-0.107***	0.054***	-0.248***	-0.238***	0.630***	0.130***	0.051***	-0.101***	1			
Top1	-0.00400	-0.047***	-0.0060	-0.051***	0.200***	0.014*	0.053***	-0.055***	0.086***	1		
Turnover	-0.044***	-0.048***	0.450***	0.267***	0.076***	0.021***	-0.00200	-0.061***	0.0080	-0.052***	1	
NCSKEW$_t$	0.076***	-0.019***	-0.131***	-0.048***	-0.015*	-0.019***	0.00100	0.027***	-0.033***	0.00500	-0.046***	1

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

4.3. Regression Analysis

In examining the relationship between Short-Term Loans for Long-Term Investments (SFLI) and stock price collapse risk (NCSKEW), this study employs fixed-effects regression with robust standard errors. Table 4 presents the results of the fixed-effects regression model (4). As shown in the table,

the regression coefficient of SFLI on NCSKEW is 0.028 and is significant at the 5% level. This finding provides partial confirmation that SFLI significantly exacerbates stock price collapse risk (NCSKEW), lending basic support to hypothesis H1. This lays the foundation for further exploration of the mediating pathways through which SFLI affects stock price collapse risk (NCSKEW).

Table 4: Regression Analysis

VARIABLES	$NCSKEW_{t+1}$
$SFLI_t$	0.028**
	(2.00)
Ret_t	6.982***
	(12.95)
$Sigma_t$	-0.765***
	(-3.15)
$Size_t$	0.046***
	(5.80)
$Board_t$	-0.049
	(-1.37)
$Indep_t$	0.084
	(0.77)
$Dual_t$	0.008
	(0.67)
BM_t	-0.065***
	(-11.13)
$Top1_t$	0.012
	(0.23)
$Turnover_t$	-0.015
	(-1.53)
$NCSKEW_t$	-0.061***
	(-8.68)
Constant	-1.301***
	(-6.75)
Observations	23,799
Number of Stkcd	2,620
R-squared	0.065
F	63.83

Note: ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively, with t-values shown in parentheses. The same applies to the following tables.

4.4. Regression Analysis of the Mediating Pathways through which SFLI Influences Stock Price Collapse Risk

As discussed in the theoretical analysis and research hypothesis sections, Short-Term Loans for Long-Term Investments (SFLI) can influence stock price collapse risk by exacerbating corporate operational risk or increasing the extent of earnings management, ultimately leading to heightened stock price collapse risk. Therefore, two separate fixed-effects regression tests are conducted for each pathway.

4.4.1. SFLI, Corporate Operational Risk, and Stock Price Collapse Risk

In accordance with the studies of John et al. [28] and Wang Zhuquan [29], it is universally acknowledged that higher operational risk in a company is associated with increased profit volatility. Therefore, following this approach, this paper measures the magnitude of operational risk using the volatility of the rolling values of the profit margin (profit before interest, tax, depreciation, and amortization) from year t-4 to t-1 (four years). To account for variations in company size, and to eliminate this effect, the profit margin is first divided by the total assets of the previous year. A higher value indicates greater operational risk in the company.

Table 5 presents the results of the fixed-effects regression analysis with corporate operational risk (Risk) as the mediating variable. In column (1), the regression coefficient of SFLI on stock price collapse risk (NCSKEW) is significantly positive at the 5% level. In column (2), the regression coefficient of SFLI on corporate operational risk (Risk) is significantly positive at the 5% level, indicating that SFLI behavior can exacerbate corporate operational risk to some extent. In column (3), the regression coefficient of corporate operational risk (Risk) on stock price collapse risk (NCSKEW) is positive and significant at the 5% level, and the regression coefficient of SFLI on stock price collapse risk (NCSKEW) remains positive. Based on the comprehensive regression analysis results, it can be inferred that corporate operational risk (Risk) plays a mediating role between SFLI and stock price collapse risk. In other words, the behavior of SFLI can further intensify the risk of stock price collapse by increasing corporate operational risk, supporting the pathway involving SFLI, corporate operational risk, and stock price collapse risk. This provides support for hypothesis H2.

Table 5: Analysis of Corporate Operational Risk Mediating Effect - Risk

VARIABLES	(1) $NCSKEW_{t+1}$	(2) $Risk_t$	(3) $NCSKEW_{t+1}$
$SFLI_t$	0.028**	0.016***	0.032**
	(2.00)	(2.71)	(2.24)
$Risk_{t+1}$			0.036**
			(2.26)
Ret_t	6.982***	-2.665***	7.108***
	(12.95)	(-11.51)	(13.12)
$Sigma_t$	-0.765***	0.628***	-0.816***
	(-3.15)	(6.02)	(-3.34)
$Size_t$	0.046***	0.060***	0.044***
	(5.80)	(17.48)	(5.51)

Board$_t$	-0.049	0.037**	-0.051
	(-1.37)	(2.41)	(-1.41)
Indep$_t$	0.084	0.004	0.087
	(0.77)	(0.07)	(0.79)
Dual$_t$	0.008	0.001	0.008
	(0.67)	(0.11)	(0.67)
BM$_t$	-0.065***	-0.050***	-0.063***
	(-11.13)	(-20.05)	(-10.72)
Top1$_t$	0.012	0.195***	0.005
	(0.23)	(8.67)	(0.10)
Turnover$_t$	-0.015	-0.005	-0.015
	(-1.53)	(-1.24)	(-1.50)
NCSKEW$_t$	-0.061***	0.004	-0.061***
	(-8.68)	(1.36)	(-8.73)
Constant	-1.301***	-0.943***	-1.268***
	(-6.75)	(-11.38)	(-6.56)
Observations	23,799	23,799	23,799
Number of Stkcd	2,620	2,620	2,620
R-squared	0.065	0.035	0.065
F	63.83	33.62	61.40

4.4.2. SFLI, Earnings Management, and Stock Price Collapse Risk

Drawing on existing literature [30-31], this study employs earnings management (DA) to reflect the quality of corporate disclosure. Manipulative accruals are chosen as the measure of earnings management (DA), where manipulative accruals are estimated using the modified Jones model. A higher value indicates a greater degree of manipulative earnings management by the company.

Table 6 presents the results of the fixed-effects regression analysis with earnings management (DA) as the mediating variable. In column (1), the regression coefficient of SFLI on stock price collapse risk (NCSKEW) is significantly positive at the 5% level. In column (2), the regression coefficient of SFLI on earnings management (DA) is significantly positive at the 1% level, indicating that SFLI behavior can increase the level of earnings management to some extent, specifically in discretionary accruals. In column (3), the regression coefficient of earnings management (DA) on stock price collapse risk (NCSKEW) is positive and significant at the 5% level, and the regression coefficient of SFLI on stock price collapse risk (NCSKEW) remains positive. Based on these regression results, it can be inferred that earnings management (DA) plays a mediating role between SFLI and stock price collapse risk. In other words, the behavior of SFLI can further intensify the risk of stock price collapse by increasing the degree of earnings management, supporting the pathway involving SFLI, earnings management, and stock price collapse risk. This provides support for hypothesis H3.

Table 6: Analysis of Earnings Management Mediating Effect - DA

VARIABLES	(1) $NCSKEW_{t+1}$	(2) DA_{t+1}	(3) $NCSKEW_{t+1}$
$SFLI_t$	0.034**	0.004*	0.034**
	(2.39)	(1.71)	(2.36)
DA_{t+1}			0.115**
			(2.43)
Ret_t	6.989***	0.178**	6.968***
	(12.97)	(2.28)	(12.93)
$Sigma_t$	-0.783***	0.023	-0.786***
	(-3.22)	(0.65)	(-3.23)
$Size_t$	0.047***	-0.015***	0.048***
	(5.86)	(-12.87)	(6.05)
$Board_t$	-0.049	0.007	-0.050
	(-1.37)	(1.37)	(-1.39)
$Indep_t$	0.087	-0.026	0.090
	(0.79)	(-1.63)	(0.82)
$Dual_t$	0.008	-0.003	0.009
	(0.67)	(-1.39)	(0.69)
BM_t	-0.065***	-0.005***	-0.064***
	(-11.07)	(-5.46)	(-10.97)
$Top1_t$	0.008	0.004	0.008
	(0.16)	(0.49)	(0.15)
$Turnover_t$	-0.015	-0.003**	-0.015
	(-1.52)	(-1.99)	(-1.49)
$NCSKEW_t$	-0.061***	0.002	-0.061***
	(-8.73)	(1.52)	(-8.76)
DA_t	0.107**	0.032***	0.103**
	(2.35)	(4.83)	(2.27)
Constant	-1.301***	0.062***	-1.363***
	(-6.75)	(151.08)	(-7.03)
Observations	23,799	23,799	23,799
Number of Stkcd	2,620	2,620	2,620
R-squared	0.065	0.054	0.065
F	61.42	50.73	59.21

5. Further Analysis

5.1. Moderating Effect of Internal Control Quality

Based on the studies of Ye Kangtao et al. and Jiang Hongyun et al. [1,32], internal control quality (IC) also has a significant impact on stock price collapse risk. To enhance the accuracy of the article, internal control quality (IC) is introduced as a moderating variable, drawing from the scholars' research. Internal control quality data is sourced from the Dibo database's internal control index, which reflects the degree to which various internal control objectives of a company are achieved and accurately portrays the internal control quality of listed companies. It indirectly reflects the possibility of companies hiding information, making it one of the factors to consider when measuring stock price collapse risk. Therefore, based on the median of internal control quality (IC), it is divided into two groups: one with better internal control quality and the other with poorer internal control quality. Fixed-effects regression is then conducted within each group according to Model (4).

Table 7 presents the regression results grouped based on internal control quality. In column (1), under poor internal control quality, the regression coefficient of short-term loans for long-term investments (SFLI) on stock price collapse risk (NCSKEW) is significantly positive. In column (2), under good internal control quality, the regression coefficient of SFLI on stock price collapse risk (NCSKEW) is positive but not significant. This indicates that under poor internal control quality, the positive impact of short-term loans for long-term investments on stock price collapse risk is further exacerbated, while under good internal control quality, there may be some improvement in the impact of SFLI on stock price collapse risk. In other words, internal control quality (IC) plays a moderating role.

5.2. Moderating Effect of Managerial Ability

According to existing research [33-34], managerial ability (MA) can influence stock price collapse risk to some extent. Therefore, managerial ability (MA) is also a factor that should be considered when measuring stock price collapse risk, and it may have a moderating effect on the impact of short-term loans for long-term investments on stock price collapse risk. Hence, this study uses the median of managerial ability (MA) as a basis, dividing it into two groups: one with better managerial ability and the other with poorer managerial ability. Fixed-effects regression is then conducted within each group according to Model (4).

Table 7 presents the regression results grouped based on managerial ability. In column (3), under poor managerial ability, the regression coefficient of short-term loans for long-term investments (SFLI) on stock price collapse risk (NCSKEW) is significantly positive. In column (4), under good managerial ability, the regression coefficient of SFLI on stock price collapse risk (NCSKEW) is positive but not significant. This indicates that under poor managerial ability, the positive impact of short-term loans for long-term investments on stock price collapse risk is further exacerbated, while under good managerial ability, there may be some improvement in the impact of SFLI on stock price collapse risk. Therefore, managerial ability (MA) has a moderating effect.

Table 7: Moderation Effect Analysis

	IC		MA	
	(1)	(2)	(3)	(4)
VARIABLES	NCSKEW$_{t+1}$	NCSKEW$_{t+1}$	NCSKEW$_{t+1}$	NCSKEW$_{t+1}$
	Poor	Good	Poor	Good
SFLI$_t$	0.047*	0.024	0.078**	0.022
	(1.89)	(1.32)	(2.41)	(1.33)
Ret$_t$	6.955***	6.006***	6.140***	7.123***
	(7.78)	(8.08)	(5.75)	(10.85)
Sigma$_t$	-0.678*	-0.504	-1.043**	-0.574*
	(-1.73)	(-1.44)	(-2.18)	(-1.92)
Size$_t$	0.064***	0.058***	0.055***	0.051***
	(4.31)	(5.36)	(2.69)	(5.37)
Board$_t$	-0.128*	-0.050	-0.070	-0.061
	(-1.82)	(-1.07)	(-0.91)	(-1.39)
Indep$_t$	-0.336	0.273*	-0.267	0.211
	(-1.59)	(1.91)	(-1.19)	(1.56)
Dual$_t$	0.002	0.018	-0.019	0.019
	(0.09)	(1.02)	(-0.78)	(1.17)
BM$_t$	-0.062***	-0.065***	-0.088***	-0.062***
	(-5.41)	(-8.70)	(-5.81)	(-9.11)
Top1$_t$	-0.055	0.043	-0.118	-0.003
	(-0.56)	(0.60)	(-0.90)	(-0.05)
Turnover$_t$	0.003	-0.025*	-0.006	-0.020
	(0.19)	(-1.90)	(-0.33)	(-1.63)
NCSKEW$_t$	-0.094***	-0.072***	-0.114***	-0.062***
	(-8.20)	(-7.46)	(-8.69)	(-7.21)
Constant	-1.275***	-1.634***	-1.151**	-1.451***
	(-3.50)	(-6.28)	(-2.44)	(-6.29)
Observations	9,814	13,985	7,303	16,496
Number of Stkcd	2,368	2,479	1,546	2,320
R-squared	0.066	0.076	0.079	0.067
F	26.09	41.29	21.50	44.33

6. Robustness Tests

6.1. Replacement of the Dependent Variable

To enhance the robustness of the results, drawing from existing studies [11,26], we use the Downside-Upside Volatility Ratio (DUVOL) to measure stock price collapse risk. The specific method is as follows:

Step 1: Referring to the previous section, we conduct the following regression using the weekly returns of stock i, calculating the residuals:

$$r_{i,t} = \alpha_i + \beta_{1,i} * r_{m,t-2} + \beta_{2,i} * r_{m,t-1} + \beta_{3,i} * r_{m,t} + \beta_{4,i} * r_{m,t+1} + \beta_{5,i} * r_{m,t+2} + \varepsilon_{i,t} \quad (1)$$

Where, $r_{i,t}$ represents the return of stock i in week t, $r_{m,t}$ represents the average return of the A-share stock market in week t considering dividend reinvestment, and $\varepsilon_{i,t}$ represents the residual. To mitigate the impact of potential asynchronous trading of stocks, we include the lagged two periods and leading two periods of the market's average return in Model (1).

Step 2: Calculate the firm-specific return for stock i in week t as $W_{i,t}=Ln(1+\varepsilon_{i,t})$.

Step 3: Construct the DUVOL based on $W_{i,t}$:

$$DUVOL_{i,t} = log\{[(n_{it} - 1) \sum_{DOWN} W_{i,t}^2]/[(n_d - 1) \sum_{UP} W_{i,t}^2]\} \quad (1)$$

Where, $n_{it}(n_d)$ represents the number of weeks in which the weekly specific returns $W_{i,t}$ of stock i are greater than (less than) the annual average returns $W_{i,t}$. A higher value of DUVOL indicates a more severe leftward skewness in the company's stock returns, corresponding to an increased stock price collapse risk.

Table 8, column (1), displays the results of the relevant fixed-effects regression. The results show that SFLI have a significant positive impact on stock price collapse risk (DUVOL) at the 1% level. This implies that the behavior of short-term loans for long-term investments exacerbates the stock price collapse risk, providing further robust evidence for the results in Table 4.

6.2. Replacement of Explanatory Variables

To further enhance the robustness of the results, the following approach is employed to replace the explanatory variables. Drawing inspiration from the research of Zhong Kai et al. [4], a turnover frequency variable for "short-term loans for long-term investments" (SFLI1) is used in lieu of SFLI. Specifically, SFLI1 is calculated as the ratio of the turnover times, i.e., (Fixed asset and long-term investment cash expenditure - (Long-term loan increment + Equity increment + Operating cash flow + Cash inflow from disposal of fixed assets and long-term assets)), divided by the average value of short-term loans at the beginning and end of the year. A higher SFLI1 indicates a greater turnover frequency, implying that the company relies extensively on short-term rolling financing to support long-term investment plans, thereby exacerbating the phenomenon of short-term loans for long-term investments.

Table 8, column (2), presents the results of the relevant fixed-effects regression. The findings reveal a significant positive impact of short-term loans for long-term investments (SFLI1) on stock price collapse risk at the 5% level. This suggests that the behavior of short-term loans for long-term investments exacerbates the stock price collapse risk, providing further robust evidence for the results in Table 4.

Table 8 Robustness Tests - 1

VARIABLES	(1) DUVOL$_{t+1}$	(2) NCSKEW$_{t+1}$
SFLI$_t$	0.033***	
	(2.88)	
SFLI1$_t$		0.002**
		(2.18)
Ret$_t$	4.070***	6.914***
	(9.28)	(12.92)
Sigma$_t$	-0.838***	-0.779***
	(-4.24)	(-3.20)
Size$_t$	0.013**	0.045***
	(2.05)	(5.73)
Board$_t$	-0.038	-0.048
	(-1.32)	(-1.35)
Indep$_t$	-0.004	0.090
	(-0.05)	(0.82)
Dual$_t$	0.006	0.009
	(0.55)	(0.69)
BM$_t$	-0.022***	-0.065***
	(-4.53)	(-11.13)
Top1$_t$	-0.029	0.011
	(-0.69)	(0.22)
Turnover$_t$	-0.001	-0.015
	(-0.17)	(-1.55)
NCSKEW$_t$	-0.072***	-0.061***
	(-10.24)	(-8.73)
Constant	-0.194	-1.280***
	(-1.24)	(-6.69)
Observations	23,799	23,799
Number of Stkcd	2,620	2,620
R-squared	0.072	0.065
F	71.45	63.87

6.3. Cluster Adjustment

To further enhance the robustness of the results, this study considers the geographical differences among companies, conducts clustering adjustments at both the company and provincial levels, and

performs fixed-effects regression based on the model (4). As shown in Table 9, column (1), after cluster adjustment, short-term loans for long-term investments (SFLI) still exhibits a significantly positive impact on stock price collapse risk at the 5% significance level. This indicates that, even after cluster adjustments, the behavior of short-term loans for long-term investments continues to exacerbate the risk of stock price collapse, providing further robust evidence consistent with the results presented in Table 4.

6.4. Addition of Control Variables

To further strengthen the robustness of the results, this study introduces two representative control variables to mitigate the influence of other factors on the results. Drawing on the research by Quan Xiaofeng and others [35], OPAQUE is measured by the mean value of the absolute value of manipulative accruals in the past three years (t-3, t-2, and t-1) of the company in year t. Additionally, the audit opinion is included as a control variable. Fixed-effects regression is conducted following Model (4), and the results are presented in Table 9, Column (2). It is indicated that SFLI still has a significant positive impact on the risk of stock price collapse at the 5% level. This suggests that, through the improvement of control variables, the behavior of SFLI continues to exacerbate the risk of stock price collapse in the company, providing further robust evidence for the results presented in Table 4.

Table 9: Robustness Tests – 2

VARIABLES	(1) $NCSKEW_{t+1}$	(2) $NCSKEW_{t+1}$
$SFLI_t$	0.028**	0.028**
	(2.00)	(1.98)
Ret_t	6.982***	7.298***
	(12.95)	(13.46)
$Sigma_t$	-0.765***	-0.851***
	(-3.15)	(-3.49)
$Size_t$	0.046***	0.043***
	(5.80)	(5.40)
$Board_t$	-0.049	-0.048
	(-1.37)	(-1.34)
$Indep_t$	0.084	0.088
	(0.77)	(0.80)
$Dual_t$	0.008	0.008
	(0.67)	(0.65)
BM_t	-0.065***	-0.063***
	(-11.13)	(-10.67)
$Top1_t$	0.012	0.020
	(0.23)	(0.38)
$Turnover_t$	-0.015	-0.017*
	(-1.53)	(-1.71)

NCSKEW$_t$	-0.061***	-0.047***
	(-8.68)	(-5.39)
Opinion$_t$		-0.094***
		(-4.21)
OPAQUE$_t$		0.235**
		(2.38)
Constant	-1.260***	-1.148***
	(-7.46)	(-5.91)
Observations	23,799	23,799
Number of Stkcd	2,620	2,620
R-squared	0.065	0.064
F	63.83	57.72

7. Conclusions and Insights

This study utilizes data from Chinese A-share listed companies for the years 2007-2020 and reveals that a higher level of short-term loans for long-term investments exacerbates the risk of stock price collapse, providing valuable insights for corporate development. The impact of SFLI on stock price collapse risk is mediated through two pathways: operational risk and earnings management. Additionally, better internal control quality and managerial competence can, to a certain extent, mitigate the influence of levels of short-term loans for long-term investments on stock price collapse risk, thereby stabilizing corporate development.

The findings of this research offer implications for governance and management in enhancing corporate governance and prolonging the life cycle of businesses. Governance bodies should pay attention to the impact of concealing negative information on stock price collapse, strengthen their focus on factors leading to the accumulation of adverse information, and prevent corporate crises. Simultaneously, managers should enhance their managerial capabilities, adopt a long-term perspective, and not solely focus on immediate interests. Reducing mismatches in financing terms, such as avoiding short-term loans for long-term investments behaviors, can promote the healthy development of stock prices. Both management and governance bodies should promptly analyze the causes of difficulties, strengthen internal control management, and endeavor to control various risks at their source, ensuring the long-term development of companies in the current complex financial environment.

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