



Capital Misallocation and Financial Distress: Social Implications for Chinese Firms

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ABSTRACT

Inefficient allocation of financial capital can increase the vulnerability of companies, limiting their financial stability and creating social consequences for stakeholders. The aim of this study is to examine how capital misallocation affects corporate financial distress among Chinese listed companies from 2010 to 2023 and to explore the underlying mechanisms of this relationship. The empirical analysis is based on panel data from Chinese companies whose shares are traded on the A-shares market for 2010-2023. The source data is obtained from the CSMAR database. Regression models with individual and temporary fixed effects and robust standard errors were used to evaluate the relationships. The results show that inefficient capital allocation significantly increases the risk of financial insolvency. The stability of the result is confirmed by using the O-score (0.0410), including the regional financial development indicator (-0.1189) and excluding observations for 2019-2020. An analysis of the mechanisms shows that inefficient capital allocation reduces the operating profitability of companies (-0.0094) and at the same time increases the degree of manipulation of financial leverage (0.0423). Inefficient capital allocation increases the risk of financial distress among non-labor-intensive companies (-0.1379) and companies in competitive industries (-0.1196). The results show that improving the efficiency of financial resource allocation and limiting excessive debt burden can help reduce the risk of financial insolvency and strengthen the sustainability of companies.

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Капиталды тиімсіз бөлу және қаржылық төлем қабілетсіздігі: қытайлық компаниялар үшін әлеуметтік салдары

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ТҮЙІН

Қаржылық капиталды тиімсіз бөлу компаниялардың қаржылық тұрақтылығын шектей отырып және мүдделі тараптар үшін әлеуметтік салдарлар туындата отырып, олардың осалдығын күшейтуі мүмкін. Зерттеудің мақсаты 2010–2023 жылдар аралығындағы Қытайдың листингтік компанияларында капиталды тиімсіз бөлудің қаржылық дәрменсіздікке әсерін зерттеу және осы өзара байланыстың негізгі тетіктерін анықтау болып табылады. Эмпирикалық талдау 2010–2023 жылдар аралығындағы акциялары A-shares нарығында айналыстағы Қытай компанияларының панельдік деректеріне негізделген. Бастапқы деректер CSMAR дерекқорынан алынған. Өзара байланыстарды бағалау үшін жеке және уақыттық тіркелген әсерлері және робасты стандартты қателері бар регрессиялық модельдер қолданылды. Нәтижелер капиталды тиімсіз бөлудің қаржылық дәрменсіздік тәуекелін статистикалық тұрғыдан мәнді түрде арттыратынын көрсетеді. Нәтиженің тұрақтылығы O-score көрсеткішін қолдану (коэффициенті 0.0410), өңірлік қаржылық даму көрсеткішін енгізу (–0.1189) және 2019–2020 жылдардағы бақылауларды алып тастау арқылы расталады. Тетіктерді талдау капиталды тиімсіз бөлудің компаниялардың операциялық рентабельділігін төмендететінін (–0.0094) және сонымен қатар қаржылық левежді манипуляциялау дәрежесін арттыратынын (0.0423) көрсетеді. Капиталды тиімсіз бөлу еңбекті көп қажет етпейтін компаниялар (–0.1379) мен бәсекелес салалардағы компаниялар (–0.1196) арасында қаржылық дистресс тәуекелін анағұрлым күштірек арттырады. Алынған нәтижелер қаржылық ресурстарды бөлу тиімділігін арттыру және шамадан тыс борыштық жүктемені шектеу қаржылық дәрменсіздік тәуекелін төмендетуге және компаниялардың тұрақтылығын нығайтуға ықпал етуі мүмкін екенін көрсетеді.

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Неэффективное распределение капитала и финансовая несостоятельность: социальные последствия для китайских компаний

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АННОТАЦИЯ

Неэффективное распределение финансового капитала способно усиливать уязвимость компаний, ограничивая их финансовую устойчивость и создавая социальные последствия для заинтересованных сторон. Цель исследования заключается в изучении влияния неэффективного распределения капитала на финансовую несостоятельность китайских листинговых компаний за период 2010–2023 гг. и выявлении основных механизмов этой взаимосвязи. Эмпирический анализ основан на панельных данных китайских компаний, акции которых обращаются на рынке A-shares, за 2010–2023 гг. Исходные данные получены из базы CSMAR. Для оценки взаимосвязей применялись регрессионные модели с индивидуальными и временными фиксированными эффектами и робастными стандартными ошибками. Результаты показывают, что неэффективное распределение капитала статистически значимо повышает риск финансовой несостоятельности. Устойчивость результата подтверждается при использовании O-score (коэффициент 0.0410), включении показателя регионального финансового развития (–0.1189) и исключении наблюдений за 2019–2020 гг. Анализ механизмов показывает, что неэффективное распределение капитала снижает операционную рентабельность компаний (–0.0094) и одновременно увеличивает степень манипулирования финансовым рычагом (0.0423). Неэффективное распределение капитала сильнее повышает риск финансового дистресса среди не трудоинтенсивных компаний (–0.1379) и компаний конкурентных отраслей (–0.1196). Полученные результаты свидетельствуют о том, что повышение эффективности распределения финансовых ресурсов и ограничение избыточной долговой нагрузки могут способствовать снижению риска финансовой несостоятельности и укреплению устойчивости компаний.

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1. Introduction

In the context of global economic development and diversified market competition, firms, as key components of the market economy, are influenced by and constrained by numerous factors in their operations and growth. Macroeconomic fluctuations, financial crises, market shifts, and major policy adjustments are likely to significantly affect enterprise operations, potentially placing firms in financial distress (hereinafter – FD). Firms may also face difficulties as their economic situation deteriorates, stemming from factors such as defective corporate governance structures, errors in strategic decision-making, and internal mismanagement. Examples include blind expansion, failed mergers and acquisitions, and investment in high-risk projects.

FD has become a significant issue that cannot be ignored in business management. When a company faces a financial crisis, it will seriously affect its profitability and solvency, further threatening its ability to continue operating. In serious cases, it will cause a break in the capital chain and an inability to repay its debts on time, ultimately leading to bankruptcy and liquidation. The impact of FD on the enterprise is broad and will significantly affect its shareholders, creditors, employees, and other stakeholders, thereby generating not only economic but also social consequences. In particular, prolonged financial instability may affect employment stability, employee welfare, and the broader social sustainability of firms.

In recent years, corporate FD has attracted considerable scholarly attention, with numerous studies examining its causes and economic consequences. Many scholars have conducted rich research on financial default, financial crisis, financial early warning, FD, and other related topics. For example, Bhamra et al. (2011) suggested that monetary policy may cause FD. Zhang's (2015) study reveals that FD increases with the intensity of R&D. Richardson et al. (2015) argued that FD motivates firms to adopt tax-aggressive behaviour. Li et al. (2020) showed that FD influences earnings management methods. Habib et al. (2020) further comprehensively analyzed the determinants of FD.

Some scholars have devoted themselves to researching technical methods for predicting FD. Regarding the role of credit ratings, Yan et al. (2023) noted that they significantly enhance the incremental predictive power of corporate FD. According to the study of disclosure dimensions, delayed disclosure of annual reports is efficacious in improving the accuracy of FD prediction (Nie et al., 2023). To address the conceptual drift problem, Sun et al. (2024) proposed improving the predictive performance of FD by dynamically constructing an integrated model to address class imbalance. With the development of machine learning, researchers have proposed using machine learning models to achieve higher prediction accuracy than statistical models. Moreover, research shows that incorporating environmental, social, and governance (ESG) assessment factors can improve the accuracy of FD prediction (Song et al., 2024). This suggests that the assessment of corporate financial risk is increasingly connected with broader dimensions of social and sustainable corporate development. At the same time, incorporating relevant risk factors into FD prediction models has also been proven to enhance their predictive effectiveness (Zhang & Wang, 2025).

The aim of this study is to examine how capital misallocation affects corporate financial distress among Chinese listed companies from 2010 to 2023 and to explore the underlying mechanisms of this relationship. Although existing research has enriched the theoretical framework and empirical methods for corporate FD across multiple dimensions, there remains a

relative lack of literature that systematically explores the impact of financial capital allocation efficiency on corporate FD from the financial supply side, particularly with regard to its broader social implications for firms and their stakeholders. Currently, emerging market economies are undergoing rapid development and structural transformation. The imperfect financial systems and low resource allocation efficiency in these economies drive up financing constraints and financial pressures on firms, potentially affecting not only their economic performance but also their social sustainability. As the world's largest emerging market economy, China has firms that exhibit significant heterogeneity in size and scale, providing a representative sample for studying the impact of financial capital misallocation on FD. Therefore, from the perspective of emerging market economies, delving into the relationship between financial capital misallocation and corporate FD, as well as its broader social implications, is a topic worthy of exploration.

2. Literature review

Capital mismatch (hereinafter – CM) is the phenomenon in which firms fail to achieve the optimal allocation of resources in capital allocation and financing decisions, resulting in a high cost of capital and inefficient capital utilization. Modigliani and Miller (1958) proposed the MM theory, which states that in the absence of taxes, markets are perfectly efficient and corporate investment decisions are unaffected by capital structure. Furthermore, there is no relationship between a company's market value, capital costs, and capital structure. Costs are independent of capital structure. Claessens and Perotti (2007) found that credit opportunities for firms in emerging markets are unequal. Restuccia and Rogerson (2017) further demonstrated that CM refers to the failure of capital to flow efficiently, thereby preventing the achievement of the ideal of maximizing total social output. When the allocation of capital deviates from the optimal state, it constitutes CM.

In the real market, capital allocation often fails to reach the theoretical optimum due to policy differences, capital market frictions, information asymmetry, and market imperfections, resulting in a common phenomenon of CM. At the micro level, CM is primarily reflected in the uneven distribution of financial resources among firms, largely due to differences in enterprise ownership forms and scales. In China's bank-dominated financial system, there is widespread discrimination in the credit market against firms of different ownership and size (Lu et al., 2012; Gou et al., 2018). Financial resources are increasingly allocated to state-owned enterprises (SOEs) and local financing platforms, which, through financial leakage, transfer funds to firms in need of additional financial support. However, many small and medium-sized firms find it difficult to obtain credit resources from financial institutions at reasonable costs, driving up their financing costs (Benkraiem et al., 2025). The mismatch in financial capital has led to insufficient capital supporting real enterprises and to the diversification of financial resources from the real to the virtual.

The role of CM on economic development has been discussed in the literature from a macroeconomic perspective. Guariglia and Poncet (2008) use an analysis of Chinese provincial data to reveal the contribution of financial capital and economic growth. Hsieh and Klenow (2009), on the other hand, after studying the United States, China, and India, point out a serious capital-labor mismatch that results in low total factor productivity. Xiao et al. (2023) based their analysis on a sample of Chinese industrial firms, demonstrating that financial frictions impact the decline in total factor productivity resulting from CM.

Other scholars have discussed the impact of CM on firms' economic outcomes from a microeconomic perspective. Financial mismatch inhibits firms' innovation (Tong et al., 2022; Ji et

al., 2025). Qin and Gong (2024) suggested that credit mismatch inhibits investment efficiency through the intermediation of financial leverage. Han and Li (2020) argue that financial mismatch drives up firms' shadow banking. Schivardi et al. (2022) point out that financial mismatch drives the financialization of firms. And Liu et al. (2022) explore how political connections influence the role of financial mismatch in the risk of debt default by private firms. Zhang et al. (2024) further investigated CM and its relationship to the risk of corporate litigation.

FD faced by firms also tends to be referred to as a financial crisis, which mainly refers to an economic state in which an enterprise is unable to repay its debts as they fall due, pay interest, or meet its daily operating capital requirements on time due to cash flow constraints, declining profitability, or excessive pressure on debt servicing in the course of its operations. The occurrence of FD among firms is closely related to profitability, leverage, capital structure, industry competition, and macro-environmental factors.

Many scholars have studied FD from a corporate governance perspective. Empirical studies have shown that board diversity can be effective in mitigating FD. García and Herrero (2021) point out that when the proportion of female directors in a company is high, the risk of FD is relatively low. Ali et al. (2022) found that cognitive board diversity reduces the probability of financial distress. Lagasio et al. (2023) further showed that the composition and functioning of board committees may influence firms' financial stability. CEO duality mitigates the risk of corporate FD (Daoud & Yaseen, 2024). Co-opted directors reduce the risk of corporate FD (Sarang et al., 2025). Li et al. (2024) states that family-controlled firms face higher financial risk. Several studies suggest that firm characteristics and executive behavior may influence FD. Empirical research by Chatterjee et al. (2023) finds a significant correlation between CEO compensation and corporate FD. Shan et al. (2024) discovered that management shareholding ratios are positively correlated with FD. Yang et al. (2025) emphasize that management integrity plays a key role in alleviating or exacerbating FD. Ahemed et al. (2025) also found that managerial optimism contributes to FD.

In addition to corporate governance and executive characteristics, many scholars have also explored the factors influencing FD from different dimensions of corporate management decisions. Ugur et al. (2022) point out that a firm's leverage level is closely related to FD. Islam et al. (2023) argue that enhancing the comparability of accounting information can help reduce the likelihood that a firm is in FD. Wu et al.'s (2024) study suggests that financial flexibility plays a positive role in mitigating FD. Cui and Wang (2023) indicate that digital transformation is effective in mitigating FD. García Martín and Herrero (2025) further adopt an employee management perspective, stating that improving employee satisfaction can help reduce the risk of corporate default. Meanwhile, several studies have revealed factors that exacerbate FD. For example, Shan et al. (2023) discovered that collateral networks significantly increase firms' financial risk; Xing et al. (2025) showed that environmental violations significantly increase the likelihood of firms' FD; Geng et al. (2025) further indicated that firms' overinvestment behavior exacerbates the risk of FD.

Further, some scholars have examined FD from the standpoint of investors and external monitoring. Studies have pointed out that private equity investors can better handle FD (Hotchkiss et al., 2021; De Silva et al., 2025). Cao et al.'s (2024) findings confirm that institutional investor field visits can alleviate FD. Lian (2024) found that enhancing the ease with which customers can obtain bank credit can effectively reduce the risk of suppliers facing FD. Garcia (2025) noted that emotional volatility and heightened investor attention can increase the risk of FD for companies.

Additionally, environmental factors and climate risk significantly affect FD, and some scholars have studied it from an ecological perspective. He and Zheng (2022) suggest the impact of environmental regulation on FD. Firms' ecological performance is negatively related to FD (Jia & Li, 2022). Ding et al. (2023) note that firms' carbon-emitting behaviors increase the risk of FD. Adopting environmental protection measures can reduce FD (Zouaghi et al., 2024). Liu et al. (2025) further explore how extreme weather shocks affect FD. The empirical results of Binesh et al. (2025) suggest that strong ESG performance can effectively mitigate firms' exposure to FD risk.

The level of development in financial markets profoundly influences firms' capital allocation and financing decisions. Existing literature suggests that financial capital misallocation may adversely affect firms' operational efficiency and financial stability. Specifically, financial capital misallocation often manifests as a deviation of the firm's capital structure from the optimal range, constrained access to financing channels, or excessively high financing costs. These issues may lead to inefficient resource allocation and rising financial pressure. Such misallocation not only affects a firm's short-term financing capacity but may also undermine its long-term profitability, thereby increasing the likelihood of FD. Based on this, the following hypothesis is proposed:

H1: CM significantly increases the likelihood of firms falling into FD.

From a profitability perspective, financial capital misallocation may directly erode a firm's earnings base by increasing financing costs and reducing capital utilization efficiency. When firms face financing costs above the industry average, their market competitiveness is likely to be impaired, leading to a shrinking profit margin from core business operations. In addition, capital misallocation may lead to capital flowing into low-return or high-risk projects, increasing the probability of investment failure, further eroding firm profitability, and exacerbating financial risk. Based on this mechanism, the following hypothesis is proposed:

H2: CM aggravates the risk of FD by weakening firms' profitability.

From the perspective of leverage manipulation, financial capital misallocation may induce firms to rely excessively on debt financing to compensate for capital shortages, thereby encouraging leverage manipulation behavior. In response to financing constraints, firms may adopt aggressive financial strategies, such as over-reliance on short-term debt or off-balance-sheet financing, to maintain a facade of normal operations or meet financing needs. While such behavior may temporarily ease liquidity pressure, it tends to weaken the financial structure in the long run, increase interest burdens, and strain cash flows, thus amplifying the risks of default and bankruptcy. Accordingly, the following hypothesis is proposed:

H3: CM increases the risk of FD by raising the degree of leverage manipulation.

3. Research methods

This study, based on panel data on Chinese companies from 2010 to 2023, empirically examines the impact of capital mismatch on financial distress and its mechanism of action using a fixed-effects model, with FD as the dependent variable. This paper uses the financial warning Z-score index, developed by Altman (1968), to represent FD. The data are taken from the Chinese CSMAR Database. The smaller the firm's Z-score, the greater the FD, indicating that the firm's financial position is deteriorating; the larger the firm's Z-score, the smaller the FD, indicating that the firm's financial position is very healthy.

Independent variable - CM is used as an explanatory variable. In this paper, we follow Hsieh and Klenow (2009) and Han and Li (2020) in measuring CM by calculating the degree of deviation between a firm's cost of funds and the industry average cost of funds to which it belongs.

Control variables: Based on the relevance of the research topic and the factors affecting it, this study selected the following as control variables: The natural logarithm of the firm's total assets (FIRMSIZE), The Firm's debt-to-equity ratio (LEV), The Firm's return on equity (ROE), the firm's values (TOBINQ), Management shareholding (MGMTSHARE), the shareholding ratio of the largest shareholder (TOPSHARE), Board seats (BOARDSIZE), and the percentage of independent directors (INDDIR). The contents of the variables are shown in Table 1.

Table 1. Definition of variables.

Variable	Definition
FD	Using the Z-score to represent financial distress
CM	The extent to which the cost of funds is higher than the industry average cost of funds
FIRMSIZE	Firm size, the natural logarithm of the firm's total assets
LEV	The balance sheet ratio, the ratio of total liabilities to total assets, measures the firm's financial leverage
ROE	Return on equity, calculated as net profit divided by shareholders' equity
TOBINQ	Tobin's Q, calculated as the market value of the firm divided by the replacement cost of its assets
MGMTSHARE	The proportion of shares held by the firm's management relative to total outstanding shares
TOPSHARE	The shareholding ratio of the largest shareholder in the firm
BOARDSIZE	The total number of directors on the firm's board
INDDIR	The proportion of independent directors on the board of directors of the firm

Note: compiled by the authors.

To ensure that the study sample is sufficiently representative and relevant, all A-share-listed companies in China are selected, except for financial and real estate companies, ST companies, and delisted companies. Meanwhile, observations with missing values in the dependent variable, independent variable, or control variables are also excluded from the sample. The sample scope encompasses a diverse range of industries, including machinery manufacturing, automobile manufacturing, aerospace, public utilities, telecommunication services, oil processing, coal mining, and agriculture. The sample timeframe covers 2010-2023, with a total of 38,966 observations. All sample data and indicator data for this study were obtained from CSMAR, unless otherwise stated. This study uses Stata software for statistical and empirical analyses, while variables are reduced-tailed at the 1% and 99% levels to better control statistical estimation bias.

This study establishes a multiple regression model with FD as the explanatory variable and CM as the core explanatory variable and conducts empirical research using this model. The benchmark regression model is as follows (3):

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \delta_i + \gamma t + \varepsilon_i t \quad (1)$$

where:

Y – the financial distress index;

β_0 – intercept;

$\beta_1 \dots \beta_n$ – regression coefficients;

$X_1 \dots X_n$ – explanatory variables;
 δ_i – the control firm's individual fixed effect;
 γ_t – the control years' time fixed effect;
 $\varepsilon_{i,t}$ – the standard error.

4. Results

According to the statistical data for the variables in Table 2, the maximum Z-score for FD is 35.7556, the minimum is -0.1204, and the standard deviation is 5.5726, indicating that the Z-score values in the sample vary significantly. The maximum value for CM is 2.9757, the minimum value is -1.000, and the standard deviation is 0.8210. The standard deviation is significantly greater than the mean, indicating a high degree of variation among individual samples and a high level of dispersion in the data. Table 3 presents the main results of the benchmark regression.

Table 2. Statistical description

Variable	N	Min	p50	Max	Mean	SD
FD	38966	-0.1204	3.3098	35.7556	5.0601	5.5726
CM	38966	-1.0000	-0.0988	2.9757	-0.0054	0.8210
FIRMSIZE	38966	19.7324	21.9319	26.1102	22.1235	1.2595
LEV	38966	0.0495	0.3876	0.9219	0.3986	0.2014
ROE	38966	-0.7523	0.0693	0.32798	0.0553	0.1318
TOBINQ	38966	0.8484	1.6148	8.6635	2.0193	1.2584
MGMTSHARE	38966	0.0000	2.2912	69.2793	15.5157	20.5176
TOPSHARE	38966	8.4129	31.5200	74.2500	33.8020	14.7553
BOARDSIZE	38966	5.0000	9.0000	14.0000	8.4405	1.6211
INDDIR	38966	33.3300	36.3600	57.1400	37.62593	5.2999

Note: compiled by the authors.

First, without controlling for individual fixed effects and time fixed effects, Column 1 does not include control variables, while Column 2 includes all control variables. As shown in Table 3, in both scenarios, there is a significant negative correlation between CM and FD at the 1% significance level. Second, we considered the scenario in which both individual and time fixed effects were controlled for. Column 3 does not include control variables, while Column 4 includes all control variables. The regression coefficients in Columns 3 and 4 of Table 3 indicate that the negative correlation between CM and FD remains significant at the 1% level.

Table 3. Benchmark regression.

Variable	(1) FD	(2) FD	(3) FD	(4) FD
CM	-1.6051*** [0.0714]	-0.2791*** [0.0365]	-0.6035*** [0.0534]	-0.1188*** [0.0351]
FIRMSIZE		0.4850*** [0.0380]		0.7208*** [0.0801]
LEV		-13.8644*** [0.3058]		-14.6016*** [0.3607]
ROE		0.3955* [0.2146]		-0.1773 [0.1784]
TOBINQ		2.6431*** [0.0497]		2.5444*** [0.0447]

MGMTSHARE		-0.0034*		0.0011
		[0.0019]		[0.0032]
TOPSHARE		-0.0011		0.0018
		[0.0023]		[0.0036]
BOARDSIZE		-0.0243		-0.0535**
		[0.0248]		[0.0244]
INDDIR		-0.0082		-0.0119*
		[0.0072]		[0.0069]
Constant	5.0514***	-4.9013***	5.0667***	-9.3673***
	[0.0682]	[0.7972]	[0.0002]	[1.7841]
Firm_FE	No	No	Yes	Yes
Year_FE	No	No	Yes	Yes
N	38966	38966	38646	38646
Adj. R ²	0.0559	0.6705	0.6174	0.8203

Note: compiled by the authors.

The benchmark regression results show that the stronger the CM, the greater the risk of FD, further validating our basic assumptions and research conclusions. To further verify the robustness of the benchmark regression results, this paper uses Ohlson's (1980) method to calculate the O-score value and replaces the Z-score value for analysis. The higher the O-score, the greater the risk of FD. According to the results in column (1) of Table 4, there is a significant positive correlation between CM and O-score at a 1% significance level, indicating that the stronger the CM level, the higher the O-score value, and the greater the risk of FD. After replacing the explanatory variables, the test results still support our basic assumptions and conclusions.

Provincial financial development levels significantly affect credit supply and corporate financing. To this end, this paper measures the level of provincial financial development (FINANCE) by quantifying the proportion of total deposits and loans of financial institutions relative to regional gross domestic product (GDP). Based on this, the paper introduces the regional control variable 'Finance' and re-conducts the regression analysis between CM and FD. According to the results in the second column of Table 4, after incorporating the regional control variable, the impact of CM on FD remains significant at the 1% significance level, further supporting the original conclusion.

China launched the Loan Market Quoted Rate (LPR) reform in 2013. The LPR reform made bank lending rates more transparent and market-oriented, thereby reducing the real cost of corporate financing. In August 2019, the central bank's LPR replaced the traditional benchmark lending rate and became the main reference for banks' loan pricing. The central bank implemented an accommodative monetary policy, taking several reserve reductions and interest rate cuts, which systematically drove down corporate financing costs and brought corporate financing rates to multi-year lows in 2020. 2019 and 2020 are the years in which China's interest rate marketization reform will have the most direct and far-reaching impact on corporate financing costs. This paper considers the influence of special factors, excluding the two-year samples, and re-conducts regression analyses on the remaining samples.

From the coefficients of the regression results in column (3) of Table 4, CM significantly and negatively affects firms' FD at the 1% level, which still supports the assumptions and conclusions of the benchmark regression.

In summary, to further validate the reliability and robustness of the empirical results, this paper conducted multiple tests by replacing explanatory variables, adding control variables, and removing samples from abnormal years. The results show that these tests are consistent with the

Table 4. Robustness check.

Variable	(1) OScore	(2) FD	(3) FD
CM	0.0410*** [0.0155]	-0.1189*** [0.0351]	-0.1005*** [0.0381]
FIRMSIZE	-0.4383*** [0.0227]	0.7210*** [0.0802]	0.7228*** [0.0805]
LEV	8.3325*** [0.1054]	-14.5999*** [0.3597]	-14.6117*** [0.3757]
ROE	-4.2548*** [0.1130]	-0.1777 [0.1784]	-0.1837 [0.1970]
TOBINQ	-0.0843*** [0.0110]	2.5443*** [0.0447]	2.5211*** [0.0484]
MGMTSHARE	-0.0039*** [0.0011]	0.0011 [0.0032]	0.0018 [0.0032]
TOPSHARE	0.0001 [0.0011]	0.0018 [0.0036]	0.0009 [0.0038]
BOARDSIZE	-0.0020 [0.0085]	-0.0535** [0.0244]	-0.0474* [0.0251]
INDDIR	0.0009 [0.0022]	-0.0119* [0.0069]	-0.0106 [0.0071]
FINANCE		-0.0179 [0.1033]	
Constant	-2.0786*** [0.5157]	-9.3018*** [1.7976]	-9.4249*** [1.7817]
Firm_FE	Yes	Yes	Yes
Year_FE	Yes	Yes	Yes
N	32615	38646	32170
Adj. R2	0.8578	0.8203	0.8122

Note: compiled by the authors.

benchmark regression results, thereby further supporting the core assumptions and research conclusions of this paper.

CM often increases the cost of corporate financing, reducing firms' profitability and profit margins. At the same time, inefficient capital allocation puts firms at a disadvantage in market competition, thereby exacerbating the risk of FD. Firms may also increase leverage manipulation and over-indebtedness to bridge the financing gap in the case of CM, thereby exposing them to higher financial risks and significantly increasing the risk of FD. In view of the above discussion, two mechanism-testing models are proposed as follows:

5. Discussion

CM often increases the cost of corporate financing, reducing firms' profitability and profit margins. At the same time, inefficient capital allocation puts firms at a disadvantage in market competition, thereby exacerbating the risk of FD. Firms may also increase leverage manipulation and over-indebtedness to bridge the financing gap in the case of CM, thereby exposing them to higher financial risks and significantly increasing the risk of FD. In view of the above discussion, two mechanism-testing models are proposed as follows (2):

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \delta_i + \gamma_t + \varepsilon_{i,t} \quad (2)$$

where:

Y – the operating profit margin of firm i in year t ;
 β_0 – intercept;
 $\beta_1 \dots \beta_n$ – regression coefficients;
 $X_1 \dots X_n$ – explanatory variables;
 δ_i – the control firm's individual fixed effect;
 γ_t – the control years' time fixed effect;
 $\varepsilon_{i,t}$ – the standard error.

In this paper used the operating margin to represent the firm's profitability (Profit) and draw on the methodology of Xu et al. (2020) to calculate the firm's leverage manipulation value (Levm), which measures the level of leverage manipulation. CM significantly and negatively affects Profit at the 1% level, suggesting that CM cuts firms' profitability, as shown in column (1) of Table 5.

Table 5. Mechanism analysis.

Variable	(1) Profit	(2) Levm
CM	-0.0094*** [0.0014]	0.0423*** [0.0017]
FIRMSIZE	0.0202*** [0.0026]	-0.0143*** [0.0029]
LEV	-0.1384*** [0.0103]	-0.0597*** [0.0106]
ROE	0.8665*** [0.0194]	0.0769*** [0.0080]
TOBINQ	-0.0007 [0.0009]	0.0028*** [0.0010]
MGMTSHARE	0.0006*** [0.0001]	-0.0001 [0.0001]
TOPSHARE	0.0004*** [0.0001]	-0.0003* [0.0002]
BOARDSIZE	0.0007 [0.0011]	0.0013 [0.0012]
INDDIR	0.0002 [0.0003]	0.0007** [0.0003]
Constant	-0.3945*** [0.0606]	0.4074*** [0.0661]
Firm_FE	Yes	Yes
Year_FE	Yes	Yes
N	38646	32626
Adj. R^2	0.7123	0.4060

Note: compiled by the authors.

CM significantly and positively affects Levm at the 1% level, indicating that firms increase the level of Levm as the degree of CM rises, see column (2) of Table 5. The coefficients from the empirical regressions suggest that CM exacerbates the risk of FD through these two main mechanisms. Based on an analysis of industry factors of production characteristics, drawing on Yin et al. (2018), the sample firms are classified by industry as labor-intensive, technology-intensive, and asset-intensive. Among labor-intensive firms, the effect of CM on FD is not significant, as shown in column (1) of Table 6. The possible explanation is that labor-intensive firms are not asset-heavy or capital-intensive, invest less in fixed assets and large projects, and have the flexibility to adjust their operations and costs to cope with CM-related problems within certain limits. On the contrary, non-labor-intensive enterprises, especially high-tech or capital-intensive enterprises, are asset-

heavy and capital-intensive, with high demand for capital and funds, long-term fixed investments, and relatively inelastic adjustments to capital structure and capital demand, which will exacerbate the risk of FD when CM is generated. From column (2) of Table 6, it can be seen that CM has a significant effect on FD at the 1% level.

Table 6. Heterogeneity analysis.

Variable	(1)	Labour intensive FD	(2)	Non-Labour intensive FD
CM		-0.0447 [0.0686]		-0.1379*** [0.0410]
FIRMSIZE		0.9052*** [0.1514]		0.5665*** [0.0950]
LEV		-13.3579*** [0.6090]		-15.2676*** [0.4228]
ROE		-0.0074 [0.2694]		-0.3621 [0.2207]
TOBINQ		2.4988*** [0.0824]		2.6078*** [0.0530]
MGMTSHARE		-0.0016 [0.0069]		0.0007 [0.0036]
TOPSHARE		0.0102 [0.0067]		0.0006 [0.0043]
BOARDSIZE		-0.0061 [0.0334]		-0.0850*** [0.0317]
INDDIR		-0.0014 [0.0087]		-0.0195** [0.0091]
Constant		-14.9023*** [3.4139]		-5.2777** [2.1168]
Firm_FE		Yes		Yes
Year_FE		Yes		Yes
N		11991		26602
Adj. R ²		0.8029		0.8330

Note: compiled by the authors.

According to Yuan et al. (2021), the degree of industry regulation is used to classify industries as regulated or competitive. In regulated industries, the effect of CM on FD is insignificant, as shown in column (1) of Table 7.

Table 7. Heterogeneity analysis.

Variable	(1)	Regulated industries FD	(2)	Competitive industries FD
CM		-0.0947 [0.0780]		-0.1196*** [0.0391]
FIRMSIZE		0.8066*** [0.1472]		0.6673*** [0.0948]
LEV		-12.3122*** [0.7930]		-15.4166*** [0.4006]
ROE		0.2120 [0.3871]		-0.2892 [0.1982]
TOBINQ		2.4488*** [0.1261]		2.5686*** [0.0476]
MGMTSHARE		-0.0014 [0.0079]		0.0013 [0.0034]
TOPSHARE		0.0022 [0.0063]		-0.0009 [0.0045]
BOARDSIZE		-0.0668 [0.0410]		-0.0638** [0.0290]
INDDIR		-0.0194		-0.0127*

	[0.0159]	[0.0076]
Constant	-11.9168***	-7.7129***
	[3.3047]	[2.1295]
Firm_FE	Yes	Yes
Year_FE	Yes	Yes
N	8050	30550
Adj. R ²	0.7959	0.8256

Note: compiled by the authors.

The possible explanation is that regulated industries typically involve public infrastructure, public goods, or specialized operations. In sectors such as electricity, water, pharmaceuticals, telecommunications, iron and steel, and railways, the government typically controls market access, production qualifications, and pricing policies through government policies and policy support. At the same time, these firms generally receive government subsidies or pricing guarantees. Therefore, these firms can still rely on government support to alleviate their FD even if CM occurs. In competitive industries, however, the profit model of firms directly relies on free competition in the market, and due to the intense competition in the industry and the greater flexibility in capital allocation, the existence of CM can easily lead to higher operating costs, loss of competitive advantage, and exacerbate the risk of falling into FD.

6. Conclusion

This paper analyses the relationship between CM and corporate FD in a sample of Chinese-listed firms from emerging market economies for the period 2010-2023. The empirical results show that CM significantly increases the risk of FD. Meanwhile, the mechanism of influence between the two is explored in depth. Firstly, CM leads to inefficient use of capital and higher financing costs, which directly weaken firms' profitability. Meanwhile, in the case of an irrational capital structure, firms often resort to increasing leverage to achieve specific goals, leading to long-term reliance on leverage manipulation and a substantial increase in firms' financial risk. Further heterogeneity analysis reveals that the impact of CM on firms' FD varies across samples with different characteristics, such as industry production factors and the degree of industry regulation.

In summary, to further prevent and resolve the risk of FD of firms and optimize the efficiency of financial resource allocation. The competent authorities should further foster a healthy market and fair financial environment, and create a favorable business environment for enterprise development, production, and operations. Firstly, continue to optimize the financial system, provide a full range of financial services, encourage financial institutions to refine and diversify their services, and increase support for small and medium-sized enterprises (SMEs) and private firms, thereby injecting new vitality into the sustainable development of firms. Secondly, on this basis, further optimization of the multi-tiered capital market structure, promotion of financial innovation, expansion of financing channels, and diversification of financing tools will provide important support for sustainable economic development. Finally, firms should reasonably design their capital structures, moderately control leverage risks, and improve capital utilization efficiency. At the same time, they should strengthen their financial risk management systems to respond to uncertainties in the external environment and achieve long-term sustainable development.

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