



Research article

Market power, internal and external monitoring, and firm distress in the Chinese market

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Abstract: This research revealed the factors that cause firm distress in the Chinese market. The stock exchange-listed firm samples are classified as moderate or severe distressed firms if they receive a special treatment warning from stock exchanges due to continuous negative net loss or are suffering from negative equities. By applying ordinary least square and logit regressions to the 2015–2022 data sample, the results showed that market power and internal and external monitoring significantly affect the likelihood of firm distress. Interestingly, debt only negatively affects a firm's earnings, has no impact on moderate firm distress, and reduces the likelihood of falling into severe distress. State-owned enterprises (SOEs) receive government support and are therefore less likely to be distressed, in contrast to family-owned firms. The recovery results confirmed that SOEs are easier to recover than family-owned firms. The ability to repay debt increases credibility and is a good signal of recovery. We differentiated from past discussions that focused on earning management and business failure. Our research contributes to the literature by analyzing firm distress and recovery from market power and monitoring, which are not well discussed with observable evidence. These findings could be helpful for both corporate and regulatory policy decision-making.

Keywords: firm distress; market power; debt; monitor; state-owned enterprise; family-owned firms

JEL Codes: G32, G33, G34

1. Introduction and background

Distressed firms are firms suffering from financial difficulties. Most distressed firms underperform compared to their peer competitors in the same industry because their products do not help to boost their sales. One of the most common reasons for that is that products are incorrectly priced compared with other competitors (Zhang, 2015). In addition to product competition, operation planning could increase the weakness of the firm if management incorrectly estimates the sales status and short-term future business environment (Leverly & Grace, 2012).

One typical consideration when planning for firm operations is whether the firm operates efficiently. If the firm is successful, it usually has greater market power, which allows the firm to quickly turn raw material into finished inventory (Ukaegbu, 2014). Once the inventory is sold, the cash can be quickly and safely collected. Large firms and firms with large market shares can usually pay their suppliers smaller amounts and ask their customers to finish the cash delivery process faster. Such an advantage indicates greater efficiency and could increase profitability (Bhattacharya et al., 2022). On the other hand, large firms could experience more complicated agency problems due to the increased complexity of their structure, which lowers their efficiency and decreases their profitability.

Some external factors could significantly affect the firm and make it distressed, for example, the pandemic and other external shocks (Nuta et al., 2024). The internal inefficient working capital management and inappropriate capital structures could also lead to firm distress (Habib & Kayani, 2022). Most managers believe in the optimal capital structure theory, but they tend to increase the operating leverage and start to deviate from the optimal structure, seeking higher returns when they believe that the future market is optimistic (Novy-Marx, 2011). A higher operating leverage could significantly increase the return on equity. Unfortunately, the cost of debt could increase with the level of the operating leverage, and a higher leverage causes a greater cost of debt (Opler & Titman, 1994). The high interest cost could be a heavy financial burden leading to net loss.

Since the Chinese market experiences fast growth and has a large number of exchange listed firms, we chose it as a candidate for exploring firm distress factors. Also, even stock exchange-listed Chinese firms still rely heavily on banks and other financial institutions to provide liquidity rather than directly issuing bonds in the financial market (Zou & Adams, 2008). Firms' relationships, leverage levels and cost of debts, monitoring covenants, and internal controls provide insights into the causality of firm distress (Poncet et al., 2010).

This paper contributes to the current literature in the following ways. First, we use trade credit as a market power indicator to demonstrate how market power influences the likelihood of firm distress. We differ from other studies by involving different designs and concepts. Most of the current discussion focuses on how the event or operation causes a share price crash, which is commonly used as an indicator of distress. Second, we explore the heterogeneity of how debt affects a firm by providing empirical evidence showing that debt can affect a firm differently at different levels of distress. Debts

could perform external monitoring functions, but the interest burden could weaken the distress of the firm. Third, our findings cover both distress and the recovery from the distress to provide a full picture.

This paper is organized as follows: Section 2 explains the theoretical basis of the research. Section 3 discusses the literature on firm distress and states our hypotheses. Section 4 describes the Chinese firm panel data. Section 5 explains the ordinary least squares and the logit methodologies to test our multiple hypotheses. Section 6 reports the results and discusses implications. Lastly, Section 7 concludes.

2. Theoretical framework

This research discusses the possibility of distress for firms from the bargaining and market power perspective. Based on the agency problem, the paper extends to the internal and external monitoring effects that prevent distress. Further, the different natures of firms, such as state-owned enterprises (SOEs) compared with private firms, result in very different situations.

2.1. *The Porter's five forces*

Many reasons could cause a firm to fall and experience financial or performance distress. Most commonly, firms experience strong competition in the industry or other less differentiated products replace their products, so the net income significantly decreases. The earlier theory of Porter's five forces analyzes threats to a firm's survivorship (Grundy, 2006). The buyer and the supplier's bargaining and marketing power influence the speed of the cash collections after the firm renders its service (Chang et al., 2019). Firms with strong market power could quickly convert the receivables into cash and reinvest. Such high turnover ensures profitability and increases the firm's efficiency with reinvestments. Low turnover decreases efficiency, and longer collection times increase the receivable collection uncertainties.

2.2. *Agency and incentive*

It is also common for firms to experience distress because of blind expansion. From the aspect of agency and monitoring, firms with expansion constraints or debt contracts with negative covenants would experience a higher level of monitoring. How to efficiently align the managers' interests with the shareholders and efficiently control the agency problem is well discussed, but there is no consensus solution. Some studies show that performance-related compensation contracts could motivate the manager's incentive, but since performance is always measured by return on equity (ROE), the shortage in such contracts could cause unethical buybacks or excessive dividends. Managers try to reduce the equity size to increase the ROE, which deviates from the original goal of such performance-related contracts (Cook & Zhang, 2022). The other common option is to include the firm shares as part of the manager's compensation. Such compensation makes the manager a shareholder, so they should have interests and incentives similar to those of other shareholders. When the firm's shares significantly impact the manager's wealth, it decreases the manager's asset diversification benefits, which causes managers to have an incentive to lower their holding positions (Babenko, 2009). If managers sell the shares, the interest alignment effect becomes less significant.

Based on Porter's analysis, this research connects market power and the distress. Further, the study focuses on the different monitoring effects. It demonstrates that internal and external monitors, which efficiently reduce agency costs, would also reduce the likelihood of firm distress.

3. Literature review and hypotheses

The firm distress could be a result of multiple reasons. It could be poor management, inappropriate strategy, inefficient firm capital structure, economic effect, market competition among similar products, and other policy or industry reasons. Most of those reasons could be categorized as market and management agency reasons, which could be addressed if appropriate internal and external monitoring is implemented. Table 1 shows the recent research pathways and the focus of firm distress research.

Table 1. Chronological review of recent firm distress studies.

Focus of research	Year	Authors
The business failure and firm distress	2001	Turetsky & McEwen
Business strategy, distress, and recovery	2001	Sudarsanam & Lai
Earning management	2007	Charitou et al.
Inter-firm distress linking along supply chain	2008	Hertzel et al.
Agency problem and strategy	2012	Leverly & Grace
Research and development causes dress	2015	Zhang
Corporate social responsibility (CSR) and stress	2019	Al-Hadi et al.
Firm bank relation	2023	Álvarez et al.

3.1. Market power and distress

The accounts receivable represents the negotiation ability and marketing positioning between the firm and its customers (Fabbri & Klapper, 2016). When a firm has stronger market power, accounts receivable usually have a shorter period, and greater turnover helps the firm increase profitability and reduce collection uncertainty (García-Teruel & Martínez-Solano, 2010). A quick receivable turnover increases cash flow and frees capital (Clinch et al., 2025). The firm can increase the speed of production and reinvestments. Some firms choose to trade their accounts receivable with financial institutions on discount to meet their liquidity goals (Chen et al., 2023). Compared with accounts receivable, firms with greater market power pay their suppliers more slowly. A longer payable term would allow the firm to have stronger cash flow and improve liquidity (Emery & Marques, 2011). Similar to accounts receivable, but in the opposite direction, longer-term accounts payable also improve a firm's profitability and market value (Nam & Uchida, 2019). Net trade credit refers to accounts receivable minus accounts payable and is used to measure negotiation market power. The following hypotheses are proposed.

H1. The negotiation market power is positively associated with earnings and profitability.

3.2. Debt, interest burned, and creditors monitoring

Long-term debt is usually an interest-bearing debt borrowed from financial institutions. One of the typical financial institutions is the bank; the debt is used to purchase machines and fixed assets, or it can be used as a credit line to pay for raw materials to the supplier. The interest in long-term debt is largely affected by monetary policies and macroeconomic status (Pianeselli & Zaghini, 2014). The large interest cost could be a financial burden to any firm, especially when the firm incorrectly estimates its operation and market sales (Zulkehibri, 2015). Some firms use short-term debt to finance long-term assets, but such mismatches could cause liquidity problems when debt rollover is needed (Chen et al., 2023; Kahl et al., 2015). When firms suffer loss, the loan increases the loss, and interest is an extra burden that causes financial distress and increases the likelihood of firm bankruptcy. On the other hand, when banks issue loans, they carefully check the firm's operation and often send their analysts to perform a firm visit. Such screening lowers the possibility of financial fraud (Lee & Sharpe, 2009). Banks also use constrained covenants in lending contracts, which alleviates managers' agency problems and improves accounting qualities (Chen et al., 2022). They have access to detailed financial information not available to external parties (Ahn & Choi, 2009). Investors could freeride such visits, research performed, and bank monitoring since that information is not publicly available in the market (Miarka & Tröge, 2005). After issuing loans, banks maintain continuous monitoring to ensure that the firms can pay back the loan. Such information analysis and continuous monitoring are expected to reduce underperformance (Gustafson et al., 2021). One particular feature of the Chinese market is that banks usually ask firms to provide collateral. More conservative firms with high operating quality are required to provide less collateral; the opposite is also true for distressed firms (Chen et al., 2013). Appropriate covenants and collaterals increase banks' incentive to monitor (Rajan & Winton, 1995), but when high collateral is too large, it may weaken the monitoring incentive that banks possess since collateral is usually much greater than the value of loans, and banks can seize collateral when bankruptcy occurs or when firms become unliquidated (Wang & Xia, 2014). We build the two following hypotheses on the above literature' findings:

H2a. Long-term debt increases the financial burden and therefore increases the likelihood of financial distress.

H2b. Long-term debt increases external monitoring and therefore decreases the likelihood of financial distress.

3.3. Internal and external monitoring

Shareholders are an important group of firm stakeholders. They not only share the wealth interest of the firm but also monitor the firm's development and can participate in decision-making if they possess timely information and sophisticated knowledge to process the information (Change et al., 2016). Institutional investors have similar firm management experience and possess such knowledge. Significant institutional ownership allows institutional investors to perform more internal monitoring (Elyasiani & Jia, 2010; Navissi & Naiker, 2006). Auditing provides accounting information verification. A higher level of auditing quality could reveal potential mismatches between what is

provided by management and what is shown in reality (Safdar et al., 2019). With respect to international standards, even if there is a debate about whether the Big Four auditing firms are more knowledgeable about auditing business and are more likely to point out this concern, a firm that relies on Big Four auditing has confidence in its management and operating performance outcomes (Boone et al., 2010). We test the hypotheses that the number of institutional investors and the auditing degree matter to explaining the likelihood of a distress situation for Chinese firms, as below.

H3. Institutional ownership reduces the likelihood that a firm will be distressed.

H4. Higher auditing quality reduces the likelihood of firm distress.

3.4. Firm heterogeneities

The Chinese stock exchange market has many state-owned enterprises (SOEs). Many studies argue that SOEs experience lower efficiency problems, but they are the most suitable organizations for society service rendering rather than profit maximization firms (Córdoba-Pachón et al., 2014; Tang et al., 1999; Zhu et al., 2016). SOEs often receive subsidies to compensate for regulated prices and nonprofit maximization but provide more social welfare contributions (Han et al., 2021). Subsidy support could include direct financial help or policy support and guidance (Li & Wu, 2022). Some support could be indirect. Governments may provide tax exemptions, reduce tax charges, and ask banks to provide loan funding support when SOEs are experiencing liquidity problems (Wang & Shan, 2013). Such local government intervention creates heterogeneous relationships between bank SOEs and bank private firms (Yeung, 2009). The hypotheses below address the ownership type effect on the likelihood that firms enter financial distress.

H5a. SOEs are less likely to be financially distressed.

H5b. Personal firms are more likely to be financially distressed.

H6a. SOEs are more likely to recover from financial distress.

H6b. Personal firms are more likely to recover from financial distress.

3.5. Debt and recovery

From the aspect of recovering from financial distress, the effect should be immediate. Monitoring clearly does not have an immediate effect on alleviating the financial burden and seeking financial reforms (Sudarsanam, & Lai, 2001). A lower debt level and less interest could improve a firm's profitability and reduce the likelihood of experience loss. Interest coverage, especially interest coverage ratios and liquidity measures, is an important indicator of the financial health status of firms (Farooq et al., 2018). A lower debt amount could also properly prepare the firm for any market shocks. A smaller financial burden could indicate easier reforms or a change in the firm's strategies when needed, leading to our last hypothesis below.

H7. Meeting debt obligations and debt repayments signal distress recovery.

4. Data

Data for this study were collected from the China East Money database. The sample periods are between 2015 and 2022. We first selected all firms listed in both Shanghai and Shenzhen stock exchange before 2015 and then excluded banks and other financial institutions or any firm from the financial industry, because the financial sector follows different accounting systems. If the firm has ever experienced a continuous two-year loss or at any time had negative equity, the stock exchange puts a “special treatment (ST)” mark before the name of the stock. If the condition is believed to be worse, the firm experiences a continuous three-year loss, and the “*ST” mark is used to warn of the delist risk. We created dummy variables for financially distressed firms (“ST” firms) and severely financially distressed firms (“*ST”) to the firm year if the firm received a special treatment mark from the stock exchange. There were 82 “ST” cases and 357 “*ST” cases out of a total of 19,099 firm-year observations. Since the financial market continued during the COVID pandemic, the sample does not exclude this period. The variable “power” experienced one missing variable, so it had 19,098 observations. The firm characteristics and other performances were then matched with the distress dummy variables. Table 1 lists the abbreviations of the variables and the variable treatments. Table 2 shows the general statistics.

Table 2. Variable definitions.

Variable	Symbol	Variable treatment
Earning per a share	EPS	The firms’ earning per a share, directly observable from database
Delist from stock exchange special warning	ST*	Directly observable from database
Special treatment for the firm experience over 2 continuous years loss	ST	Directly observable from database
Recover from *ST	RST*	Directly observable from database
Recover from ST	RST	Directly observable from database
The firms market power reflected by account receivable and payable	Power	(Account receivable over one year—account payable)/total revenue multiply by 100
Equity over total asset	Equity	The equity percentage of the firm capital structure
Percentage of long-term debt	Debt	Long-term debt/total debt
Gross income margin	Gross	Directly observable from database
Fixed asset percentage	Asset	Fix asset/total asset multiply by 100
Number of institutional investors per firm	Inst	Directly observable from database
Big Four auditing firms	Four	Dummy variable equals to 1 if the firm auditing is done by Big Four auditing firms
State-owned enterprise	SOE	Dummy variable equals to 1 if the firm is state-owned enterprise
Family-owned enterprise	Family	Dummy variable equals to 1 if the firm is family-owned firm
Current ratio	Current	Current asset/current liability
Earnings before interest and depreciation over interest multiplier	EBITINT	Directly observable from database
Last year return on equity	ROE	Last year net income divided by last year equity
The beta in the CAPM model	BETA	Beta estimated in the CAPM model, which represents the reward of taking systematic risks

Table 3. General statistics.

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
EPS	19,099	0.288	1.056	-16.460	0.047	0.470	49.930
ST*	19,099	0.019	0.135	0	0	0	1
ST	19,099	0.004	0.065	0	0	0	1
RST*	19,099	0.018	0.134	0	0	0	1
RST	19,099	0.004	0.061	0	0	0	1
Power	19,098	-4.731	194.653	-24,550.790	-10.059	9.499	520.572
Debt	19,099	29.876	22.610	-80.202	9.285	47.058	96.374
Equity	19,099	53.142	133.239	-17,734.550	39.741	70.532	526.044
Gross	19,099	27.189	18.789	-403.004	14.726	36.299	98.511
Asset	19,099	21.159	16.693	0.000	8.200	30.483	295.993
Current	19,099	2.136	2.533	0.000	1.078	2.332	80.664
EBITINT	19,099	48.121	1,084.725	-13,836.680	0.000	12.777	85,219.270
ROE	19,099	1.959	148.877	-15,824.420	1.993	11.198	1,104.102
Four	19,099	0.068	0.252	0	0	0	1
SOE	19,099	0.459	0.498	0	0	1	1
Family	19,099	0.503	0.500	0	0	1	1
BETA	19,099	0.927	0.399	-7.177	0.708	1.183	5.047

Note: Annual listed Chinese firm data from 2015 to 2022, retrieved from China East Money. Over the 8-years period, 82 cases were regarded as “financially distressed” and 357 cases as “severely financially distressed”. In 2015, there were 2401 firms; this number shrank due to mergers and delisted companies, among other reasons.

5. Methodologies

The panel data regression with fixed and time control is used to analyze the causality relationship between the independent and dependent variables. The interests focus on how the market power affects a firm’s performance and further influences the likelihood of firm distress. Further, the analysis focuses on the likelihood of distress analyzed by the logit and probit regressions, and how internal and external monitoring may alleviate the possibility of distress.

5.1. Market power, debt, and earnings

The first test focuses on how market power affects earnings. As mentioned in the early sections, market power is indicated by trade credits, which are accounts receivable minus accounts payable. If the firm pays suppliers more slowly but experiences faster cash collection from customers, it shows high efficiency and greater market power. Equation (1) shows the relationship between market power and earnings, testing hypothesis H1. Some past research also uses the capital asset pricing model (CAPM) to discover the systematic and unsystematic risks. Following the method used by Demydyuk et al. (2015), the CAPM beta of each firm in the panel data is estimated. Then the term “BETA” from the CAPM replaces “EPS” as the dependent variable to measure how the market power affects the systematic risk.

$$EPS_{i,t} = \beta_0 + \beta_1 Power_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \beta_7 [Power_{i,t} * Current_{i,t}] + \sum IND + \sum Year + \varepsilon_{i,t} \quad (1)$$

The capital structure, especially the debt level, could significantly affect the interest burden, and the likelihood of future debt financing could affect a firm's liquidity. In contrast to market power, debt covenants may improve efficiency and reduce agency problems; therefore, debt may have a more complicated influence on earnings. Equation (2) reflects such a relationship between debt and earnings as stated by hypotheses H2a and H2b.

$$EPS_{i,t} = \beta_0 + \beta_1 Debt_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \beta_7 [Debt_{i,t} * Gross_{i,t}] + \sum IND + \sum Year + \varepsilon_{i,t} \quad (2)$$

5.2. Likelihood of distress

The earnings could properly reflect the firm's operating conditions. In this section, we change the method to show the robustness of the market power and debt measure. Since the “*ST” reflects a worse operating condition compared with the “ST” distressed firms, we further explore whether there are any heterogeneous relationships between the two independent variables of market power, debt levels, and the dependent variable of firm distress. Instead of ordinary least squares regression, we use logit regression to confirm the previous findings. Equations (3)–(6) test hypotheses H1, H2a, and H2b.

$$ST_{i,t} = \beta_0 + \beta_1 Power_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \beta_7 [Power_{i,t} * Current_{i,t}] + \varepsilon_{i,t} \quad (3)$$

$$ST_{i,t}^* = \beta_0 + \beta_1 Power_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \beta_7 [Power_{i,t} * Current_{i,t}] + \varepsilon_{i,t} \quad (4)$$

$$ST_{i,t} = \beta_0 + \beta_1 Debt_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \beta_7 [Debt_{i,t} * Gross_{i,t}] + \varepsilon_{i,t} \quad (5)$$

$$ST_{i,t}^* = \beta_0 + \beta_1 Debt_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \beta_7 [Debt_{i,t} * Gross_{i,t}] + \varepsilon_{i,t} \quad (6)$$

5.3. Internal and external supervision

Shareholders and auditors usually monitor managers' performance and decisions. Most individual investors do not possess the professional knowledge to monitor, but institutional investors are more educated, and individual investors may freeride the institutional shareholder's monitoring if there are significant shares held by institutional investors. Auditors are important external parties that take responsibility for verifying manager performance. Having managers hire Big Four auditing firms to verify their management outcomes is a positive signal to external investors from past research, indicating that managers' performance quality is high. Therefore, the higher shares owned by institutional investors and high-quality auditing are expected to decrease the likelihood of distress. Equations (7)–(10) test those relationships as stated by hypotheses H3 and H4.

$$ST_{i,t} = \beta_0 + \beta_1 Inst_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (7)$$

$$ST_{i,t}^* = \beta_0 + \beta_1 Inst_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (8)$$

$$ST_{i,t} = \beta_0 + \beta_1 Four_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (9)$$

$$ST_{i,t}^* = \beta_0 + \beta_1 Four_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (10)$$

5.4. Firm heterogeneity and distress likelihood

Since firm background could affect external support, SOEs are more likely to receive more external help, and they indeed assume some of their social obligations; thus, SOEs are expected to be less likely to be distressed. Compared with SOEs, family-owned firms suffer more agency problems and are more likely to make aggressive operation decisions; they are also more likely to default when managers make incorrect decisions. Equations (11)–(14) test these relationships as stated by hypotheses H5a, H5b, H6a, and H6b.

$$ST_{i,t} = \beta_0 + \beta_1 SOE_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (11)$$

$$ST_{i,t}^* = \beta_0 + \beta_1 SOE_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (12)$$

$$ST_{i,t} = \beta_0 + \beta_1 Family_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (13)$$

$$ST_{i,t}^* = \beta_0 + \beta_1 Family_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (14)$$

5.5. Recovery and firm features

As a robustness check of the previous section, we also test which firms are more likely to recover from both “ST” distress and the more severe “*ST” distress status. SOEs with previous expectations are less likely to experience distress, but family-owned firms are more likely to experience distress; thus, a similar logic applies here. It is expected that SOEs are more likely to recover, and family-owned firms are less likely to recover. Equations (15)–(18) show such a relationship as stated by hypotheses H5a, H5b, H6a, and H6b.

$$RST_{i,t} = \beta_0 + \beta_1 SOE_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (15)$$

$$RST_{i,t}^* = \beta_0 + \beta_1 SOE_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (16)$$

$$RST_{i,t} = \beta_0 + \beta_1 Family_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (17)$$

$$RST_{i,t}^* = \beta_0 + \beta_1 Family_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + \varepsilon_{i,t} \quad (18)$$

5.6. Market power and debt influence on recovery

The propensity score match method is used to create a control group, which includes firms suffering losses but not yet being marked as “ST”, or marginally distressed, to test how market power and debt affect the likelihood of distress recovery. Three factors are used to create such a control group. For the “RST” recovery test, the control group is matched by considering “ST”, last year return on equity (ROE), and last year earnings per share (EPS). The logic is that, except for very few firms, most distressed-recovered firms do not receive “ST” and remove “ST” in the same year. Since the STs in the treatment group are almost all zero, using it as the Propensity Score Matching (PSM) matching criterion, it matches the stocks not yet marked as “STs” but that suffer low income and revenue. The same logics apply to the control group of “RST*”, except “ST*” is used rather than “ST”. Equations (19)–(22) test this relationship. The debt level is expected to be a significant influential factor.

$$RST_{i,t} = \beta_0 + \beta_1 Power_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + ROE_{i,t-1} + \varepsilon_{i,t} \quad (19)$$

$$RST_{i,t}^* = \beta_0 + \beta_1 Power_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + ROE_{i,t-1} + \varepsilon_{i,t} \quad (20)$$

$$RST_{i,t} = \beta_0 + \beta_1 Debt_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + ROE_{i,t-1} + \varepsilon_{i,t} \quad (21)$$

$$RST_{i,t}^* = \beta_0 + \beta_1 Debt_{i,t} + \beta_2 Equity_{i,t} + \beta_3 Gross_{i,t} + \beta_4 Asset_{i,t} + \beta_5 Current_{i,t} + \beta_6 EBITINT_{i,t} + ROE_{i,t-1} + \varepsilon_{i,t} \quad (22)$$

6. Results

6.1. Market power, debt, and earnings

Table 4 shows the influence of market power and debt on earnings. In Columns (1) and (2), both coefficients of market power show a negative contribution to earnings. We define market power as accounts receivable minus accounts payable divided by revenue, so a slower collection from consumers and faster payment to suppliers could negatively affect earnings. A longer uncollected period from consumers increases the likelihood of bad debt, which decreases earnings. Hypothesis 1 is supported by the evidence. The debt-to-earning influence shows heterogeneity. In Column (3), debt makes a negative contribution to earnings, and the gross margin makes a positive contribution to earnings. The interpretations are that more profitable firms have less external debt, and interest may slightly reduce earnings as well. In Column (4), the interaction term between debt and gross margin shows interesting results. When the firm suffers a loss, the gross margin is negative; then, the gross margin has a direct negative contribution to earnings, but the negative coefficient of the debt and gross margin interaction term alleviates the negative effect of the gross margin on earnings. These results show that external creditors impose debt covenants, and that external monitoring helps the firm to further fall into distress, but this understanding requires further verification. The relationships between “Power” and the CAPM beta are shown in column (5) and (6). After controlling the time and industry

effects, the “Power” significantly increases the CAPM beta, which indicates the higher systematic risk. Such result is in line with the finding that “Power” has a negative impact on earnings in the previous tests.

Table 4. Effects of market power and debt on earnings.

	<i>Dependent variable:</i>					
	EPS			BETA		
	(1)	(2)	(3)	(4)	(5)	(6)
Power	-0.0004*** (0.0001)	-0.0004*** (0.0001)			0.00004 (0.00003)	0.0001* (0.00003)
Debt			-0.004*** (0.0004)	-0.0005 (0.001)		
Equity	0.0004*** (0.0001)	0.0003** (0.0001)	-0.0002*** (0.0001)	-0.0002*** (0.0001)	-0.00002 (0.00004)	-0.00004 (0.00004)
Gross	0.015*** (0.0004)	0.015*** (0.0004)	0.015*** (0.0004)	0.019*** (0.001)	0.0003** (0.0001)	0.0003** (0.0001)
Asset	-0.002*** (0.001)	-0.002*** (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.0003* (0.0002)	-0.0003* (0.0002)
Current	-0.003 (0.003)	-0.001 (0.003)	-0.011*** (0.003)	-0.012*** (0.003)	-0.001 (0.001)	-0.0001 (0.001)
EBITINT	0.00001** (0.00001)	0.00001** (0.00001)	0.00001* (0.00001)	0.00001* (0.00001)	0.00000 (0.00000)	0.00000 (0.00000)
Power*Current		-0.0001 (0.0001)				-0.00004 (0.00002)
Debt*Gross				-0.0001*** (0.00002)		
Constant	-0.096* (0.053)	-0.098* (0.053)	0.063 (0.054)	-0.033 (0.055)	1.102*** (0.015)	1.101*** (0.015)
Observations	19,098	19,098	19,099	19,099	19,098	19,098
R ²	0.078	0.078	0.083	0.086	0.475	0.475
Adjusted R ²	0.076	0.076	0.082	0.085	0.474	0.474
Residual std. error	1.014 (df = 19068)	1.014 (df = 19067)	1.012 (df = 19069)	1.010 (df = 19068)	0.289 (df = 19068)	0.289 (df = 19067)
F statistic	55.459*** (df = 29; 19068)	53.682*** (df = 30; 19067)	59.585*** (df = 29; 19069)	59.763*** (df = 30; 19068)	594.046*** (df = 29; 19068)	574.356*** (df = 30; 19067)

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

Table 5. Market power and likelihood of distress.

	<i>Dependent variable:</i>			
	ST		ST*	
	(1)	(2)	(3)	(4)
Power	0.008*** (0.002)	0.010*** (0.002)	0.009*** (0.001)	0.012*** (0.001)
Equity	-0.011*** (0.003)	-0.013*** (0.003)	-0.012*** (0.002)	-0.016*** (0.002)
Gross	-0.013** (0.005)	-0.011** (0.005)	-0.020*** (0.003)	-0.019*** (0.003)
Asset	-0.007 (0.007)	-0.006 (0.007)	0.008*** (0.003)	0.009*** (0.003)
Current	0.005 (0.051)	0.033 (0.048)	0.020 (0.022)	0.053** (0.022)
EBITINT	-0.0002 (0.0002)	-0.0002 (0.0002)	-0.0001 (0.0002)	-0.0001 (0.0002)
Power*Current		-0.003*** (0.001)		-0.003*** (0.0004)
Constant	-4.475*** (0.246)	-4.465*** (0.245)	-3.087*** (0.134)	-3.013*** (0.136)
Observations	19,098	19,098	19,098	19,098

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

Table 5 and Table 6 present the results of the robustness test by changing the regression methods between market power, debt, and the likelihood of firm distress. The coefficients of lack of market power in Table 5 are all significant and positive for both “ST” and “ST*”. Low market power increases the likelihood of being distressed. In Table 6, debt does not show a significant positive contribution to increasing the likelihood of distress. For more severe distress, debt reduces the likelihood of distress. This evidence confirms the results in Table 4; debt could lower earnings, but there is no clear evidence that higher debt directly increases the likelihood of firm distress. Debt actually reduces the likelihood of severe distress. This is evidence that creditors monitor firm performance, lower agency concerns, and increase firm efficiency. Table 7 and Table 8 use the probit regression to confirm the findings in Table 5 and Table 6. The interest variable market power has the same sign, which shows the robustness of the original test results.

Table 6. Debt and distress likelihood.

	<i>Dependent variable:</i>			
	ST		ST*	
	(1)	(2)	(3)	(4)
Debt	-0.005 (0.006)	-0.005 (0.008)	-0.009*** (0.003)	-0.009** (0.004)
Equity	0.0001	0.0001	0.0002	0.0002

Continued on next page

	<i>Dependent variable:</i>			
	ST		ST*	
	(1)	(2)	(3)	(4)
Gross	(0.0002) -0.013*** (0.005)	(0.0002) -0.013 (0.009)	(0.0001) -0.019*** (0.003)	(0.0001) -0.019*** (0.004)
Asset	-0.007 (0.007)	-0.007 (0.007)	0.008*** (0.003)	0.008*** (0.003)
Current	-0.073 (0.076)	-0.073 (0.076)	-0.071* (0.037)	-0.071* (0.037)
EBITINT	-0.0002 (0.0002)	-0.0002 (0.0002)	-0.0001 (0.0001)	-0.0001 (0.0001)
Debt*Gross		-0.00000 (0.0002)		-0.00001 (0.0001)
Constant	-4.723*** (0.305)	-4.725*** (0.344)	-3.296*** (0.151)	-3.302*** (0.164)
Observations	19,099	19,099	19,099	19,099

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

Table 7. Market power and likelihood of distress (Probit).

	<i>Dependent variable:</i>			
	CST		CSTstar	
	(1)	(2)	(3)	(4)
Power	0.002*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.004*** (0.001)
Equity	-0.003*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.006*** (0.001)
Gross	-0.005** (0.002)	-0.005** (0.002)	-0.008*** (0.001)	-0.008*** (0.001)
Asset	-0.002 (0.002)	-0.002 (0.002)	0.003** (0.001)	0.003** (0.001)
Current	-0.0004 (0.018)	0.011 (0.017)	0.006 (0.009)	0.022** (0.010)
EBITINT	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.00005 (0.0001)	-0.00004 (0.0001)
Power*Current		-0.001*** (0.0003)		-0.001*** (0.0002)
Constant	-2.316*** (0.094)	-2.306*** (0.097)	-1.743*** (0.060)	-1.709*** (0.060)
Observations	19,098	19,098	19,098	19,098

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

Table 8. Debt and distress likelihood (Probit).

	<i>Dependent variable:</i>			
	CST		CSTstar	
	(1)	(2)	(3)	(4)
Debt	-0.002 (0.002)	-0.001 (0.003)	-0.003*** (0.001)	-0.003** (0.002)
Equity	-0.00003 (0.0001)	-0.00003 (0.0001)	0.00003 (0.0001)	0.00003 (0.0001)
Gross	-0.005** (0.002)	-0.004 (0.003)	-0.008*** (0.001)	-0.008*** (0.002)
Asset	-0.002 (0.002)	-0.002 (0.002)	0.003*** (0.001)	0.003*** (0.001)
Current	-0.017 (0.022)	-0.017 (0.023)	-0.018 (0.013)	-0.019 (0.013)
EBITINT	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)
Debt*Gross		-0.00003 (0.0001)		-0.00002 (0.0001)
Constant	-2.394*** (0.105)	-2.413*** (0.121)	-1.816*** (0.061)	-1.826*** (0.069)
Observations	19,099	19,099	19,099	19,099

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

6.2. Internal and external supervision

Table 9. Likelihood of supervision and distress.

	<i>Dependent variable:</i>			
	ST		ST*	
	(1)	(2)	(3)	(4)
Inst	-0.017*** (0.005)		-0.012*** (0.003)	
Four		-1.757* (1.007)		-1.325*** (0.383)
Equity	0.0001 (0.0002)	0.0001 (0.0002)	0.0002* (0.0001)	0.0002 (0.0001)
Gross	-0.013*** (0.005)	-0.013*** (0.005)	-0.020*** (0.003)	-0.019*** (0.003)
Asset	-0.006 (0.007)	-0.008 (0.007)	0.007** (0.003)	0.006** (0.003)
Current	-0.072	-0.062	-0.047	-0.043

Continued on next page

	<i>Dependent variable:</i>			
	ST (1)	(2)	ST* (3)	(4)
EBITINT	(0.073) -0.0002 (0.0002)	(0.071) -0.0002 (0.0002)	(0.033) -0.0001 (0.0002)	(0.033) -0.0001 (0.0002)
Constant	-4.313*** (0.299)	-4.811*** (0.252)	-3.171*** (0.151)	-3.524*** (0.127)
Observations	19,099	19,099	19,099	19,099

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

Shareholders' supervision as internal monitoring and auditing as external monitoring are expected to both efficiently reduce the likelihood of a firm being distressed. The results are reported in Table 9. Both institutional ownership and relying on Big Four auditing firms have significant negative coefficients on both moderate and severe distress. Internal and external monitoring can efficiently reduce the likelihood of distress. Hypotheses H3 and H4 are accepted.

6.3. Firm types and distress likelihood

Table 10. Firm type and distress.

	<i>Dependent variable:</i>			
	ST (1)	(2)	ST* (3)	(4)
SOE	-0.784*** (0.247)		-0.053 (0.110)	
Family		0.813*** (0.241)		0.060 (0.109)
Equity	0.0001 (0.0002)	0.0001 (0.0002)	0.0002* (0.0001)	0.0002* (0.0001)
Gross	-0.014*** (0.004)	-0.014*** (0.004)	-0.020*** (0.003)	-0.020*** (0.003)
Asset	-0.006 (0.007)	-0.006 (0.007)	0.006** (0.003)	0.006** (0.003)
Current	-0.076 (0.074)	-0.077 (0.075)	-0.038 (0.032)	-0.038 (0.032)
EBITINT	-0.0002 (0.0002)	-0.0002 (0.0002)	-0.0001 (0.0002)	-0.0001 (0.0002)
Constant	-4.551*** (0.268)	-5.331*** (0.302)	-3.551*** (0.138)	-3.605*** (0.135)
Observations	19,099	19,099	19,099	19,099

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

Table 10 reports the likelihood of SOEs and family-owned firms underperforming and becoming distressed. The SOE has a significant negative contribution to the likelihood of moderate distress. This is our expectation since SOEs can receive government liquidity support and are therefore less likely to be distressed. Family-owned firms are more likely to be in moderate distress but less likely to be in extreme distress. Family-owned firms suffer greater agency probability, so incorrect firm managers' decisions could significantly lower performance and cause them to suffer from distress. Both H5a and H5b are accepted.

6.4. Firm types and recovery

The last section shows that SOEs are less likely to experience distress. The recovery is used as a robustness check to determine whether it reflects a logic similar to that used in the distressed case. Table 11 reports the recovery likelihood. SOEs have a significant positive contribution to recovery from moderate distress. Family-owned firms make significant negative contributions to moderate distress recovery. Both cases reflect the exact same results as the distressed analysis in the last section. Both H6a and H6b are accepted.

Table 11. Firm type and distress recovery.

	<i>Dependent variable:</i>			
	RST (1)	(2)	RST* (3)	(4)
SOE	0.843** (0.410)		0.098 (0.158)	
Family		-0.931** (0.397)		-0.100 (0.159)
Equity	0.022** (0.009)	0.020** (0.009)	0.007*** (0.002)	0.007*** (0.002)
Gross	-0.012 (0.010)	-0.010 (0.010)	0.005 (0.004)	0.005 (0.004)
Asset	0.008 (0.011)	0.009 (0.011)	0.003 (0.004)	0.003 (0.004)
Current	0.100 (0.118)	0.118 (0.125)	-0.017 (0.030)	-0.017 (0.030)
EBITINT	0.016** (0.008)	0.015** (0.007)	-0.009*** (0.003)	-0.009*** (0.003)
Constant	-1.245*** (0.473)	-0.433 (0.435)	-0.415** (0.201)	-0.318 (0.199)
Observations	147	147	693	693

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

6.5. Debt level and recovery

The original market power and the effect of debt on recovery are tested. One of the difficulties is the selection of a control group. After recovering from distress, the firms experienced distress are still significantly weaker compared with true healthy firms. The appropriate control group should be firms with similar condition, the weak firm, but not yet classified as distressed. The propensity score matching is used to cluster such a control group. Table 12 shows the results. Market power does not show a significant contribution, but debt has both negative and significant coefficients for both moderate and excessive distress recovery. The results indicate that recovery occurs when firms meet their debt obligations. The repayment of debts and lower debt levels signal a performance recovery. The results support Hypothesis H7.

Table 12. PSM-matched recovery.

	<i>Dependent variable:</i>			
	RST (1)	(2)	RST* (3)	(4)
Power	-0.002 (0.004)		0.002 (0.002)	
Debt		-0.021** (0.010)		-0.013*** (0.004)
Equity	-0.013 (0.010)	-0.015 (0.010)	-0.002 (0.002)	-0.004 (0.003)
Gross	-0.002 (0.009)	-0.006 (0.010)	-0.003 (0.004)	-0.003 (0.004)
Asset	0.008 (0.011)	0.018 (0.012)	0.009** (0.004)	0.014*** (0.005)
Current	0.268 (0.170)	0.224 (0.164)	-0.014 (0.026)	-0.026 (0.027)
EBITINT	0.011 (0.008)	0.009 (0.008)	-0.003* (0.002)	-0.003* (0.002)
Constant	-0.142 (0.486)	0.589 (0.556)	0.027 (0.188)	0.352 (0.215)
Observations	142	142	700	700

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels; standard errors are shown in parentheses.

6.6. Summary of findings

Table 13 summarizes the hypotheses and findings.

Table 13. Summary of findings.

Hypotheses	Validation	Discussion
H1. The negotiation market power is positively associated with earnings and profitability.	Supported	Higher market power increases the overall turnover, and therefore increases the efficiency and earnings.
H2a. The long-term debt increases the financial burden and therefore increases the likelihood of financial distress.	Rejected	Even the interest-bearing long-term debt decreases the earning, but it does not increase the likelihood of distress.
H2b. The long-term debt increases the external monitoring and therefore decreases the likelihood of financial distress.	Supported	The firm with long-term debt has lower probability to fall into severe distress since creditors monitoring and the agency problem is reduced by the debt covenants.
H3. The institutional ownership reduces the likelihood for the firm to be distressed.	Supported	The sophisticated institutional investors could efficiently monitor the firm operation and reduce the agency costs.
H4. The higher auditing quality reduces the firm distress likelihood.	Supported	Higher quality auditing verifications provide accurate and timely information to both internal and external users to improve the management.
H5a. State-owned enterprises (SOEs) are less likely to be financially distressed	Supported	The SOEs could receive external government support.
H5b. Personal firms are more likely to be financially distressed.	Supported	Family-owned firms have higher agency problems, even if they can make quick decisions, but the cost of wrong decisions could be high.
H6a. SOEs are more likely to recover from financial distress.	Supported	The results confirm that the government support could help firms to recover.
H6b. Personal firms are more likely to recover from financial distress.	Rejected	Family-owned firms do not receive policy or other government supports.
H7. Meeting debt obligations and the debt repayments signal distress recovery.	Supported	The lower debt level decreases the interest cost burden and increases the firm's credibility to its consumers and suppliers.

6.7. Discussion

There are different reasons for a firm to experience distress risk. The inappropriate management delegation could increase the agency's risk, and managers may consider more of their interests than the shareholder's (Andreou et al., 2021). The economic and social factors could also affect a firm's solvency. When the market has a negative investment sentiment, it further transmits to the firm's managers, affecting their decisions (Huang & Li, 2021; Saleemij, 2023). The firm's share price crash is commonly associated with a firm's financial distress, and firms in the same industry could receive the spillover effect since investors believe the distress may reflect an industry difficulty rather than an individual firm (Sevinç, 2022).

Firms accumulate their default risk from continuous operation. Most investors believe cash, rather than revenue, is a better performance indicator (Sano, 2022). The earning quality and internal and external monitoring levels could reflect the risk well. The cash conversion and the accumulated possible bad debt reflect the firm's market power and show the management's risk attitude toward the counterparty dealing. Some firms experience quick expansion, so they must deal with customers with lower credit and face a higher likelihood of difficulty collecting the receivables. The expansion could happen with aggressive inefficient investment in research and development, which may increase the default probability (Shahwan & Habib, 2020). Some firms experience sales difficulty, so they need to

lower their customer reputation demand, and the low-quality customer often increases the likelihood of uncollectable receivables.

From the monitoring aspect, our results confirm that when firms have more sophisticated inside shareholders like institutional investors, they usually question the firm's strategies and prevent it from expanding blindly or dealing with lower-quality customers. The supervision of the institutional shareholders could also affect the board voting since they usually hold larger shares, and such board voting threat makes their voice and suggestions important to the management level in the firm. Sometimes the capital structure and working capital management could also affect the default likelihood. The inefficient working capital and the heavy interest could both negatively affect a firm's liquidity.

Even though there is no empirical evidence showing that the debt level could cause more considerable default risk, it effectively reduces the level of debt. It signals that the firm has started performing better during recovery. The firm needs to adjust its capital structure to avoid large and heavy interest and hopes to refinance the cheaper fund by showing its improvement in operation. SOEs are essential to the Chinese market and economy. They have better access to the resources with policy support and less financial constraints. When the SOEs experience default risks, it is easier for them to recover, and such recovery is possibly partially contributed by the local government's support. Compared with SOEs, private firms have significant financial constraints. When they experience default risks, banks usually deny further access to the lending and seize the firm's assets when the bankers feel the loan may be difficult to reclaim.

Also, a higher level of external monitoring, including auditing and debt contract covenants, could help increase corporate governance and public credibility and help the firm recover from distress (Habib, 2023). From the regulation and policy aspect, it is important to have policies designed to reward higher levels of corporate governance (Shaikh & Randhawa, 2022). Such a reward could be in the form of low financial constraints to access the bank loan since more transparent information disclosure would significantly increase a firm's credibility from the point of view of investors and creditors.

7. Conclusions

This research focuses on the factors leading firms to fall into distress in the Chinese market. By using the panel data regression analysis and the nonlinear logit and probit regressions, we find clear evidence that market power significantly affects earnings, leading firms to become distressed. Even long-term debt negatively affects earnings, and creditors' monitoring and debt covenants offset the negative interest financial burden; thus, long-term debt does not significantly contribute to a firm's distress and, in contrast, reduces the likelihood of a firm experiencing severe distress. Both institutional ownership, which increases internal monitoring, and high-quality auditing services, which corresponds to external monitoring, successfully reduce firm distress. Compared with family-owned firms, SOEs show a significant advantage. They receive support from the government, are less likely to suffer distress, and recover more quickly from firm distress if they indeed underperform compared with other peer competitors. By comparing a firm that has recovered from firm distress with a firm that has underperformed but is not yet marked as a distressed firm, the debt repayment could indicate that the firm is recovering and signals an increase in the credibility of the potential transaction counterparties. Such results could be interpreted as higher market power, more efficient external and internal

monitoring, and higher level of resources accessibility possibly preventing firm distress and helping firms in distress to recover.

This research uses the observable financial distress event, the delisting warning given to the firm from the stock exchange, as the distress indicator. Such an observable event is explicitly well-defined without measuring ambiguity and is interpretable, but the number of observations is limited. Also, multiple distress warnings have the same weight for each single warning and do not show the accumulated negative effects of such distress warnings. Firm distress is closely related to shareholders, managers, and other firm stakeholders. The capital structure, including dividend payments, research and development of their products and services, shareholder composition and agency issues, including duality, manager ethics, and compensation contracts, could be interesting future research topics.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Conflict of interest

The authors declare no conflict of interest.

References

- Ahn S, Choi W (2009) The role of bank monitoring in corporate governance: Evidence from borrowers' earnings management behavior. *J bank Financ* 33: 425–434. <https://doi.org/10.1016/j.jbankfin.2008.08.013>
- Al-Hadi A, Chatterjee B, Yaftian A, et al. (2019) Corporate social responsibility performance, financial distress and firm life cycle: evidence from Australia. *Account Financ* 59: 961–989. <https://doi.org/10.1111/acfi.12277>
- Álvarez L, García-Posada M, Mayordomo S (2023) Distressed firms, zombie firms and zombie lending: a taxonomy. *J Bank Financ* 149: 106762. <https://doi.org/10.1016/j.jbankfin.2023.106762>
- Andreou CK, Andreou PC, Lambertides N (2021) Financial distress risk and stock price crashes. *J Corp Financ* 67: 101870. <https://doi.org/10.1016/j.jcorpfin.2020.101870>
- Babenko I (2009) Share repurchases and pay-performance sensitivity of employee compensation contracts. *J Financ* 64: 117–150. <https://doi.org/10.1111/j.1540-6261.2008.01430.x>
- Bhattacharya A, Morgan NA, Rego LL (2022) Examining why and when market share drives firm profit. *J Marketing* 86: 73–94. <https://doi.org/10.1177/00222429211031922>
- Boone JP, Khurana IK, Raman KK (2010) Do the Big 4 and the second-tier firms provide audits of similar quality? *J Account Public Pol* 29: 330–352. <https://doi.org/10.1016/j.jaccpubpol.2010.06.007>
- Chang HY, Liang LH, Yu HF (2019) Market power, competition and earnings management: accrual-based activities. *J Financ Econ Policy* 11: 368–384. <https://doi.org/10.1108/JFEP-08-2018-0108>
- Chang K, Kang E, Li Y (2016) Effect of institutional ownership on dividends: An agency-theory-based analysis. *J Bus Res* 69: 2551–2559. <https://doi.org/10.1016/j.jbusres.2015.10.088>
- Charitou A, Lambertides N, Trigeorgis L (2007) Managerial discretion in distressed firms. *Brit Account Rev* 39: 323–346. <https://doi.org/10.1016/j.bar.2007.08.003>

- Chen CJ, He W, Lu CJ, et al. (2022) Bank loan covenants, accrual quality and firms' information environment. *Account Financ* 62: 547–575. <https://doi.org/10.1111/acfi.12798>
- Chen JZ, Lobo GJ, Wang Y, et al. (2013) Loan collateral and financial reporting conservatism: Chinese evidence. *J Bank Financ* 37: 4989–5006. <https://doi.org/10.1016/j.jbankfin.2013.09.003>
- Chen L, Gao F, Guo T, et al. (2023) Mixed ownership reform and the short-term debt for long-term investment of non-state-owned enterprises: Evidence from China. *Int Rev Financ Anal* 90: 102861. <https://doi.org/10.1016/j.irfa.2023.102861>
- Chen Y, Huang Y, Wen M (2023) Accounts Receivable Reform and Financing Constraints: Evidence from China's A-Share Market. *Emerg Mark Financ Trade* 1–26. <https://doi.org/10.1080/1540496X.2023.2298255>
- Clinch G, Sidhu B, Sin S (2002) The usefulness of direct and indirect cash flow disclosures. *Rev Account Stud* 7: 383–404. <https://doi.org/10.1023/A:1020759511460>
- Cook DO, Zhang W (2022) CEO option incentives and corporate share repurchases. *Int Rev Econ Financ* 78: 355–376. <https://doi.org/10.1016/j.iref.2021.12.002>
- Córdoba-Pachón JR, Garde-Sánchez R, Rodríguez-Bolívar MP (2014) A systemic view of corporate social responsibility (CSR) in state-owned enterprises (SOEs). *Knowl Process Manag* 21: 206–219. <https://doi.org/10.1002/kpm.1453>
- Demydyuk G, Shawky HA, Rest JVD, et al. (2015) Key operating indicators to lever financial performance of publicly traded restaurant companies: a market's perspective from 2007–2011. *Int J Revenue Manag* 8: 165–192. <https://doi.org/10.1504/IJRM.2015.070006>
- Elyasiani E, Jia J (2010) Distribution of institutional ownership and corporate firm performance. *J Bank Financ* 34: 606–620. <https://doi.org/10.1016/j.jbankfin.2009.08.018>
- Emery GW, Marques MA (2011) The effect of transaction costs, payment terms and power on the level of raw materials inventories. *J Oper Manage* 29: 236–249. <https://doi.org/10.1016/j.jom.2010.11.003>
- Fabbri D, Klapper LF (2016) Bargaining power and trade credit. *J Corp Financ* 41: 66–80. <https://doi.org/10.1016/j.jcorpfin.2016.07.001>
- Farooq U, Jibrán Qamar MA, Haque A (2018) A three-stage dynamic model of financial distress. *Manag Financ* 44: 1101–1116. <https://doi.org/10.1108/MF-07-2017-0244>
- García-Teruel PJ, Martínez-Solano P (2010) A dynamic approach to accounts receivable: a study of Spanish SMEs. *Eur Financ Manag* 16: 400–421. <https://doi.org/10.1111/j.1468-036X.2008.00461.x>
- Grundy T (2006) Rethinking and reinventing Michael Porter's five forces model. *Strateg Chang* 15: 213–229. <https://doi.org/10.1002/jsc.764>
- Gustafson MT, Ivanov IT, Meisenzahl RR (2021) Bank monitoring: Evidence from syndicated loans. *J Financ Econ* 139: 452–477. [https://doi.org/10.1016/0378-4266\(95\)00006-2](https://doi.org/10.1016/0378-4266(95)00006-2)
- Han X, Epetia MCF, Cheng Y (2021) “Subsidies” or “taxes”? Corporate credit misallocation induced by the nexus of state-owned enterprises and state-owned banks. *J Asian Econ* 76: 101346. <https://doi.org/10.1016/j.asieco.2021.101346>
- Habib AM (2023) Do business strategies and environmental, social, and governance (ESG) performance mitigate the likelihood of financial distress? A multiple mediation model. *Heliyon* 9. <https://doi.org/10.1016/j.heliyon.2023.e17847>
- Habib AM, Kayani UN (2022) Does the efficiency of working capital management affect a firm's financial distress? Evidence from UAE. *Corp Gov Int J Bus Soc* 22: 1567–1586. <https://doi.org/10.1108/CG-12-2021-0440>

- Hertzel MG, Li Z, Officer MS, et al. (2008) Inter-firm linkages and the wealth effects of financial distress along the supply chain. *J Financ Econ* 87: 374–387. <https://doi.org/10.1016/j.jfineco.2007.01.005>
- Huang Z, Li Z (2021) What reflects investor sentiment? Empirical evidence from China. *Data Sci Financ Econ* 1: 235–252. <https://doi.org/10.3934/DSFE.2021013>
- Kahl M, Shivdasani A, Wang Y (2015) Short-term debt as bridge financing: Evidence from the commercial paper market. *J Financ* 70: 211–255. <https://doi.org/10.1111/jofi.12216>
- Lee KW, Sharpe IG (2009) Does a bank's loan screening and monitoring matter? *J Financ Serv Res* 35: 33–52. <https://doi.org/10.1007/s10693-008-0041-8>
- Leverly JT, Grace MF (2012) Dupes or incompetents? An examination of management's impact on firm distress. *J Risk Insur* 79: 751–783. <https://doi.org/10.1111/j.1539-6975.2011.01443.x>
- Li S, Wu Y (2022) Government subsidies, ownership structure and operating performance of state-owned enterprises: evidence from China. *Appl Econ* 54: 6480–6496. <https://doi.org/10.1080/00036846.2022.2069671>
- Miarka T, Tröge M (2005) Do bank–firm relationships reduce bank debt? Evidence from Japan. *Eur J Financ* 11: 75–92. <https://doi.org/10.1080/1351847032000168687>
- Nam H, Uchida K (2019) Accounts payable and firm value: International evidence. *J Bank Financ* 102: 116–137. <https://doi.org/10.1016/j.jbankfin.2019.03.010>
- Navissi F, Naiker V (2006) Institutional ownership and corporate value. *Manag Financ* 32: 247–256. <https://doi.org/10.1108/03074350610646753>
- Novy-Marx R (2011) Operating leverage. *Rev Financ* 15: 103–134. <https://doi.org/10.1093/rof/rfq019>
- Nuta AC, Habib AM, Neslihanoglu S, et al. (2024) Analyzing the market performance of Romanian firms: do the COVID-19 crisis and classification type matter? *Int J Emerg Market*. <https://doi.org/10.1108/IJOEM-05-2023-0842>
- Opler TC, Titman S (1994) Financial distress and corporate performance. *J Financ* 49: 1015–1040. <https://doi.org/10.1111/j.1540-6261.1994.tb00086.x>
- Pianeselli D, Zaghini A (2014) The cost of firms' debt financing and the global financial crisis. *Financ Res Lett* 11: 74–83. <https://doi.org/10.1016/j.frl.2013.12.002>
- Poncet S, Steingress W, Vandenbussche H (2010) Financial constraints in China: Firm-level evidence. *China Econ Rev* 21: 411–422. <https://doi.org/10.1016/j.chieco.2010.03.001>
- Rajan R, Winton A (1995) Covenants and collateral as incentives to monitor. *J Financ* 50: 1113–1146. <https://doi.org/10.1111/j.1540-6261.1995.tb04052.x>
- Safdar R, Chaudhry NI, Mirza SS, et al. (2019) Principal–principal agency conflict and information quality in China: The governance role of audit quality and analyst following. *J Financ Report Account* 17: 42–59. <https://doi.org/10.1108/JFRA-07-2017-0052>
- Saleemi J (2023) Political-obsessed environment and investor sentiments: pricing liquidity through the microblogging behavioral perspective. *Data Sci Financ Econ* 3: 196–207. <https://doi.org/10.3934/DSFE.2023012>
- Sano K (2022) Intelligence and global bias in the stock market. *Data Sci Financ Econ* 3: 184–195. <https://doi.org/10.3934/DSFE.2023011>
- Sevinç, D. (2022). Volatility spillovers among MIST stock markets. *Data Sci Financ Econ* 2: 80–95. <https://doi.org/10.3934/DSFE.2022004>
- Shahwan TM, Habib AM (2020) Does the efficiency of corporate governance and intellectual capital affect a firm's financial distress? Evidence from Egypt. *J Intellect Cap* 21: 403–430. <https://doi.org/10.1108/JIC-06-2019-0143>

- Shaikh I, Randhawa K (2022) Managing the risks and motivations of technology managers in open innovation: Bringing stakeholder-centric corporate governance into focus. *Technovation* 114: 102437. <https://doi.org/10.1016/j.technovation.2021.102437>
- Sudarsanam S, Lai J (2001) Corporate financial distress and turnaround strategies: An empirical analysis. *Brit J Manage* 12: 183–199. <https://doi.org/10.1111/1467-8551.00193>
- Tang Q, Chow CW, Lau A (1999) Auditing of state-owned enterprises in China: historic development, current practice and emerging issues. *Int J Account* 34: 173–187. [https://doi.org/10.1016/S0020-7063\(99\)00008-4](https://doi.org/10.1016/S0020-7063(99)00008-4)
- Turetsky HF, McEwen RA (2001) An empirical investigation of firm longevity: A model of the ex ante predictors of financial distress. *Rev Quant Financ Account* 16: 323–343. <https://doi.org/10.1023/A:1011291425075>
- Ukaegbu B (2014) The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa. *Res Int Bus Financ* 31: 1–16. <https://doi.org/10.1016/j.ribaf.2013.11.005>
- Wang Y, Xia H (2014) Do lenders still monitor when they can securitize loans? *Rev Financ Stud* 27: 2354–2391. <https://doi.org/10.1093/rfs/hhu006>
- Wang XY, Shan W (2013) Chairperson's government background, excess employment and government subsidies: evidence from Chinese local state-owned enterprises. *China J Account Res* 6: 51–74. <https://doi.org/10.1016/j.cjar.2012.08.005>
- Yeung G (2009) How banks in China make lending decisions. *J Contemp China* 18: 285–302. <https://doi.org/10.1080/10670560802576034>
- Zhang W (2015) R&D investment and distress risk. *J Empir Financ* 32: 94–114. <https://doi.org/10.1016/j.jempfin.2015.03.009>
- Zhu Q, Liu J, Lai KH (2016) Corporate social responsibility practices and performance improvement among Chinese national state-owned enterprises. *Int J Prod Econ* 171: 417–426. <https://doi.org/10.1016/j.ijpe.2015.08.005>
- Zou H, Adams MB (2008) Debt capacity, cost of debt, and corporate insurance. *J Financ Quant Anal* 43: 433–466. <https://doi.org/10.1017/S0022109000003586>
- Zulhibri M (2015) Interest burden and external finance choices in emerging markets: Firm-level data evidence from Malaysia. *Int Econ* 141: 15–33. <https://doi.org/10.1016/j.inteco.2014.11.002>



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