



Institutional ownership and bond pricing: Evidence from China

Yulin Wang^a, Xueying Zhang^{b,**}, Thomas Walker^{c,e,*}, Gerrit Liedtke^d

^a Shandong Youth University of Political Science, School of Accountancy, 31699 Jingshi East Road, Jinan, Shandong, China

^b Shandong University of Finance and Economics, School of Finance, 40 Shungeng Road, Jinan, Shandong, China

^c Concordia University, Montreal, Canada

^d University of Bremen, Postdoctoral Researcher at the Chair of Finance, Max-von-Laue-Straße 1, 28359 Bremen, Germany

^e Corvinus Institute for Advanced Studies (CIAS), Corvinus University of Budapest, Hungary

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ABSTRACT

This paper examines the impact of institutional ownership on the bond yield spreads of publicly traded Chinese firms. Our research results show the presence of a U-shaped, non-linear relationship between the shareholdings of institutional investors and bond yield spreads. Heterogeneity tests reveal differences in the impact of institutional ownership on yield spreads among different types of institutional investors and for firms in which members of the central government stabilization fund, commonly referred to as “national team” institutions, hold shares. Further tests indicate that corporate governance levels and firm performance serve as channels through which institutional shareholders affect bond yield spreads.

1. Introduction

Institutional investors have become increasingly influential in China’s capital markets, holding a growing share of listed equities and playing a complex, evolving role in corporate governance. As discussed in [Jiang and Kim \(2024\)](#), as of 2021, their holdings in A-shares surpassed 34 trillion RMB, yet institutional investors in China typically remain minority shareholders – unlike their counterparts in Western markets. Rather than exerting control through large, stable ownership stakes, Chinese institutional investors often influence firms through short-term trading and exit threats, creating both informational signals and governance pressure.

At the same time, China’s corporate bond market – now the second-largest in the world – has historically been characterized by implicit guarantees, which muted default risk and distorted bond pricing mechanisms ([Amstad and He, 2020](#); [Huang et al., 2023](#)). These guarantees allowed firms to issue debt at artificially low spreads, regardless of underlying credit risk. However, since the 2017 regulatory reforms aimed at removing implicit guarantees and increasing market discipline ([Huang et al., 2022](#); [Hotchkiss et al., 2023](#)), bond pricing has become more sensitive to firm-specific fundamentals. As bond defaults have risen, the question of how institutional equity ownership affects credit spreads has become particularly salient.

While an extensive body of literature has explored the influence of institutional investors on firm performance, governance, and equity value (e.g., [Gillan and Starks, 2000](#); [Kang et al., 2018](#); [Shleifer and Vishny, 1986](#)), their impact on bondholders remains ambiguous. On one hand, institutional investors may reduce agency costs and improve governance, thereby lowering bond spreads ([Bhojraj and Sengupta, 2003](#); [Amiri-Moghadam et al., 2021](#); [Sunder et al., 2014](#)). On the other hand, they may push for riskier

* Corresponding author at: Concordia University, Montreal, Canada.

** Corresponding author.

E-mail addresses: 19930908@sdufe.edu.cn (X. Zhang), thomas.walker@concordia.ca (T. Walker), gliedtke@uni-bremen.de (G. Liedtke).

strategies or fail to monitor effectively, which could increase credit risk and the cost of debt (Feng et al., 2021; Zhang and Zhou, 2018; El Ghouli et al., 2023). The heterogeneity of institutional investors further complicates this relationship: short-term investors are often linked to higher risk-taking (Kim et al., 2019) and distinct financing preferences such as lower leverage and a greater reliance on equity issuance (Chang et al., 2024), while long-term investors are associated with more conservative financial policies (Huang and Petkevich, 2016).

This paper investigates a critical yet underexplored question: How does institutional ownership influence bond yield spreads in China? Using a comprehensive panel of A-share listed firms from 2010 to 2024, we document a U-shaped relationship between institutional equity ownership and corporate bond yield spreads. Moderate levels of institutional ownership are associated with lower bond spreads, consistent with improved governance and monitoring. However, beyond a certain threshold, additional ownership is associated with increasing spreads, possibly due to over-monitoring, short-termism, or distorted managerial incentives—echoing the Chinese proverb that “going beyond the limit is as bad as falling short.”

We further examine heterogeneity by investor type and find that the U-shaped relationship is significantly weakened when long-term institutional investors dominate or when state-affiliated “national team” funds are present. These findings suggest that ownership composition, not just ownership level, is essential in determining bondholder outcomes. Finally, we explore corporate governance quality and firm performance as potential transmission channels for institutional investors’ influence on credit spreads.

Two recent studies are closely related to our research. Wang et al. (2022) examine the impact of multiple large shareholders on bond yield spreads in China and find that their presence reduces spreads by mitigating controlling shareholder expropriation and information asymmetry. Similarly, Chatterjee et al. (2023) shows that higher institutional equity ownership lowers issuers’ bond costs, estimating that a 10% increase in institutional ownership reduces spreads by approximately 1.6%. While we build on the empirical approaches of these papers, our study differs in several important ways. First, both Wang et al. (2022) and Chatterjee et al. (2023) rely on bond samples issued prior to 2017, before regulatory reforms began removing implicit guarantees in China’s bond market. Second, they focus on the at-issue yield spread—a static measure at the time of bond issuance—which does not capture the ongoing influence of institutional investors in the secondary market. Third, their ownership variables reflect shareholdings only at issuance, without accounting for subsequent changes. Finally, neither study explores the role of investor heterogeneity—e.g., the varying effects of long-term versus short-term or state-affiliated investors. In contrast, our study examines dynamic ownership changes and differentiates among investor types, offering a more comprehensive view of institutional influence on bond pricing post-reform.

Our study contributes to several fields within the broader finance literature. First, it provides novel evidence of a non-linear relationship between institutional equity ownership and bond pricing, helping to reconcile mixed results in the literature. Specifically, our research suggests that the marginal impact of a given shareholder on the bond yield spread depends on the extant institutional ownership ratio. These results are similar to those of Cremers et al. (2007), who find that the impact of shareholder control on credit risk depends on takeover vulnerability and that shareholder control is associated with higher (lower) yields if the firm is exposed to (protected from) takeovers.

Second, our results contribute to the growing body of studies on the factors affecting the pricing of corporate bonds in the secondary market. Existing research typically focuses on the offset of external systemic factors on bond yield spreads such as the macroeconomic environment, economic policies, and institutional settings. In addition, some studies investigate the effect of internal corporate behaviors such as corporate information disclosures, equity pledges, and corporate governance, as well as bond characteristics including contract terms, government guarantees, bond-specific risks, and default events. This paper takes an external corporate governance perspective by introducing the magnitude and composition of institutional shareholdings into the bond pricing model. In doing so, it fills an important gap, as prior research has largely overlooked the role of institutional investors as external monitors in credit pricing. Beyond governance, our study also contributes to the literature on information flow across segmented capital markets. The prior literature in this area documents a lack of integration of equity and bond markets (Collin-Dufresne et al., 2001; Chordia et al., 2017; Choi and Kim, 2018; Feng et al., 2025), which is also documented for the Chinese market (Zhang et al., 2025a). However, institutional investors may serve as informational bridges, transmitting signals from equity markets into bond pricing. Due to recent regulatory changes and the rise of institutional ownership, China offers a fertile ground to analyze these effects. At the same time, the insights provided by this study offer important guidance for bond market participants in other economies facing similar frictions.

Finally, our study enhances the body of knowledge regarding the heterogeneous nature of institutional equity ownership and its effect on debt financing. Using data from developed markets, several papers indicate that the investment horizons of institutional investors are negatively correlated with the debt pricing of investee firms, suggesting that firms with larger short-term (long-term) institutional ownership are associated with higher (lower) bond yield spreads (Huang and Petkevich, 2016) and loan spreads (Kim et al., 2019), as well as lower (higher) credit ratings (Driss et al., 2021). Based on data from the Chinese market, our study not only examines the impact of institutional investors horizons on corporate bond yield spreads, but also explores the influence of the central government’s stabilization fund on bond spreads.

The remainder of this paper is organized as follows. Section 2 summarizes the related literature and discusses our hypotheses. Section 3 describes our sample and our empirical research design. The empirical results are reported in Section 4. Section 5 concludes.

2. Related literature and hypotheses development

Institutional investors have become increasingly influential in China’s capital markets, though their role differs notably from that in developed economies. While their ownership has grown from 1.4% of A-share market capitalization in 2003 to 18.7% in 2018 (Lin and Puchniak, 2022), they generally remain minority shareholders and often pursue short-term trading strategies. Their influence tends to rely more on exit threats and price signals than on direct control (Jiang and Kim, 2015; Jiang and Kim, 2024). As ownership becomes

more dispersed and retail investors dominate, institutional investors may assume a disproportionately important governance role through market-based discipline.

Extensive research highlights the effects of institutional ownership on corporate governance (Gillan and Starks, 2000), firm performance (Kang et al., 2018), payout policies (Crane et al., 2016), and ESG behavior (Sun and Zhao, 2024). However, its impact on bondholders is more ambiguous. According to Jensen and Meckling (1976), institutional investors may discipline managers and reduce agency costs—benefiting bondholders—or engage in risk shifting that increases bondholder exposure. Some studies find that institutional investors enhance transparency and oversight, leading to narrower bond yield spreads (Bhojraj and Sengupta, 2003; Sunder et al., 2014; Amiri-Moghadam et al., 2021), while others show that large or activist institutions may exacerbate governance risks and raise credit spreads (Zhang and Zhou, 2018; Feng et al., 2021; El Ghoul et al., 2023).

These mixed findings suggest a non-linear relationship between institutional ownership and a firm's bond yield spread. Institutional investors typically possess financial expertise, diversified portfolios, and market access (García-García et al., 2020; Kabir et al., 2020), allowing them to influence firms via various mechanisms (Ferreira and Matos, 2008; Ruiz-Mallorquí and Santana-Martín, 2011). They can reduce managerial opportunism (Chen et al., 2017), promote efficient governance (Drobetz et al., 2025), and alleviate the free-rider problem, thereby improving firm performance and reducing financing costs. Thus, at low to moderate ownership levels, they help reduce default risk and bond spreads. However, as their ownership increases, some institutional blockholders may form control cliques to extract private benefits at the expense of minority shareholders (García-García et al., 2020). These cliques may collude with managers or competitors (Schnatterly et al., 2008; He and Huang, 2017), weakening governance and long-term value, and leading to higher bond risk premiums. We, thus, propose the following hypothesis:

H1. Institutional ownership has a U-shaped relation with the bond yield spreads.

In other words, in line with the Chinese proverb: “Going too far is as bad as not going far enough,” we expect that at low to moderate levels, institutional ownership improves governance and reduces bond spreads, but that – beyond a certain point – a further rise in institutional ownership may introduce agency risks through excessive monitoring or coordination problems, causing bond spreads to widen.

Moreover, the segmentation between stock and bond markets in China may amplify the signaling power of institutional investors. Compared to developed markets, China's bond market often reacts weakly to equity-related information, reflecting investor heterogeneity, different pricing channels, and limited arbitrage (Choi and Kim, 2018; Feng et al., 2025; Zhang et al., 2025a). In this environment, institutional investors may serve as one of the few reliable cross-market signals for credit pricing.

In addition to our primary hypothesis, we examine whether the type of institutional investor moderates the U-shaped relationship. Prior studies show that long-term institutions (Huang and Petkevich, 2016; Kim et al., 2019) and government-affiliated “national team” investors (Huang et al., 2019; Dang et al., 2024) may stabilize firm behavior and lower credit risk. Recent evidence also suggests that institutional investor horizons influence firms' financing decisions by shaping the information environment. Specifically, short-term investors are associated with lower leverage, larger equity issues, and longer debt maturities—likely due to their informational advantages and preference for liquid, information-sensitive securities (Chang et al., 2024). These dynamics further support the notion that investor type and time horizon condition how institutional ownership translates into bond pricing outcomes. Finally, we explore the channels through which institutional ownership affects credit pricing, focusing on corporate governance quality and firm performance as possible transmission mechanisms.

3. Research design

3.1. Sample selection

We employ a sample of listed firms that issued bonds between 2010 and 2024, and match institutional ownership data with corporate bond trading data. This results in an initial sample of 11,252 firm-year observations. From this sample, we drop firms that meet any of the following exclusion criteria: (1) financial firms (resulting in 8407 observations remaining), (2) firms under special treatment (ST and *ST status) (reduced to 8369 observations), and (3) firms with missing bond trading data (leaving 7508 observations). Given the small proportion of bonds rated below AA-, we further restrict the sample to bonds rated AAA, AA+, AA, and AA- (resulting in 7229 observations). Finally, to mitigate the influence of extreme outliers, we trim all continuous variables at the 1st and 99th percentiles. We also exclude firms with missing values for the control variables, resulting in a final sample of 6239 firm-year observations. We obtain institutional ownership data, bond trading data, and firm-level financial information from the CSMAR database, and collect provincial-level macroeconomic indicators from the National Bureau of Statistics of China.

3.2. Model design and variable definitions

To investigate the possibility of a U-shaped non-linear relationship between institutional ownership and a firm's bond credit spread, we employ the institutional ownership ratio (*InstProp*) and its squared term to construct the following empirical model:

$$\begin{aligned} \text{Spread}_{i,j,t} = & \beta_0 + \beta_1 \text{InstProp}_{i,t-1} + \beta_2 \text{InstProp}_{i,t-1}^2 \\ & + \sum \beta \text{Controls}_{i,t-1} + \sum \text{Year} + \sum \text{Industry} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where the dependent variable, $Spread_{i,j,t}$, represents the annual credit spread of bond j issued by listed company i at time t . Using secondary market monthly bond trading data, we calculate the monthly credit spread of each bond j in period t as the difference between the yield to maturity, $y_{j,t}$, and the yield to maturity of a government bond $y_{j,t}^{GB}$ with the same remaining maturity as bond j in the same trading month. We then obtain the annual credit spread of bond j by averaging these spreads within each year. The explanatory variable, $InstProp_{i,t-1}$, represents the proportion of institutional investors' holdings to the total shares of listed company i in period $t-1$, along with its squared term, $InstProp_{i,t-1}^2$.¹ If β_2 is significantly positive and β_1 is significantly negative, they would be indicative of a U-shaped relationship between a firm's institutional ownership ratio and its bond credit spread.

Drawing from the existing literature, Model (1) includes a series of control variables:

1. Bond characteristics: following Chatterjee et al. (2023), these consist of a bond's numerical credit rating (*Bond Rating*) (see Table 1 for definition), the natural logarithm of the total number of bonds issued (*Scale*), and the bonds' remaining time to maturity (*Maturity*);
2. Issuer characteristics: following Wang et al. (2022), these include a dummy variable which identifies whether the issuer is a state-owned enterprise (*SOE*), the natural logarithm of the firm's total assets (*Size*), the leverage ratio (*Leverage*), return on assets (*ROA*), cash flow ratio (*Cash Flow*), revenue growth rate (*Growth*), board size (*Board*), percentage of independent directors (*Indep*), and a duality dummy identifying whether the roles of chairman and CEO are combined (*Dual*);
3. Regional macroeconomic characteristics: following Li et al. (2020) and Walker et al. (2021), these comprise per capita GDP (*Per Capita GDP*) and the GDP growth rate (*GDP Growth*) for the province in which a given firm is headquartered.

We further control for year and industry fixed effects to mitigate any interference from time- and industry-specific factors. Finally, we lag the explanatory variable by one period to alleviate any endogeneity concerns. Table 1 presents definitions for all variables.

4. Empirical results

4.1. Descriptive statistics

Table 2 presents descriptive statistics for our main variables. The mean of the dependent variable, the bond credit spread (*Spread*), is 2.138%. The minimum value is approximately 0.301%, and the maximum value is around 15.05%, with a standard deviation is 1.687%. This indicates an uneven distribution and significant variations in bond credit spreads in the sample. The mean value of the institutional ownership ratio (*InstProp*) is 0.630, suggesting a strong institutional investment sector in China. The remaining control variables align closely with the existing literature.

4.2. Baseline regression results

To investigate the impact of institutional ownership on a firm's bond credit spread, we estimate Model (1), where both the *InstProp* indicator and its squared term, $InstProp^2$ are of main interest. The baseline regression results are presented in Columns (1) and (2) of Table 3. They show that irrespective of whether or not we include the control variables, the coefficient for *InstProp* is significantly negative, and the coefficient for its squared term, $InstProp^2$, is significantly positive. This indicates a significant U-shaped relationship between institutional investors' ownership a firm's bond credit spread. Further calculations reveal the inflection point of institutional investors' shareholdings affecting bond credit spread to be 0.6302, with a 95% confidence interval (Filler interval) of [0.5774, 0.7106]. This turning point falls within the statistical distribution range for the institutional ownership ratio, and the overall test for the U-shaped relationship yields a p -value below 0.001. To shine additional light on this finding, we conduct grouping tests based on samples before and after the institutional ownership inflection point. The empirical results, shown in Table 3 (Columns (3) and (4)), indicate that in the samples to the left of the inflection point, the regression coefficient of *InstProp* is significantly negative. Conversely, in the samples to the right of the inflection point, the coefficient of *InstProp* is significantly positive. This implies that the bond credit spread decreases initially as the institutional ownership ratio increases, but when the institutional ownership ratio increases beyond the inflection point, the bond credit spread rises as the ownership ratio continues to increase, demonstrating a significant U-shaped relationship between the two variables.

4.3. Robustness tests

4.3.1. Quantile regression (QR) analysis

Bond pricing data may be influenced by extreme values or heterogeneity across the distribution. To address this issue, we estimate a series of quantile regressions (QR). This analysis, performed across different values of the dependent variable, *Spread*, can help reveal whether the reported U-shaped relationship between institutional ownership and bond yields holds across different types of bonds, such as distressed vs. low-risk bonds, enhancing the robustness of our findings. Following Zhang et al. (2025b) and Magazzino et al.

¹ In a separate robustness test, we replace these variables with the proportion of institutional shareholdings to the tradable shares of listed companies, $InstProp2$, and its squared term $InstProp2^2$.

Table 1
Variable definitions.

	Variable name	Variable definition
Dependent variable	<i>Spread</i>	The yield difference between a corporate bond and its maturity-matched treasury bond (%).
Main independent variables	<i>InstProp</i>	The year-end proportion of institutional investor holdings of the total shares of a listed company.
	<i>InstProp2</i>	The year-end proportion of institutional investor holdings of the tradable shares of a listed company.
Bond characteristics	<i>Bond Rating</i>	Bond rating, based on four categories: AA-, AA, AA+ and AAA, the numerical ranking ranges from one to four, with AA- assigned a value of one, and AAA a value of four.
	<i>Scale</i>	Natural logarithm of the total value of bonds issued.
	<i>Maturity</i>	Remaining time to maturity, in years.
Issuer characteristics	<i>SOE</i>	Dummy variable, equal to 1 if the issuer is a state-owned enterprise, 0 otherwise.
	<i>Size</i>	Natural logarithm of the firm's total assets.
	<i>Leverage</i>	Book value of total liabilities divided by the book value of total assets.
	<i>ROA</i>	Net profit divided by total assets.
	<i>Cash Flow</i>	Net cash flow from operating activities divided by total assets.
	<i>Growth</i>	Current year operating income divided by the previous year's operating income minus 1.
	<i>Board</i>	Natural logarithm of the number of board members.
	<i>Indep</i>	Number of independent directors divided by the total number of directors.
	<i>Dual</i>	Dummy variable, equal to 1 if the chairman of the board and the general manager are the same person, otherwise 0.
Macroeconomic variables	<i>Per Capita GDP</i>	GDP per capita of the province where the issuer is located (in ten thousand yuan).
	<i>GDP Growth</i>	Quarterly growth factor (1 + g) in the gross domestic product (GDP) of the province in which the bond issuer is located.
Variables used in further analyses	<i>MeanInst</i>	The average proportion of institutional investor holdings of the total shares of a listed company within the same industry in the same year.
	<i>LTDominance</i>	Dummy variable, equal to 1 if the ownership ratio of long-term institutional investors is greater than that of short-term institutional investors, indicating the dominance of long-term institutions, otherwise 0.
	<i>National</i>	Dummy variable, equal to 1 if national institutions hold shares of a listed company, otherwise 0.
	<i>Govern1</i>	Measure of the quality of a firm's corporate governance based on seven indicators.
	<i>Govern2</i>	Measure of the quality of a firm's corporate governance based on nine indicators.
	<i>ROE</i>	Net profit divided by total equity.

The table shows details regarding the construction of dependent and main independent variables as well as bond and issuer characteristics.

Table 2
Descriptive statistics for the main variables.

Variable	Mean	Std. Dev.	Minimum	Median	Maximum
Spread	2.138	1.687	0.301	1.679	15.053
InstProp	0.630	0.173	0.184	0.658	0.921
Bond Rating	3.208	0.846	1.000	3.000	4.000
Scale	20.707	0.749	17.728	20.723	23.026
Maturity	3.064	2.071	0.003	2.804	29.926
SOE	0.662	0.473	0.000	1.000	1.000
Size	24.516	1.599	20.384	24.338	28.293
Leverage	0.615	0.154	0.058	0.636	1.345
ROA	0.030	0.041	-0.448	0.026	0.346
Cash Flow	0.043	0.061	-0.290	0.041	0.489
Growth	0.336	1.273	-1.079	0.119	43.094
Board	2.218	0.214	1.609	2.197	2.890
Indep	0.377	0.061	0.200	0.364	0.800
Dual	0.142	0.349	0.000	0.000	1.000
Per Capita GDP	8.710	4.552	1.288	7.877	20.028
GDP Growth	1.070	0.027	0.950	1.074	1.172

This table provides summary statistics (i.e., the mean, median, standard deviation, minimum, and maximum) for all sample variables. The sample period is from 2010 to 2024, and the number of firm-year observations is 6239.

(2025), we estimate quantile regressions at the 25th, 50th, and 75th percentiles. The results are presented in Table 4. In all columns, the coefficients of both the linear and squared terms of institutional ownership remain significant and exhibit the same signs as those in the baseline regression model. This indicates that the U-shaped relationship between institutional ownership and bond credit spreads remains robust across different quantiles.

4.3.2. Alternative dependent variable

To account for the fact that a single company may issue multiple bonds, we follow the existing literature (Adams and Mansi, 2009; Chen and King, 2014; Dick-Nielsen et al., 2023) and calculate the annual bond-weighted credit spread at the company level, denoted by *FirmSpread* and by using the proportion of each bond's issuance size (the total amount issued of a particular bond divided by the sum of the total issuance amounts of all bonds issued by the company) as weights. We then estimate Model (1), again using '*FirmSpread*' as

Table 3
The effect of institutional investor holdings on bond spreads.

	(1)	(2)	(3)	(4)
	<i>Spread</i>			
	Full sample	Full sample	Left side	Right side
<i>InstProp</i>	-4.379*** (-6.170)	-2.937*** (-4.582)	-0.804*** (-2.990)	0.620** (2.094)
<i>InstProp</i> ²	1.804*** (3.023)	2.330*** (4.285)		
<i>Bond Rating</i>		-0.559*** (-18.181)	-0.704*** (-15.282)	-0.387*** (-9.434)
<i>Scale</i>		-0.109*** (-3.566)	-0.240*** (-4.626)	-0.103*** (-2.877)
<i>Maturity</i>		-0.049*** (-5.298)	-0.053*** (-2.796)	-0.039*** (-3.983)
<i>SOE</i>		-0.968*** (-22.254)	-0.863*** (-13.206)	-1.087*** (-18.708)
<i>Size</i>		-0.045** (-1.978)	0.120*** (2.764)	-0.071*** (-2.694)
<i>Leverage</i>		0.967*** (5.415)	1.064*** (3.903)	0.656*** (2.818)
<i>ROA</i>		-8.634*** (-15.954)	-10.744*** (-13.616)	-6.214*** (-8.417)
<i>Cashflow</i>		0.856*** (2.689)	0.936* (1.915)	0.063 (0.157)
<i>Growth</i>		0.030** (2.093)	0.130*** (4.645)	-0.018 (-1.161)
<i>Board</i>		0.221** (2.297)	-0.041 (-0.253)	0.141 (1.226)
<i>Indep</i>		0.619* (1.867)	-0.820 (-1.390)	0.824** (2.164)
<i>Dual</i>		-0.088* (-1.646)	-0.389*** (-4.980)	0.379*** (5.122)
<i>Per Capita GDP</i>		-0.058*** (-11.083)	-0.086*** (-9.118)	-0.037*** (-6.271)
<i>GDP Growth</i>		-6.312*** (-4.604)	-10.229*** (-4.835)	-4.615*** (-2.669)
<i>Constant</i>	4.127*** (20.424)	15.106*** (9.274)	19.387*** (7.757)	11.945*** (5.919)
<i>Year</i>	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes
<i>N</i>	6239	6239	2769	3470
<i>Adjusted R</i> ²	0.158	0.367	0.370	0.359

This table reports the results of a panel regression analysis of Chinese corporate bond spreads between 2010 and 2024. The dependent variable is the annual yield spread between a corporate bond and its maturity-matched treasury bond. The main independent variables are the year-end institutional ownership ratio and its squared term. Using the full sample, Columns (1) and (2) present the test results without and with control variables, respectively. Columns (3) and (4) provide the results of the grouping tests based on samples left and right of the institutional ownership ratio inflection point. "Left side" refers to the samples to the left side of the inflection point, while "Right side" refers to the samples to the right side of the inflection point. Year and industry fixed effects are included in all specifications. We report coefficient estimates with *t*-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

the dependent variable. The empirical results, shown in the first three columns of Table 5, indicate that the coefficient of *InstProp*² remains significantly positive. The results for the subsample regressions before and after the inflection point remain robust.

4.3.3. Replacing explanatory variables

We replace the original explanatory variables with the proportion of year-end institutional shareholdings to the outstanding shares of listed companies, *InstProp*², and its squared term *InstProp*². We then estimate an extended Model (1) which includes these alternatively defined variables. The empirical results, presented in the last three columns of Table 5, reaffirm the robustness of the baseline regression results.

4.3.4. Endogeneity analysis

To address the potential endogeneity between the shareholdings of institutional investors and a firm's bond yield spread, we use the average proportion of institutional investor holdings to the total shares of a listed company within the same industry in the same year, denoted as *MeanInst*, as an instrumental variable. In an instrumental variable research design, a valid instrument must meet the relevance and exogeneity conditions (Wooldridge, 2010). The first-stage F-statistic is informative about whether an instrument satisfies the relevance condition (Keane and Neal, 2023). In the first-stage regression reported in Column 1 of Table 6, the F statistic is 137.11, which significantly exceeds the critical value of 7.03 for a 10% bias in the Stock and Yogo (2005) weak instrument test. This

Table 4
Quantile regression test.

	(1)	(2)	(3)
	q25	q50	q75
<i>InstProp</i>	-2.028*** (-4.740)	-1.716*** (-3.379)	-3.089*** (-3.649)
<i>InstProp</i> ²	1.685*** (4.652)	1.509*** (3.502)	2.560*** (3.788)
<i>Bond Rating</i>	-0.306*** (-15.107)	-0.443*** (-18.193)	-0.575*** (-17.807)
<i>Scale</i>	-0.076*** (-3.963)	-0.121*** (-4.981)	-0.083*** (-2.586)
<i>Maturity</i>	0.021*** (3.504)	0.007 (0.995)	-0.022*** (-2.953)
<i>SOE</i>	-0.452*** (-15.791)	-0.745*** (-21.626)	-1.178*** (-14.610)
<i>Size</i>	-0.091*** (-6.413)	-0.094*** (-5.204)	-0.062** (-2.530)
<i>Leverage</i>	0.706*** (5.951)	0.888*** (6.276)	0.938*** (5.592)
<i>ROA</i>	-3.088*** (-8.702)	-5.678*** (-13.243)	-7.816*** (-13.044)
<i>Cashflow</i>	-0.378* (-1.790)	0.502** (1.992)	1.192*** (3.977)
<i>Growth</i>	0.018* (1.915)	0.011 (0.959)	0.049** (2.135)
<i>Board</i>	0.176*** (2.743)	0.232*** (3.041)	0.245*** (2.953)
<i>Indep</i>	0.390* (1.768)	0.396 (1.508)	0.692* (1.890)
<i>Dual</i>	0.004 (0.120)	0.010 (0.227)	-0.048 (-0.558)
<i>Per Capita GDP</i>	-0.024*** (-7.640)	-0.032*** (-7.698)	-0.066*** (-9.667)
<i>GDP Growth</i>	2.362*** (4.577)	-2.419** (-2.227)	-4.277** (-2.561)
<i>Constant</i>	3.883*** (5.303)	10.467*** (7.748)	12.329*** (5.924)
<i>Year</i>	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes
<i>N</i>	6239	6239	6239
<i>Adjusted R</i> ²	0.221	0.287	0.298

In this table, we examine whether the relationship between institutional ownership and bond credit spreads varies between different quartiles of our dependent variable, *Spread*. Columns (1), (2), and (3) present the quantile regression results at the 25th, 50th, and 75th percentile, respectively. The dependent variable in each model is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond. The main independent variables are the year-end institutional ownership and its square terms. We report coefficient estimates with t-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

result indicates that the *MeanInst* meets the relevance condition required for a valid instrument variable. Meanwhile, *MeanInst* within the same industry in the same year does not directly affect a firm's bond credit spread, ensuring that our instrumental variable also fulfills the exogeneity condition. The first-stage regression results in Table 6 demonstrate a significant positive correlation between a company's institutional ownership and the industry average within the same year. A subsequent examination in the second stage indicates that even after controlling for endogeneity, the U-shaped relationship between the shareholdings of institutional investors and the bond credit spread remains valid.

4.4. Heterogeneity analysis

4.4.1. The holding period of institutional investors

Institutional investors exhibit considerable heterogeneity in terms of their holding period. Different types of institutional investors have varying impacts on a firm's corporate governance which, consequently, is likely to exert a different influence on bond prices. Drawing from Yan and Zhang's (2009) and Huang and Petkevich's (2016) methodologies, we categorize institutional investors based on the turnover of their trades into two groups: long-term stable investors and short-term speculative investors. We then calculate their respective ownership proportions denoted as *LongProp* and *ShortProp*.

We focus on the turnover of an institution's trading activities over the past two years. Specifically, we first compute the total value of stocks bought and sold by each institutional investor during each half-year period within the sample period. For a particular

Table 5
Robustness tests for replacement variables.

	Substitution of dependent variables			Substitution of independent variables		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Spread</i>					
	Full sample	Left side	Right side	Full sample	Left side	Right side
<i>InstProp</i>	-3.320*** (-4.464)	-1.022*** (-3.506)	0.722* (1.725)			
<i>InstProp</i> ²	2.705*** (4.182)					
<i>InstProp2</i>				-1.105** (-2.506)	-0.347* (-1.819)	0.626* (1.733)
<i>InstProp2</i> ²				0.858** (2.103)		
<i>Bond Rating</i>	-0.515*** (-13.967)	-0.553*** (-10.433)	-0.374*** (-6.977)	-0.565*** (-18.384)	-0.651*** (-15.728)	-0.643*** (-13.585)
<i>Scale</i>	-0.223*** (-4.922)	-0.131* (-1.930)	-0.251*** (-4.069)	-0.107*** (-3.506)	-0.173*** (-3.766)	-0.118*** (-2.842)
<i>Maturity</i>	-0.072*** (-4.921)	-0.077*** (-3.449)	-0.077*** (-3.991)	-0.050*** (-5.320)	-0.054*** (-3.543)	-0.046*** (-4.000)
<i>SOE</i>	-0.819*** (-15.457)	-0.789*** (-10.590)	-0.813*** (-10.438)	-0.980*** (-22.516)	-0.889*** (-15.141)	-1.194*** (-17.847)
<i>Size</i>	-0.003 (-0.088)	-0.177*** (-3.387)	-0.040 (-0.934)	-0.042* (-1.877)	0.040 (1.103)	-0.020 (-0.661)
<i>Leverage</i>	1.067*** (5.122)	3.476*** (13.053)	1.623*** (6.511)	0.935*** (5.251)	0.829*** (3.386)	0.913*** (3.310)
<i>ROA</i>	-8.934*** (-15.052)	-0.739*** (-6.398)	-1.582*** (-5.947)	-8.729*** (-16.108)	-10.130*** (-13.964)	-4.185*** (-4.852)
<i>Cash Flow</i>	0.583 (1.603)	-0.510 (-0.960)	-1.342*** (-2.912)	0.900*** (2.822)	0.620 (1.434)	-0.328 (-0.666)
<i>Growth</i>	0.015 (0.768)	0.081** (1.968)	-0.033 (-1.622)	0.028** (1.977)	0.038** (2.187)	-0.053* (-1.929)
<i>Board</i>	0.073 (0.591)	0.080 (0.416)	0.102 (0.638)	0.229** (2.373)	0.090 (0.623)	0.186 (1.396)
<i>Indep</i>	0.381 (0.904)	-0.150 (-0.230)	1.328** (2.415)	0.599* (1.805)	-0.279 (-0.556)	0.423 (0.944)
<i>Dual</i>	-0.122* (-1.940)	-0.189** (-2.120)	0.091 (0.977)	-0.075 (-1.405)	-0.309*** (-4.371)	0.753*** (8.772)
<i>Per Capita GDP</i>	-0.068*** (-9.542)	-0.090*** (-7.974)	-0.049*** (-5.347)	-0.056*** (-10.722)	-0.084*** (-10.168)	-0.040*** (-5.917)
<i>GDP Growth</i>	-7.824*** (-4.987)	-12.324*** (-5.256)	-5.505*** (-2.597)	-6.362*** (-4.629)	-9.947*** (-5.342)	-0.841 (-0.396)
<i>Constant</i>	18.480*** (9.707)	23.947*** (8.578)	14.326*** (5.571)	14.533*** (8.977)	18.874*** (8.555)	6.850*** (2.814)
<i>Year</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	3455	1955	1500	6239	3411	2828
<i>Adjusted R</i> ²	0.405	0.358	0.368	0.366	0.353	0.294

This table reports the results of a panel regression analysis of bond spreads after replacing our dependent and main independent variables with alternative measures. In the Columns (1) to (3), the dependent variable is the firm-level bond spread weighted by the bond issuance amount, and the main independent variables are the year-end institutional ownership ratio and its squared term. In the Columns (4) to (6), the dependent variable is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond, and the main independent variables are the year-end institutional ownership ratio based on a firm's floating shares rather than all shares outstanding, and its squared term. Year and industry fixed effects are included in all specifications. We report coefficient estimates with *t*-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

institutional investor *k*, the formulas for calculating the total value of stocks bought and sold in each half-year period are as follows:

$$CR_buy_{k,t} = \sum_{i=1}^N |S_{k,i,t} P_{i,t} - S_{k,i,t-1} P_{i,t-1} - S_{k,i,t-1} \Delta P_{i,t}| (if S_{k,i,t} \geq S_{k,i,t-1}) \tag{2}$$

and

$$CR_sell_{k,t} = \sum_{i=1}^N |S_{k,i,t} P_{i,t} - S_{k,i,t-1} P_{i,t-1} - S_{k,i,t-1} \Delta P_{i,t}| (if S_{k,i,t} < S_{k,i,t-1}) \tag{3}$$

where $P_{i,t}$ and $P_{i,t-1}$, respectively, represent the stock prices of company *i* at time *t* and *t-1*. $S_{k,i,t}$ and $S_{k,i,t-1}$ represent the number of shares of company *i* held by institutional investor *k* at time *t* and *t-1*. $CR_buy_{k,t}$ and $CR_sell_{k,t}$, respectively, indicate the cumulative market value of stocks purchased and sold by institutional investor *k* in period *t*.

Table 6
Endogeneity tests.

	(1)	(2)
	Stage 1	Stage 2
<i>MeanInst</i>	0.414*** (16.246)	
<i>InstProp</i>		-16.610*** (-2.681)
<i>InstProp</i> ²		11.693** (2.136)
<i>Bond Rating</i>	0.012*** (4.108)	-0.652*** (-16.634)
<i>Scale</i>	0.009*** (3.046)	-0.118*** (-3.261)
<i>Maturity</i>	0.002** (2.571)	-0.052*** (-4.760)
<i>SOE</i>	0.038*** (8.865)	-1.237*** (-18.090)
<i>Size</i>	0.051*** (23.513)	-0.137** (-2.362)
<i>Leverage</i>	-0.118*** (-6.754)	0.790** (2.512)
<i>ROA</i>	0.395*** (7.386)	-10.532*** (-15.713)
<i>Cash Flow</i>	0.048 (1.534)	0.804** (2.239)
<i>Growth</i>	0.003* (1.766)	0.025 (1.567)
<i>Board</i>	0.029*** (3.039)	0.246** (2.029)
<i>Indep</i>	0.006 (0.175)	0.548 (1.491)
<i>Dual</i>	-0.037*** (-6.968)	0.146** (2.030)
<i>Per Capita GDP</i>	0.002*** (3.382)	-0.049*** (-4.252)
<i>GDP Growth</i>	0.258* (1.889)	-5.680*** (-3.661)
<i>Constant</i>	-1.453*** (-8.655)	10.757*** (2.946)
<i>Year</i>	Yes	Yes
<i>Industry</i>	Yes	Yes
<i>F-statistic</i>	137.11	
<i>N</i>	6239	6239
<i>Adjusted R²</i>	0.406	0.227

This table reports the results of a two-stage least squares (2SLS) test using the year-industry average of the institutional ownership ratio (*MeanInst*) as the instrumental variable. In Stage 1 (Column 1), the dependent variable is the proportion of institutional ownership in a given firm (*InstProp*). In Column 2, we employ the fitted *InstProp* from Stage 1 in our Stage 2 regression. Here, the dependent variable is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond, and the main independent variables are the year-end institutional ownership ratio and its squared term. Year and industry fixed effects are included in all specifications. We report coefficient estimates with t-statistics in parentheses below, and also report the first-stage F-statistic. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

We then calculate the turnover rate of institutional investor k at time t as:

$$CR_{k,t} = \frac{2 \min(CR_{buy_{k,t}}, CR_{sell_{k,t}})}{\sum_{i=1}^{N_k} (S_{k,i,t} P_{i,t} + S_{k,i,t-1} P_{i,t-1})} \quad (4)$$

Next, to calculate the average turnover rate of institutional investor k over the past four half-years (i.e., the past two years), we use the following formula:

$$AVG_CR_{k,t} = 1/4 \sum_{j=0}^3 CR_{k,t-j} \quad (5)$$

Finally, we categorize the results into three groups according to the average turnover rate of all institutional investors in each

period. The group with the highest average turnover rate comprises trading-oriented institutional investors, while the group with the lowest turnover rate represents more stability-oriented institutional investors. We then calculate the ownership ratios of long-term stable institutional investors and short-term opportunistic institutional investor in each period. Finally, we compare these ownership ratios by constructing a dummy variable, *LTDominance*. This variable proxies for the relative dominance of long-term institutional investors. If the ownership ratio of long-term institutional investors is greater than that of short-term institutional investors, indicating the dominance of long-term institutions, we assign *LTDominance* a value of 1; otherwise, we assign a value of 0.

To examine the moderating effect of institutional investor heterogeneity on the U-shaped relationship between institutional ownership and a firm's bond credit spread, we augment Model (1) by incorporating an interaction term of the institutional ownership ratio and a dummy variable for firms with predominantly long-term institutional investors ($InstProp \times LTDominance$), as well as an interaction term between the squared institutional ownership ratio and the *LTDominance* dummy variable ($InstProp^2 \times LTDominance$). We first estimate the resulting model. Additionally, based on the values of *LTDominance*, we divide the overall sample into subsamples in which either long-term institutional investors dominate and subsamples in which short-term institutional investors dominate,

Table 7
Heterogeneity analysis based on institutional investor types.

	(1)	(2)	(3)
	<i>Spread</i>		
	Full sample	Short-term	Long-term
<i>InstProp</i>	-2.587*** (-3.294)	-2.527*** (-3.083)	-0.446 (-0.677)
<i>InstProp</i> ²	2.377*** (3.465)	2.346*** (3.257)	0.375 (0.696)
<i>InstProp</i> × <i>LTDominance</i>	2.112** (2.131)		
<i>InstProp</i> ² × <i>LTDominance</i>	-1.963** (-2.334)		
<i>LTDominance</i>	-0.611** (-2.195)		
<i>Bond Rating</i>	-0.461*** (-21.015)	-0.438*** (-11.622)	-0.471*** (-17.373)
<i>Scale</i>	-0.130*** (-5.915)	-0.130*** (-3.001)	-0.129*** (-5.028)
<i>Maturity</i>	-0.017*** (-2.594)	-0.030** (-2.529)	-0.010 (-1.179)
<i>SOE</i>	-0.780*** (-25.060)	-0.819*** (-14.967)	-0.760*** (-19.893)
<i>Size</i>	-0.069*** (-4.132)	-0.051 (-1.517)	-0.070*** (-3.601)
<i>Leverage</i>	1.011*** (7.881)	0.751*** (3.266)	1.052*** (6.605)
<i>ROA</i>	-6.515*** (-16.373)	-6.788*** (-11.005)	-6.581*** (-12.506)
<i>Cash Flow</i>	0.527** (2.311)	-0.159 (-0.428)	0.886*** (3.050)
<i>Growth</i>	0.039*** (3.912)	0.035*** (2.705)	0.042*** (2.735)
<i>Board</i>	0.092 (1.318)	0.014 (0.096)	0.132 (1.639)
<i>Indep</i>	0.419* (1.749)	0.817* (1.730)	0.218 (0.778)
<i>Dual</i>	0.007 (0.195)	0.062 (0.949)	-0.017 (-0.358)
<i>Per Capita GDP</i>	-0.050*** (-13.148)	-0.047*** (-5.801)	-0.050*** (-11.583)
<i>GDP Growth</i>	-3.927*** (-4.011)	-4.031** (-2.388)	-4.138*** (-3.413)
<i>Constant</i>	12.941*** (10.931)	12.804*** (6.160)	12.544*** (8.768)
<i>Year</i>	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes
<i>N</i>	6239	2136	4103
<i>Adjusted R</i> ²	0.453	0.481	0.432

This table compares the relationship between the bond spreads and the institutional ownership by different institutional investors. The dependent variable is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond. The main independent variables are the year-end institutional ownership and its square terms. Dummy variable *DLTST* equals 1 if the ownership ratio of long-term institutional investor is greater than that of short-term institutional investors, indicating the dominance of long-term institutions, otherwise 0. Year and industry fixed effects are included in all specifications. We report coefficient estimates with *t*-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

conducting a grouped test. Table 7 presents the relevant regression results.

The results in Column (1) of Table 7 show that the regression coefficient of the interaction term ($InstProp^2 \times LTDominance$) of the squared institutional ownership ratio and the long-term institutional dominance dummy is significantly negative. This indicates that when long-term institutional investors prevail among the listed company's institutional investors, the U-shaped relationship between institutional ownership ratio and the bond credit spread weakens. A further examination of the sub-sample regression results, shown in Columns (2) and (3) of Table 7, reveal a relatively lower significance for the coefficients of the institutional shareholding ratio and its squared term in the sub-sample in which long-term institutional investors dominate.

Fig. 1 shows that in the sample in which long-term institutional investors dominate, the U-shaped relationship is flatter and exhibits a negative correlation on the left side of the inflection point. This aligns with our regression results and suggests that, compared to short-term, more trading-focused institutional investors, long-term institutional investors have longer holding periods, placing greater importance on the long-term performance and corporate governance of the companies in which they invest. Therefore, even when their ownership ratio reaches a certain threshold, their supervisory effect on the company is still maintained at a moderate level.

4.4.2. The ownership of institutional investors on the “national team”

During China's stock market turmoil in the summer of 2015, the Chinese government organized a “national team” of securities firms to stabilize the market (Huang et al., 2019; Allen et al., 2020). According to these studies, interventions by the national team substantially increased the value of the rescued nonfinancial firms through increased stock demand, reduced default probabilities, and improved market liquidity. Based on this case, Brunnermeier et al. (2022) develops a theoretical framework to rationalize the approaches of the Chinese government's regular and intensive interventions in its financial system, with financial stability prioritized over other policy objectives under certain economic conditions. Dang et al. (2024) find that the national team's intervention led to reduced volatility and mitigated information asymmetry following the disclosure of government shareholdings. Based on statistics from the Wind database, the national team primarily consists of investment platforms or funds that the China Securities Finance Corporation Limited (CSF), China Central Huijin Investment Limited (CCH), and the State Administration of Foreign Exchange (SAFE) manage. The national team, unlike traditional institutional investors, has a government background and embodies a triple identity as investor, regulator, and stabilizer of the market. Leveraging their value investment approach and regulatory capabilities, they participate in corporate governance and effectively address risks stemming from both internal and external corporate governance mechanisms. Furthermore, national team ownership stakes can mitigate corporate default risks by improving a company's information environment, reducing external financing constraints, and alleviating agency problems. In light of its important role, we expand our analysis and examine the moderating effect of the national team's ownership on the U-shaped relationship between the institutional ownership ratio and the bond credit spread. Table 8 presents our results.

Following Cheng et al. (2022), we construct a dummy variable, *National*, which identifies shareholdings of the national team's institutional investors. If national team institutions hold shares of a listed company, the variable takes on a value of 1; otherwise, it is 0. Table 8 documents the moderating effect of national team shareholdings. The regression results for the total sample in Column (1) indicate that the regression coefficient of the interaction term between the squared institutional ownership and the national team dummy ($InstProp^2 \times National$) is significantly negative. This suggests that when the national team has an ownership stake in a given company, the U-shaped relationship between the institutional shareholdings and the bond credit spread weakens. Examining the results of the subsample regressions in Columns (2) and (3) further confirms that the U-shaped relationship between institutional ownership and the bond credit spread is more significant in companies in which the national team does not hold stocks. Additionally, per Table 8, Column (1), the coefficient of the national team shareholding dummy (*National*) is significantly negative, indicating lower bond financing costs for companies that are partially held by the national team.

Fig. 2 shows that the U-shaped relationship is flatter in the sample of companies whose investors include members of the national team and that their bond credit spread is notably lower. This aligns with our regression results. When institutional investors from the national team hold shares of publicly listed companies, their government background provides implicit guarantees for the company's

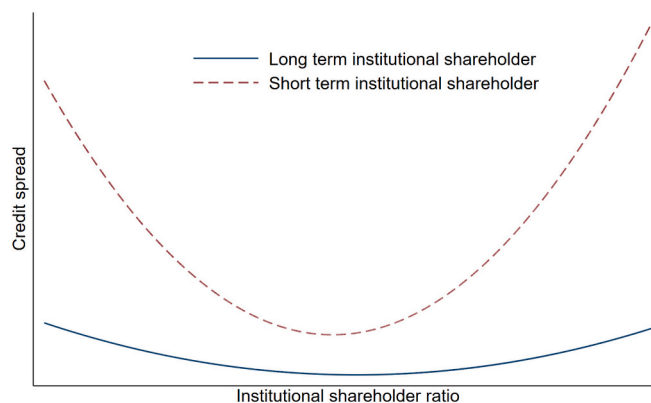


Fig. 1. The moderating effect of institutional investor heterogeneity.

Table 8
Heterogeneity analysis based on “national team” holdings.

	(1) <i>Spread</i>	(2)	(3)
	Total sample	No “national team” holdings	“National team” holdings
<i>InstProp</i>	−4.508*** (−5.586)	−4.563*** (−6.047)	−0.348 (−0.299)
<i>InstProp</i> ²	3.810*** (5.451)	3.831*** (5.846)	0.157 (0.165)
<i>InstProp</i> × <i>National</i>	4.048*** (3.191)		
<i>InstProp</i> ² × <i>National</i>	−3.653*** (−3.469)		
<i>National</i>	−1.112*** (−3.018)		
<i>Bond Rating</i>	−0.565*** (−18.399)	−0.585*** (−15.405)	−0.521*** (−10.348)
<i>Scale</i>	−0.110*** (−3.609)	−0.150*** (−3.392)	−0.077* (−1.766)
<i>Maturity</i>	−0.050*** (−5.347)	−0.027** (−2.214)	−0.072*** (−5.061)
<i>SOE</i>	−0.959*** (−22.002)	−0.803*** (−14.201)	−1.137*** (−16.915)
<i>Size</i>	−0.026 (−1.106)	0.001 (0.040)	−0.062* (−1.778)
<i>Leverage</i>	0.926*** (5.161)	0.754*** (3.423)	1.159*** (3.862)
<i>ROA</i>	−8.805*** (−16.215)	−9.040*** (−14.043)	−8.346*** (−8.943)
<i>Cash Flow</i>	0.871*** (2.737)	1.150*** (3.016)	0.283 (0.534)
<i>Growth</i>	0.032** (2.257)	0.056*** (2.733)	0.008 (0.392)
<i>Board</i>	0.226** (2.340)	0.309** (2.247)	0.217 (1.564)
<i>Indep</i>	0.620* (1.873)	1.001** (2.136)	0.498 (1.036)
<i>Dual</i>	−0.095* (−1.770)	−0.050 (−0.750)	−0.163* (−1.893)
<i>Per Capita GDP</i>	−0.055*** (−10.291)	−0.048*** (−5.984)	−0.061*** (−8.257)
<i>GDP Growth</i>	−6.053*** (−4.416)	−7.553*** (−4.640)	−3.047 (−1.261)
<i>Constant</i>	14.826*** (9.042)	16.228*** (8.110)	10.689*** (3.808)
<i>Year</i>	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes
<i>N</i>	6239	3037	3202
<i>Adjusted R</i> ²	0.369	0.417	0.328

This table examines the moderating effect of “national team” holdings on the relationship between bond spreads and institutional ownership. The dependent variable is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond. The main independent variables are the year-end institutional ownership and its squared term. Year and industry fixed effects are included in all specifications. We report coefficient estimates with *t*-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

bonds, significantly reducing the bond credit spread. Additionally, as institutions from the national team serve a dual role as investors and regulators, their decision-making perspective in corporate governance is more long-term, and their supervision is more effective. This, in turn, makes the threshold effect of institutional ownership on corporate governance levels and, subsequently, on the bond credit spread less pronounced.

4.4.3. Institutional ownership and bond pricing in turbulent times

To further investigate whether the relationship between institutional ownership and bond credit spreads is sensitive to market conditions, especially during periods of turbulence, we focus on two major shocks—the 2015 market crash and the height of the COVID-19 crisis in 2020. These episodes provide a natural setting to explore how institutional ownership affects bond pricing under heightened market stress. The regression results are presented in Table 9. As shown in Columns (1) and (2), the coefficients on the linear and quadratic terms of institutional ownership are significantly negative and significantly positive, respectively, indicating a U-shaped relationship between institutional ownership and credit spreads. This pattern is consistent with the baseline regression results for the full sample. Notably, the turning point of the U-shaped curve is 0.5267 for the 2015 market crash period and 0.5964 for the 2020 COVID-19 period, both of which are lower than the turning point of 0.6302 for the full sample. Because both periods are

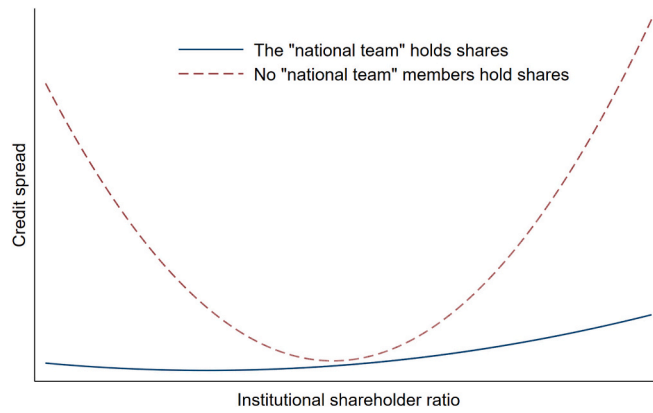


Fig. 2. The moderating effect of “national team” ownership.

Table 9
Institutional ownership and bond pricing in turbulent times.

	(1)	(2)
	2015	2020
<i>InstProp</i>	-2.974*	-6.278*
	(-1.941)	(-1.668)
<i>InstProp</i> ²	2.824**	5.125*
	(2.133)	(1.685)
<i>Bond Rating</i>	-0.374***	-0.759***
	(-4.996)	(-4.181)
<i>Scale</i>	-0.076	-0.128
	(-0.842)	(-0.800)
<i>Maturity</i>	0.049**	-0.118**
	(2.156)	(-2.381)
<i>SOE</i>	-0.350***	-1.675***
	(-3.311)	(-7.176)
<i>Size</i>	-0.242***	-0.146
	(-3.437)	(-1.291)
<i>Leverage</i>	0.853**	-0.251
	(2.095)	(-0.215)
<i>ROA</i>	-9.467***	-13.837***
	(-7.448)	(-3.185)
<i>Cashflow</i>	0.161	0.701
	(0.239)	(0.284)
<i>Growth</i>	0.445***	-0.408
	(2.892)	(-0.871)
<i>Board</i>	-0.302	0.951**
	(-1.283)	(1.988)
<i>Indep</i>	0.388	1.385
	(0.429)	(0.934)
<i>Dual</i>	-0.046	0.152
	(-0.358)	(0.562)
<i>Per Capita GDP</i>	-0.035*	-0.023
	(-1.863)	(-0.876)
<i>GDP Growth</i>	-7.345**	-0.351
	(-2.091)	(-0.056)
<i>Constant</i>	19.699***	12.868*
	(4.713)	(1.768)
<i>Year</i>	Yes	Yes
<i>Industry</i>	Yes	Yes
<i>N</i>	436	405
<i>Adjusted R</i> ²	0.504	0.394

This table reports regression results for subsamples drawn from two major adverse market events: the 2015 market crash and the 2020 COVID-19 crisis. The dependent variable is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond, and the main independent variables are the year-end institutional ownership and its squared term. Year and industry fixed effects are included in all specifications. We report coefficient estimates with t-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

associated with negative shocks, the fact that the turning points occur at lower levels of institutional ownership suggests that during adverse events, the negative effects of high institutional ownership—such as impaired corporate governance or under-performance—tend to outweigh the positive effects at an earlier stage. As a result, increases in institutional ownership begin to widen bond credit spreads even at relatively lower ownership levels, leading to an earlier arrival of the turning point in the U-shaped curve. This finding implies that under market stress, institutional investors are more likely to amplify market volatility rather than stabilize it. Our results thus lend support to the conclusions of [Fan and Fu \(2020\)](#), [Li and Jiang \(2022\)](#), and [Batra et al. \(2024\)](#), who document similar dynamics in emerging markets such as China and India.

4.5. Channel analysis

4.5.1. Institutional investor ownership and corporate governance quality

The empirical results in the preceding sections suggest a significant U-shaped relationship between institutional ownership and bond credit spreads. Initially, as institutional ownership increases and institutions provide effective supervision, the level of corporate

Table 10

The corporate governance channel.

	(1) <i>Spread</i> Spread	(2) Govern1	(3) Spread	(4) Govern2	(5) Spread
<i>InstProp</i>	-2.433*** (-3.638)	3.536*** (34.820)	-1.063** (-2.446)	3.522*** (21.393)	-1.682** (-2.368)
<i>InstProp</i> ²	1.916*** (3.358)	-1.536*** (-17.734)	1.321** (2.257)	-0.984*** (-7.004)	2.100*** (3.573)
<i>Govern1</i>			-0.387*** (-4.457)		
<i>Govern2</i>					-0.503*** (-11.792)
<i>Bond Rating</i>	-0.588*** (-18.290)	0.008* (1.728)	-0.585*** (-18.214)	-0.007 (-0.946)	-0.695*** (-21.441)
<i>Scale</i>	-0.109*** (-3.389)	-0.024*** (-4.981)	-0.118*** (-3.680)	0.001 (0.081)	-0.126*** (-3.839)
<i>Maturity</i>	-0.050*** (-5.054)	-0.002 (-1.567)	-0.051*** (-5.154)	-0.004 (-1.612)	-0.059*** (-5.866)
<i>SOE</i>	-0.951*** (-21.102)	0.049*** (7.133)	-0.932*** (-20.625)	0.686*** (61.813)	-1.011*** (-17.369)
<i>Size</i>	-0.048** (-2.029)	0.062*** (17.203)	-0.024 (-0.994)	-0.073*** (-12.510)	-0.047* (-1.920)
<i>Leverage</i>	0.948*** (5.058)	-0.067** (-2.359)	0.922*** (4.925)	0.172*** (3.736)	0.907*** (4.708)
<i>ROA</i>	-9.113*** (-16.065)	0.034 (0.393)	-9.100*** (-16.068)	-0.220 (-1.578)	-8.406*** (-14.478)
<i>Cash Flow</i>	1.120*** (3.357)	0.026 (0.520)	1.130*** (3.393)	-0.008 (-0.094)	0.957*** (2.797)
<i>Growth</i>	0.032** (2.235)	-0.001 (-0.664)	0.032** (2.199)	0.008** (2.142)	0.038*** (2.593)
<i>Board</i>	0.192* (1.892)	1.748*** (113.497)	0.869*** (4.760)	0.730*** (29.239)	0.489*** (4.462)
<i>Indep</i>	0.593* (1.680)	-3.544*** (-66.138)	-0.780* (-1.667)	-1.340*** (-15.428)	-0.411 (-1.132)
<i>Dual</i>	-0.100* (-1.799)	-0.494*** (-58.430)	-0.292*** (-4.150)	-0.527*** (-38.402)	-0.230*** (-3.639)
<i>Per Capita GDP</i>	-0.056*** (-10.212)	-0.004*** (-5.163)	-0.058*** (-10.508)	-0.003* (-1.948)	-0.056*** (-9.883)
<i>GDP Growth</i>	-6.222*** (-4.403)	0.829*** (3.863)	-5.901*** (-4.177)	-0.671* (-1.928)	-6.202*** (-4.277)
<i>Constant</i>	15.086*** (8.954)	-5.134*** (-20.064)	13.098*** (7.527)	-0.185 (-0.445)	14.680*** (8.495)
<i>Year</i>	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes
<i>N</i>	5766	5766	5766	5766	5766
<i>Adjusted R²</i>	0.375	0.926	0.377	0.821	0.342

This table reports results for the corporate governance level channel through which institutional ownership affects the bond yield spread. In Columns (1), (3) and (5), the dependent variable is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond. In Columns (2) and (4), the dependent variable is the corporate governance level constructed using a principal component analysis. In all columns, the main independent variables are the year-end institutional ownership and its squared term. Year and industry fixed effects are included in all specifications. We report coefficient estimates with *t*-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

governance improves, leading to enhanced operational performance. At this point, the risk premium demanded by creditors gradually decreases, manifested by a reduction in the yield spread in the secondary market. However, when the institutional ownership ratio reaches a certain threshold, the excessive supervisory effect diminishes the proactiveness of corporate decision agents. This scenario is detrimental to the enhancement of corporate governance and long-term value, harming the interests of creditors and, consequently, increasing the bond credit spread. Building upon the theoretical analysis and empirical findings in the previous sections, we follow Ma et al. (2022) and further explore the underlying channel through which corporate governance affects the yield spread. To measure the quality of a firm's corporate governance, we construct the variable *Govern1* based on seven indicators such as supervision, incentives, and decision-making. Similarly, we construct the variable *Govern2* which covers a total of nine indicators across three broader dimensions: shareholders, the board of directors, and incentive mechanisms. These dimensions measure a firm's corporate governance level. The results show that higher values of *Govern1* and *Govern2* are associated with higher quality corporate governance.

Table 10 shows the intermediary effect of a firm's corporate governance level. The regression results in Columns (2) and (4) show that institutional ownership as measured by *InstProp* is significantly positive, while the coefficient of its squared term, *InstProp*², is significantly negative. This indicates that institutional ownership has an inverted U-shaped effect on a firm's corporate governance level. Specifically, as the proportion of institutional shareholdings increases, the quality of a firm's corporate governance first rises and

Table 11
The firm performance channel.

	(1)	(2)	(3)	(4)	(5)
	<i>Spread</i>				
	<i>Spread</i>	<i>ROA</i>	<i>Spread</i>	<i>ROE</i>	<i>Spread</i>
<i>InstProp</i>	-3.628*** (-5.538)	0.079*** (5.436)	-2.959*** (-4.587)	0.663*** (2.603)	-3.516*** (-5.400)
<i>InstProp</i> ²	2.819*** (5.067)	-0.056*** (-4.557)	2.343*** (4.279)	-0.880*** (-4.077)	2.737*** (4.952)
<i>ROA</i>			-8.493*** (-14.972)		
<i>ROE</i>					-0.853*** (-9.030)
<i>Bond Rating</i>	-0.534*** (-16.936)	-0.003*** (-4.221)	-0.559*** (-18.022)	-0.035*** (-2.870)	-0.540*** (-17.230)
<i>Scale</i>	-0.100*** (-3.181)	-0.001 (-1.339)	-0.108*** (-3.494)	0.054*** (4.458)	-0.109*** (-3.506)
<i>Maturity</i>	-0.052*** (-5.452)	0.000 (1.518)	-0.049*** (-5.259)	-0.003 (-0.777)	-0.050*** (-5.243)
<i>SOE</i>	-0.913*** (-20.456)	-0.007*** (-7.178)	-0.973*** (-22.105)	0.097*** (5.594)	-0.928*** (-20.911)
<i>Size</i>	-0.123*** (-5.261)	0.009*** (17.164)	-0.048** (-2.025)	0.144*** (15.841)	-0.099*** (-4.218)
<i>Leverage</i>	2.296*** (14.223)	-0.154*** (-43.231)	0.985*** (5.437)	0.166** (2.324)	2.050*** (12.559)
<i>Tobin's Q</i>	-0.155*** (-4.889)	0.015*** (21.070)	-0.030 (-0.914)	0.020*** (4.705)	-0.139*** (-4.382)
<i>Cash Flow</i>	-0.389 (-1.226)	0.148*** (21.088)	0.869*** (2.689)	-0.177 (-1.384)	-0.035 (-0.111)
<i>Growth</i>	0.022 (1.505)	0.001*** (2.873)	0.030** (2.080)	0.012** (2.135)	0.023 (1.568)
<i>Board</i>	0.180* (1.826)	0.004* (1.847)	0.215** (2.212)	-0.055 (-1.441)	0.208** (2.116)
<i>Indep</i>	0.687** (2.021)	-0.011 (-1.439)	0.595* (1.781)	-0.179 (-1.357)	0.691** (2.048)
<i>Dual</i>	-0.100* (-1.825)	0.001 (0.644)	-0.094* (-1.735)	0.006 (0.292)	-0.111** (-2.027)
<i>Per Capita GDP</i>	-0.056*** (-10.426)	-0.000* (-1.863)	-0.058*** (-10.968)	-0.004* (-1.754)	-0.057*** (-10.669)
<i>GDP Growth</i>	-8.103*** (-5.780)	0.210*** (6.775)	-6.318*** (-4.571)	1.652*** (3.029)	-7.050*** (-5.044)
<i>Constant</i>	18.084*** (10.797)	-0.339*** (-9.146)	15.206*** (9.180)	-7.417*** (-11.460)	16.669*** (9.973)
<i>Year</i>	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes
<i>N</i>	6173	6173	6173	6173	6173
<i>Adjusted R²</i>	0.344	0.448	0.367	0.361	0.352

This table reports results for the firm performance channel through which institutional ownership affects the bond yield spread. In Columns (1), (3) and (5), the dependent variable is the annual mean yield spread between a corporate bond and its maturity-matched treasury bond. In Columns (2) and (4), the dependent variable is the firms' operating performance measured by ROA and ROE. In all columns, the main independent variables are the year-end institutional ownership and its squared term. Year and industry fixed effects are included in all specifications. We report coefficient estimates with *t*-statistics in parentheses below. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

then declines. The regression results in Table 10 (Columns (3) and (5)), for models that incorporate the corporate governance variables *Govern1* and *Govern2* into Model (1) still reveal a significant U-shaped relationship between institutional ownership and the bond credit spread. However, compared to the baseline regression results in Column (1), the positive coefficients of *InstProp*² all decrease in magnitude. Furthermore, the regression coefficients of *Govern1* and *Govern2* are significantly negative, indicating that higher corporate governance levels partially mediate the U-shaped relationship between institutional ownership and the bond credit spread.

4.5.2. Institutional investor ownership and firm performance

Based on Merton's structural model of credit risk, debt defaults occur when a company fails to fulfill its financial obligations (i.e., when the company's value is lower than the exercise price in a hypothetical call option model). Hence, bond investors tend to focus on changes in the company's value. According to traditional financial theory, a company's value is considered to be the discounted value of future cash flows, suggesting that strong company performance can increase its value. Therefore, we expect that initially, as institutional ownership increases, institutional investors actively provide corporate governance support to protect their interests, thereby improving corporate performance, enhancing enterprise value, and boosting bond investors' confidence. However, when their ownership stakes become excessively high, excessive oversight by institutional investors over a firm's management may lead to decision-making rigidity, having a negative impact on the company's operational performance and increasing the risk of bond default.

Table 11 explores a company's operational performance as a possible channel through which institutional ownership affects bond pricing. Both the return on assets (*ROA*) and return on equity (*ROE*) measure the operational performance of the company. The results in Table 11, Columns (2) and (4) of Table 11 show that regardless of whether *ROA* or *ROE* is used to measure a company's operational performance, the coefficient of *InstProp* is significantly positive, and the coefficient of its squared term, *InstProp*², is significantly negative. This indicates an inverted U-shaped relationship between institutional ownership and a company's operational performance. Furthermore, the results in Columns (3) and (4) demonstrate that even after controlling for the mediating variable, the impact of the company's performance, the U-shaped relationship between institutional ownership and the bond credit spread remains significant. This suggests that a company's operational performance also plays a partial mediating role in the relationship between the institutional ownership and the bond credit spread.

5. Conclusions and policy recommendations

5.1. Research conclusions

Using the institutional ownership and bond trading data of A-share listed companies in China, this study investigates the influence of institutional ownership on bond market pricing. The research reveals a significant nonlinear relationship between overall institutional ownership and the yield spread of bonds. The bond credit spread shows a U-shaped trend with an initial decrease followed by an increase as the proportion of institutional shareholdings rises, suggesting that it becomes "too much of a good thing." Even after a series of robustness checks including variable substitution and endogeneity tests, the U-shaped relationship between the two variables remains significant. An analysis of the possible channels through which institutional investors affect bond pricing indicates that institutions with moderate shareholdings provide effective supervision for listed companies, enhancing corporate governance standards and operational performance. However, when the proportion of institutional ownership is too high, it leads to excessive supervision, restricting management's decision-making autonomy. Moreover, substantial institutional shareholdings trigger excessive market attention and exert market performance pressure on companies, adversely affecting corporate governance and operational performance. Finally, we document heterogeneity in the effect of institutional investor shareholdings on bond pricing among samples of companies dominated by different types of institutional investors and firms in which "national team" institutions hold shares.

This paper makes several important contributions to the existing literature and provides practical guidance for market participants and regulators not only in China but around the globe. First, by exploring the effect of institutional investor holdings on bond pricing, it addresses a topic that remains underexplored, particularly in emerging markets such as China. Second, by differentiating between different types of institutions including long-term versus short-term oriented investors as well as members of China's "national team", the paper provides important new insights regarding different types of institutional equity ownership on debt pricing and enhances our understanding of the central government's stabilization efforts on bond spreads.

5.2. Policy recommendations

Based on our conclusions above, we propose the following policy recommendations:

Firstly, our study provides important guidance for *government regulators*: while promoting the growth and development of institutional investors, they should also encourage institutions to adopt a value-oriented investment philosophy rather than an investment strategy focused on speculation and short-term profits. These incentives, e.g., in the form of higher taxes on short-term profits would stimulate rational, long-term oriented participation in corporate governance and thereby foster the stable development of the capital markets.

Secondly, *listed companies* themselves could encourage long-term investments in their shares by, e.g., granting additional voting rights or dividends to long-term shareholders. By attracting long-term institutional investment, they would mitigate the negative impact of short-term opportunism on corporate governance. In addition, by having institutional investors on their board, firms could leverage the informational and professional advantages of institutional representatives to improve governance practices, foster constructive engagement, and enhance transparency and trust among market participants.

Thirdly, as the ownership stakes of *institutional investors* increase, they should actively engage in corporate governance while also respecting firms' managerial autonomy and decision-making consistency. For instance, they should focus on enhancing operational performance and long-term value, thereby safeguarding the broader interests of market participants.

Fourthly, *bond investors* should carefully weigh related factors in their investment decisions and should pay attention to the type of institutional investors, their holding periods, and changes in their ownership levels. This will help to thoroughly evaluate the issuing firm's governance quality and long-term performance prospects.

Originality and exclusivity

This manuscript is our original work and has not been published or submitted for publication elsewhere, in whole or in part.

Ethical compliance

The research does not involve any human subjects, animal experiments, or data from social media that would require ethical approval.

Authorship contribution

All listed authors have made substantial contributions to the conception, design, analysis, and writing of this paper. Each author has approved the final version of the manuscript and agrees to be accountable for all aspects of the work.

Declaration of competing interest

The authors declare that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ememar.2025.101396>.

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request, subject to relevant confidentiality or data access restrictions.

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