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Institutional Investor Distraction and Debt Concentration

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***Keywords*:** Debt concentration; Institutional Investor; Limited Attention.

JEL classifications: G23, G32, G41.

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Abstract

This paper investigates whether and how institutional investor distraction affects debt concentration using a sample of 25,434 firm-year observations for Chinse non-financial listed firms over the 2007-2021 period. Consistent with our hypothesis, we document robust evidence of a positive relation between institutional investor distraction and debt concentration, even after controlling for a wide range of firm characteristics. Further analysis suggests that the positive relation between institutional investor distraction and debt concentration is greater for firms subject less to external monitoring or internal governance, while more pronounced when coordination concerns are greater and firms are more financially constrained. Taken together, our study highlights the importance of institutional investor monitoring in shaping corporate actions.

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1. Introduction

There is a growing body of literature which focuses on debt concentration, or the extent to which firms rely on a few debt types for corporate investments. On the theory side, Bolton and Scharfstein (1996), Park, (2000), and Bris and Welch (2005) have made a few cases in which firms concentrated debt structure based on trade-off between costs and benefits arising from fewer creditors. Empirically, debt concentration is justified as reducing expected bankruptcy costs (Demiroglu and James, 2015; Ivashina et al., 2016; Li et al., 2021), economizing on information collection and monitoring costs (Li et al., 2018), and lacking access to some segments of the debt markets (Colla et al. 2013). This study attempts to contribute to the literature by investigating whether and how institutional investor distraction affects a firm's debt concentration.

Institutional investors are relatively well studied in the literature and it is generally accepted that institutional investors are more informed and sophisticated and make markets more efficient (Sias and Starks, 1997; Nagel, 2005; Barber and Odean, 2008). Consistent with the notion of limited attention (Kahneman, 1973), Kempf et al., (2017) exploit exogenous shocks to related parts of institutional investors' portfolio and construct a novel measure of distraction. They document consistent evidence that firms with distracted institutional investors are more likely to have corporate actions which do not maximize shareholder value. Using the Kempf et al., (2017) distraction measure, a growing number of studies continue to explore the implications of institutional investor attention including firm disclosure (Abramova et al., 2020), managerial incentives (Gilje et al., 2020; Ni, et al, 2020; Flugum et al. 2021), corporate board governance (Liu et al. 2020), audit quality (Chen et al. 2020), earnings management (Garel et al. 2021), and corporate innovation (Pu et al., 2023). Following this line of inquiries, this paper attempts to explore the impacts of institutional investor distraction on debt concentration in the Chinese context.

We hypothesize that firms with institutional investor distraction should have more concentrated debt structure. Motivated from several theoretical analyses, firms choose an optimal debt concentration based on the tradeoff between the upside arising from less likely strategic defaults and the downside due to inefficient liquidation (Bolton and Scharfstein, 1996), or on the tradeoff between ex post collection costs and ex ante anticipated agency or signaling costs (Bris and Welch, 2005). Given that institutional investors can discipline opportunistic behaviors of corporate managers, alleviate agency problems brought by external investors and thus improve corporate governance (Aggarwal et al., 2011, Chung and Zhang, 2011, Admati and Pfleiderer, 2009), institutional investors can reduce the cost of debt dispersion by reducing both the risk and the cost of coordination failure. Thus, firms with greater institutional ownership should have more dispersed debt structures (more creditors). Firms with greater institutional investor inattention should have more concentrated debt structure.

Using a sample of 25,434 firm-year observations for Chinse non-financial listed firms over the 2007-2021 period, we document robust evidence of a positive relation between institutional investor distraction and debt concentration, even after controlling for a wide range of firm characteristics which might affect debt concentration as evidenced by the empirical literature. These results are consistent with our empirical hypothesis that firms with greater institutional investor inattention should have more concentrated debt structure.

We explore three potential mechanisms through which institutional investor distraction can affect debt concentration: external monitoring, internal governance and accounting quality. First, following Chen et al., (2015) and Dunn and Mayhew (2004), we use analyst coverage and big 4 auditors to measure external monitoring. We find consistent evidence that the positive relation between institutional investor distraction and debt concentration is significant for the low analyst coverage or Non-big 4 subsample, but insignificant for the high analyst coverage or Big 4 subsample. Second, following the literature, we consider seven firm characteristics

which are important for internal governance including board independence, board size, institutional shareholding, ownership concentration, executive compensation, management shareholding, and CEO duality. Using principal component analysis (PCA), we generate a composite index for a firm's internal governance. We find consistent evidence that the positive relation between institutional investor distraction and debt concentration is significant only for the low internal governance subsample, but insignificant for the subsample characterized with high internal governance. Third, following Dechow and Dichev (2002) and Roychowdhury (2006), we use the accruals quality and real earnings management as our measures of earnings quality. We find that the positive relation between institutional investor distraction and debt concentration is significant for both high- and low-earnings quality subsamples, but they are not significantly different. Thus we conclude that institutional investor distraction appears to affect debt concentration through external monitoring and internal governance, but not through earnings quality.

We also perform several additional tests to complement our baseline analysis. Consistent with the importance of coordination highlighted in Bolton and Scharfstein (1996) and Bris and Welch (2005), we find that the positive relation between institutional investor distraction and the debt concentration is more pronounced when default probability and anticipated bankruptcy costs are greater. Given that more financially constrained firms rely less on external financing and have lower financial reporting quality (Linck et al., 2013; Andreou et al., 2021), our baseline findings should be more concentrated for those more financially constrained firms. Following Kaplan and Zingales, (1997) and Hadlock and Pierce (2010), we measure financial constraint as the KZ index and the SA index. We find consistent evidence that the positive relation between institutional investor distraction and the debt concentration is more pronounced only for the more financial constraint subsample.

This paper contributes to the literature in three important ways. First, we contribute to the literature which focuses on debt concentration by exploring whether and how institutional investor in attention affect debt concentration. Second, our study highlights the important role of institutional investors in the Chinese market, one of the most important emerging markets where the information environment is not very transparent. Finally, our study also adds to the existent literature related to behavioral finance. We provide evidence that professional investors also succumb to limited attention (Hirshleifer et al., 2009; Israeli et al., 2021) and their inattention can have important implications for corporate actions, including the choice of debt structure.

The rest of the paper proceeds as follows. Section 2 provide a brief description of the relevant literature and develops our empirical hypothesis. Section 3 describe our data, sample and empirical methodology. Section 4 presents empirical results and robustness tests. Section 5 explores potential mechanisms and Section 6 provide cross sectional tests. Finally Section 7 concludes the paper.

2. Related Literature and Hypothesis Development

2.1 Debt concentration

Accepted theories of debt structure emphasizes the trade-off between the returns and the borrowing costs associated with multiple debtors. Bolton and Scharftein (1996) develop an optimal debt contracting framework to evaluate the optimal number of creditors a company borrows from. After striking the balance between the advantage that multiple creditors could discipline managers from a strategic default and the disadvantage of a lower liquidation value, they show that it is optimal for firms with low credit quality to borrow from just one creditor to maximize the liquidation values; while on the contrary, it is optimal for firms with high credit quality to borrow from multiple creditors to make strategic default less attractive. Bris

and Welch (2005) develop a signaling model in which the "mutual free-riding incentives" among multiple creditors will impair the dispersed claimants when they are forced to negotiate with the financially distressed borrower. By contrast, they come to an opposite conclusion to Bolton and Scharftein (1996) in the sense that considering collection cost, agency and signalling cost, companies with high credit quality tend to choose fewer creditors.

Rauh and Sufi (2010) and Colla et al. (2013) provide initial empirical evidence of debt concentration in the US. Rauh and Sufi (2010) explore debt heterogeneity in capital structure for a random sample of 305 non-financial public firms from Compustat with a long-term issuer credit rating in at least one year from 1996 to 2006. For more than 70% of the sample firms, the balance-sheet debt comprises at least two types of debt. Moreover, it is also evident that 25% of the sample firms experience significant changes in debt structure but they do not experience any significant changes in total debt. Furthermore, they find that unrated firms tend to borrow from various resources. Colla et al., (2013) thereafter examine a large sample of 3,296 firms (including both rated and unrated firms) from Capital IQ between 2002 and 2009. Their results are contradictory to Rauh and Sufi (2010) since 85% of the sample firms predominantly borrow with one type of debt. Debt concentration varies considerably across different subsamples: large scale rated firms incline to choosing multiple types of debts. Colla et al. (2013) provide further explanations for greater debt concentration: lower bankruptcy cost, lower information collection and monitoring cost and lack of access to some segments of the debt markets.

The follow-up studies in the empirical literature shows that both country specific macroeconomics factors and company specific microeconomics factors affect corporate debt structure. For example, using data from forty-six countries, John et al. (2021) find that firms tend to have more concentrated debt structure within the countries with stronger creditor protection. Consistent with Colla et al., (2013), the effect is more pronounced when firms have

higher bankruptcy costs or limited access to capital. Castro et al., (2020) point out that an increase in risk-taking incentive in CEO pay is associated with higher debt concentration, indicating that debt structure can be treated as a commitment device. Li et al., (2021) document that companies with higher accounting quality employ more dispersed debt structure, and this association is more prevalent among those firms with higher default risk and lower liquidation value. Similarly, Platikanova and Soonawalla (2002) also document that the firms with lower information transparency and poorer accruals quality tend to have greater debt concentration. Moreover, they also find that firms with more stable institutional investors tend to have various types of debts, as the presence of institutional investors will low the monitoring demand arising from creditors.

The empirical literature, on the other hand, also show that debt concentration can affect corporate behaviour. Ivashina et al. (2016) examine 136 bankruptcy cases between 1998 and 2009, and discover that firms with greater debt concentration are more likely to propose pre-arranged bankruptcy plan, have better (mergers and acquisitions) M&As efficiency and more favorable M&As outcomes. Moreover, firms with diversified debt structure also are less likely to experience fluctuated turnovers during a period of crisis (Giannetti, 2019), implying that diversified debt structure will provide sufficient flexibility in debt financing, making the firms less vulnerable during the financial crisis. Lou and Otto (2020) document that new debt contracts have more covenants when existing debt comprises various types of debts, consistent with the view that covenants not only address the conflicts between creditors and shareholders, but also to reduce the potential bankruptcy cost.

2.2 Institutional Investors

Compared with other capital market investors, institutional investors are usually associated with larger investments, longer investment horizons and relatively rational behaviours due to their professionalism, information advantages and expertise in securities

analysis. Institutional investors have favorable impacts on firm profitability (Ferreira and Matos, 2008, Ekyasiani and Jia, 2010), corporate governance (Aggarwal et al., 2011; Chung and Zhang, 2011), monitoring mechanism to mitigate agency problems (Harzell and Stark, 2003), better M&A outcome (Chen et al., 2007) and accounting quality and information transparency (Chung et al., 2002, Khurana et al., 2017). Institutional investors can also influence the decision-making of several important corporate policies, including corporate innovation (Aghion et al., 2013), cross-border M&A (Andriosopoulos and Yang, 2015), managerial bad news hoarding (Callen et al., 2013), R&D expenditure (Bushee, 1998) and dividend policy (Crane et al., 2016) among others. Institutional investor participation can also reduce managerial opportunistic behaviour, and thus mitigate agency conflicts with firms and lower information asymmetry through improved monitoring (Agrawal and Mandelker, 1990; Shleifer and Vishny, 1986 and Admati and Pfleiderer, 2009).

2.3 Institutional Investor Distraction and Debt Concentration

Attention is a scarce resource and it can be distracted when there are many options provided to individuals (Kahneman, 1973, Barber and Odean, 2008). Limited attention is applied not only to retail investors (Barber and Odean, 2008) but also to institutional investors (Harford et al., 2019; Kempf et al., 2017; Schmidt, 2019; Driskill et al., 2020; Pisciotta, 2023), which implies that institutional investors can find it difficult to monitor all firms within their portfolio when distracted. We rely on the theoretical frameworks of Bolton and Scharfstein (1996) and Bris and Welch (2005) to develop our empirical hypothesis on how institutional investor distraction can influence debt concentration. These two theories focus on the importance of coordination costs.

Bolton and Scharfstein (1996) emphasize that when a firm is in a financial distress, coordination both within the same type of debt and across different types of debt is necessary

and important. Debt negotiation and debt restructuring are generally more difficult for a firm with multiple debtors because a more dispersed debt structure usually implies greater coordination costs (Asquith et al., 1994). Moreover, coordination failure could incur when creditors have different cash flow rights, investment horizons, warrantees or priority, therefore coordination costs under these circumstances can be even greater (Ayotte and Morrison, 2009; Luo and Otto, 2020). Conflicts of interest between creditors and the free riding problem among creditors can make debt negotiation and debt restructuring even more difficult (Asquith et al., 1994; Colla et al.2013; Ivashina et al., 2016). Under the Bolton and Scharfstein (1996) framework, firms with a more dispersed debt structure can benefit from more difficult debt renegotiation because managerial incentives for a strategic default can be lower for a firm and thus their corporate borrowing can be more favorable. However, a more dispersed debt structure implies higher coordination costs between multiple creditors for liquidation. Bolton and Scharfstein (1996) trade off the benefits arising from deterring strategic defaults against the costs due to inefficient liquidations and choose an optimal debt concentration to maximize firm value. The prediction of Bolton and Scharfstein (1996) is that a firm with a lower probability of defaults should favor more creditors.

Bris and Welch (2005) consider ex post collection costs due to multiple creditors and ex ante anticipated agency or signaling costs. Collection costs can stem from the costs of filing a claim, following up through the bankruptcy process, investigating the firm's true resources, communicating and negotiating with and pressuring management, hiring lawyers, bringing motions to the court, etc. In the event of financial distress creditors have to negotiate with the distressed firm. However, they cannot easily coordinate due to mutual free-riding incentives, thus creditors as a group are generally at a disadvantage when active opposition to a relief plan is required. Although firms with more creditors can benefits from a greater bargaining power against uncoordinated creditors in case of financial distress, they may suffer from a higher

interest rates when they borrow debts ex ante due to anticipated agency or signaling costs. The model by Bris and Welch (2005) show that in equilibrium it is in the interest of high-quality firms to choose more concentrated debt structure.

Given that institutional investors can refrain the opportunism of the managers, alleviate agency problems brought by external investors and improve corporate governance (Aggarwal et al., 2011, Chung and Zhang, 2011, Admati and Pfleiderer, 2009), institutional investors can reduce the cost of debt dispersion by reducing the risk and the cost of coordination failure. Thus it is believed that firms with greater institutional ownership should have more dispersed debt structures (more creditors). Holding other things constant, distraction makes institutional investor monitoring less effective, thus we hypothesize that institutional investor distraction should lead to more concentrated debt structure.

H1. Institutional investor distraction should lead to more concentrated debt structure.

3. Data and Methodology

3.1 Sample selection

Our initial sample starts with all Chinese A-share listed firms from 2007 to 2021, as the Accounting Standards for Business Enterprises (ASBE) become mandatory for all listed Chinese enterprises from 1 January 2007. We obtain financial statement data and trading data from China Stock Market & Accounting Research Database (CSMAR) and Wind database. Following the literature, we exclude financial firms from our empirical analysis as they are fundamentally different from non-financial firms. We also exclude firms with special treatment (ST) status, those firms that have already been delisted from the market, firms with stock market history of less than 1 year, and those firm-year observations without complete information on variables used in the follow-up empirical analysis. This filtering process yield

a final sample comprises 25,434 firm-year observations. All continuous variables are winsorized at the 1% and 99% percentiles to alleviate potential impacts from outliers.

Table 1 present sample distribution by year in Panel A and by industry in Panel B. Panel A reveals that the number of firm-year observation drops from the initial 40,967 to 25,434. The number of firm-years tends to increase over time, both before and after the filtering process. According to Panel B, manufacturing is the most represented industry, with 25,865 before the screening and 15,822 after the screening accounting for 63.14% and 62.21%, respectively. The sample distribution for other industries are very similar to the corresponding distribution of the initial sample, which indicates that our final sample is well distributed across different industries.

*****Insert Table 1 roughly here*****

3.2 Measuring Debt Concentration

Following Colla et al. (2013), we construct a normalised Herfindahl-Hirschman Index (HHI) of debt type usage as follows:

$$HHI_{i,t} = \frac{\left(\frac{ID_{i,t}}{TD_{i,t}}\right)^2 + \left(\frac{CD_{i,t}}{TD_{i,t}}\right)^2 + \left(\frac{BD_{i,t}}{TD_{i,t}}\right)^2 + \left(\frac{OD_{i,t}}{TD_{i,t}}\right)^2 - \frac{1}{4}}{1 - \frac{1}{4}} \quad (1)$$

where $HHI_{i,t}$, is the normalised Herfindahl-Hirschman Index for a given stock i in fiscal year t; TD refers total debt; ID refers to financial institution debt, which is the sum of short-term debt and long-term debt; CD refers to accruals including notes payable, accounts payable and accounts receivable; BD is Bond Debt, is the outstanding balance of the bond payable and OD is other debts, which include all other types of debts. The calculation of $OD = TD - ID - CD - BD$. If a firm relies exclusively on one type of debt in a specific year, HHI equals 1. If a firm uses all four types of debt over a particular year, HHI equals 0. A higher HHI value indicates the company is inclined to using fewer types of debt, and hence has a higher debt concentration.

3.3 Measuring Institutional Investor Distraction

Following Kempf et al., (2017), we define institutional investor distraction $D_{f,q}$ for firm f over the season q as follows:

$$Distraction_{fq} = \sum_{i \in F_{q-1}} \sum_{IND \neq IND_f} w_{ifq-1} \times w_{iq-1}^{IND} \times IS_q^{IND} \qquad (3)$$

where IND denotes the industries that achieve either the highest or the lowest return in season q. IND_f denotes the industry to which firm f belongs to. $w_{i,q-1}^{IND}$ is the weight of the institutional investors i within the industry when it has either the highest or the lowest return during season $q-1$. This variable measures the attention paid to the specific industry by the institutional investors. IS_q^{IND} is a dummy variable to capture whether a distracting event occurs in another industry different from the industry which a company f belongs to. This is a variable that proxies the exogenous shock to the company. IS_q^{IND} takes the value of 1 when something distracting is going on, and 0 otherwise.

The variable $w_{i,f,q-1}$ measures the degree to which institutional investors i prioritise firm f over the season $q-1$, calculated as follows:

$$w_{ifq-1} = \frac{QPFweight_{ifq-1} + QPercOwn_{ifq-1}}{\sum_{i \in F_{q-1}} (QPFweight_{ifq-1} + QPercOwn_{ifq-1})} \qquad (2)$$

where $PFweight_{i,f,q-1}$ measures the weight of firm f within international investors' portfolio during season $q-1$. We sort all firms held by the same institutional investors i by the $PFweight_{i,f,q-1}$ value into quintiles and then assign the values 1-5 to the variable $QPFweight_{i,f,q-1}$ accordingly. Similarly, $PercOwn_{i,f,q-1}$ denotes the proportion of shares outstanding held by institutional investors i during season $q-1$ and $QPercOwn_{i,f,q-1}$ represents the assigned value ranging from 1 to 5 based on the quintile ranked by the sorted $PercOwn_{i,f,q-1}$.

The final distraction measurement of the annual data $Distraction_{f,t}$ for company f during year t is the average of the $Distraction_{f,q}$ across four seasons during year t. A high value of $Distraction_{f,t}$ indicates a higher level of distraction to the institutional investor.

3.4 Control Variables

Following Colla et al. (2013), Platikanova and Soonawalla., (2020), and Garel et al. (2021), we take into account a number of firm characteristics in our multivariate regression analysis, including firm size ($Size$), book leverage (Lev), profitability ($Profitability$), dividend payment ($Divpayer$), credit ratings ($Rating$), asset tangibility ($Tangibility$), cashflow volatility ($CFvolatility$), book-to-market ratio (BTM), bankruptcy risk ($ZScore$), research and development expenditure (RD), firm age (Age), and shareholding owned by institutional investors (IO). We consider more control variables concerning institutional investers' characteristics and corporate governance in the robustness tests, such as alternative measures of the shareholding proportion by institutional investors ($BO\ and\ MO$), concentration of institutional investor shareholdings ($IHHI$), board size ($BoardSize$), ratio of independent directors ($Indir$) and manager's duality ($Duality$). Appendix A provides more detailed definitions for each variable used in our empirical study.

3.5 Empirical Model

We investigate the impact of the distracted institutional investors on the debt concentration by estimating the following regression:

$$HHI_{i,t} = \alpha + \beta_1 Distraction_{i,t} + \Sigma\beta_j Control_{i,t} + Firm + Year + \varepsilon \quad (4)$$

where the dependent variable $HHI_{i.t}$ denotes the debt concentration for a given stock i in fiscal year t; the independent variable $Distraction_{i,t}$ denotes the level of the institutional investors' distraction; and $Control_{i,t}$ represents all the control variables mentioned above. We control fixed firm and year effects and cluster standard error.

4. Empirical Results

4.1 Descriptive Statistics

Table 2 presents descriptive statistics for the primary variables used in the empirical analysis. The average institutional distraction is 0.03, with a minimum of 0 and a maximum of 0.131. Compared with Kempf et al. (2017) and Chen et al. (2020), the average institutional distraction in Chinese stock market is lower than the corresponding value of 0.14-0.16 in the US market. The average of debt concentration is 0.273. With a standard deviation of 0.166, debt concentration seems to have significant variations across firms, ranging from a minimum of 0.023 to a maximum of 0.819. On average, these sample firms are not heavily in debt as the book leverage is 0.465. They appear to be very young because the mean firm age is 2.376, and slightly profitable since average ROA is 0.036. The mean value of the shareholding proportion of institutional investors (IO)is 6.003%, and the shareholdings owned by institutional investors vary significantly across companies. Interesting, it is also evident that the upper quartile of the shareholding proportion by institutional investor who hold more than 5% of the shares outstanding (BO) is 0. The maximum value is 14.979%, indicating that over 75% of the funds, securities trader and trusts hold less than 5% of the shares of a particular firm.

*****Insert Table 2 roughly here*****

4.2 Correlation Analysis

Table 3 presents results for correlation analysis for all the key variables used in our study, with Pearson in the lower triangle while Spearman in the upper triangle. First, *Distraction* and *HHI* is positively correlated, which provide preliminary support to our empirical hypothesis. However, this unconditional correlation does not control for other firm characteristics which can affect debt concentration according to the empirical literature. Thus, we will revisit this relation in the later section. Second, *HHI* is negatively correlated with *Size*,

Lev, *Tangibility*, *Rating*, *BTM*, and *Age* while positively correlated with *Profitability*, *RD*, and *ZScore*. These significant correlations validate our choice of control variables. Finally, the correlations between the control variables are well below 0.7, which implies that the multicollinearity problem is a serious concern for our empirical analysis.

*****Insert Table 3 roughly here*****

4.3 Baseline Regression

We first examine the relationship between institutional investor distraction and debt concentration by estimating the Equation (4). Table 4 presents regression results, with *t*-statistics in parentheses calculated using standard errors clustered at the firm level.

*****Insert Table 4 roughly here*****

The coeffect on *Distraction* is 0.097 (*t*-stat = 2.03) for the column (1) regression without any control variables and 0.125 (*t*-stat = 3.03) for the column (2) regression, after controlling for a wide range of control variables explained in Section 4.4. This finding is consistent with our hypothsis that firms with more distracted institutional investors tend to have more concentrated debt structure. The coefficients on the control variables are broadly consistent with the empirical literature, as firms with less concentrated debt structure are usually those large in firm size, low in book leverage, greater in asset tangibility, better in terms of credit ratings and older in firm age.

4.4 Robustness Test

4.4.1 Alternative variable specifications

We consider several alternative measures of institutional investor distraction in Panel A of Table 6. First, our baseline specification takes the simple average of institutional investor distraction in four seasons to obtain the annual measure of institutional investor distraction. In case where the average is more susceptible to potential outliers, we use the median instead of

the simple average to obtain our first alternative measure of institutional investor distraction. Second, our baseline specification uses the weighted average to calculate institutional investor distraction. Our second alternative measure uses the simple average. More specifically, we estimate the distraction measure for each firm in every quarter. We then take the simple average to obtain quarterly distraction at the institutional investor level and taking another simple average of four quarterly distraction leads to the annual measure for institutional investor distraction. Third, our baseline measure following the Kempf et al., (2017) methodology by allocating more weights to those more powerful or more motivated institutional investors. We separate these two types of the institutional investors and come our third and fourth alternative measures of institutional investor distraction. Panel B considers several alternative measures of debt concentration. First, our baseline specification of *HHI* uses the sum of short- and long-term debt from financial institutions to estimate *ID*. Our first alternative measure of *HHI* is measured as the sum of short- and long-term debt from financial institutions and other short-term liabilities. Second, following Colla et al. (2013), we define *Excl70* as a dummy variable which takes the value of 1 if one type of debt accounts for more than 70% of total debt, and 0 otherwise.

*****Insert Table 5 roughly here*****

We repeat our multivariate regression analysis using these alternative measures of institutional investor distraction and the same set of control variables. Regression results presented in Table 5 show that the coefficients on *HHI* continue to remain positive and significant at the 1% level, thus we conclude that our baseline result is not sensitive to alternative variable specifications.

5. Potential Mechanisms

We have documented robust evidence of a positive relation between institutional investor distraction and debt concentration. This section moves on to examine three potential

mechanisms through which institutional investor distraction affects debt concentration: External monitoring, internal governance and accounting quality.

5.1 External Monitoring

We first investigate whether institutional investor distraction affects debt concentration through external monitoring. We look at analyst coverage and big 4 auditors. Both financial analysts and auditors contribute to the main resources of external monitoring (Healy and Palepu, 2001). Consistent with this notion, Chen et al., (2015) examine the exogenous shock brought to the analysts' coverage caused by merge and bankruptcy of brokers, and document significant evidence of a monitoring effect on corporate management. Dunn and Mayhew (2004) document evidence that industry-specialist audit firms can enhance disclosure quality. In case of institutional investor distraction, we expect the effect of institutional investor distraction on debt concentration is more pronounced for those less covered by financial analysts and audited by non-Big 4 audit firms. To operational this idea, we separate our sample into two groups using low/high analyst coverage and using non-big4/big 4, respectively. Regression results presented in columns (1) and (2) in Table 6 show that the positive relation between institutional investor distraction and debt concentration is only significant for the low analyst coverage subsample. Likewise, regression results presented in columns (3) and (4) show that the positive relation between institutional investor distraction and debt concentration is only significant for Non-big 4 subsample.

*****Insert Table 6 roughly here*****

5.2 Internal Governance

We then investigate whether institutional investor distraction affects debt concentration through internal governance. Previous studies have shown that effective corporate governance could mitigate information asymmetry, provide more protection for the rights of the debtors, and in turn reduce financing costs (Sengupta, 1998; Ashbaugh-Skaife et al., 2006). Therefore,

firms with more desirable internal governance should have lower costs associated with dispersed debt structure, while firms with less desirable corporate governance would benefit more from more concentrated debt structure. We expect that the effect of institutional investor distraction on debt concentration is more pronounced for firms with less desirable corporate governance.

We rely on principal component analysis (PCA) to generate a composite index for a firm's internal governance. More specifically, we consider board independence, board size, institutional shareholding, ownership concentration, executive compensation, management shareholding, and CEO duality. Following the literature, board independence is measured as the ratio of independent directors to all corporate directors. Board size is the total number of corporate directors. Institutional shareholding is the proportion of shares owned by institutional investors. Ownership concentration is the proportion of shares owned by the second, third, fourth and fifth largest owners relative to the shares owned by the largest owners. Duality is a dummy variable which takes the value of 1 if CEO and the chairman of corporate board is the same person. We use the first principal obtained from PCA to measure internal governance. a higher value indicates a better internal governance. We separate the whole sample into two groups using the median of internal governance. Consistent with our expectation, Table 7 show that the positive relation between institutional investor distraction and debt concentration is only significant for the low corporate governance subsample.

*****Insert Table 7 roughly here*****

5.3 Information Quality

We finally investigate whether institutional investor distraction affects debt concentration through information quality. High-quality information disclosure can reduce costs for information acquisition costs, monitoring, creditor coordination, hence lower the cost of dispersed debt structure. We predict that the positive relation between institutional investor

distraction and debt concentration is more pronounced when information quality is low. Following the literature, we use the accruals quality and real earnings management as our measures of earnings quality. First, the Dechow and Dichev (2002) model is used to estimate the accruals quality (Dechow and Dichev, 2002):

$$\frac{WCA_{i,t}}{Asset_{i,t-1}} = a_1 \frac{1}{Asset_{i,t-1}} + a_2 \frac{CFO_{i,t-1}}{Asset_{i,t-1}} + a_3 \frac{CFO_{i,t}}{Asset_{i,t-1}} + \varepsilon \qquad (5)$$

The accrual $WCA_{i,t}$ is measured as changes in working capital, and the proxies for cash flows $CFO_{i,t}$ relates to accruals is cash flow from operations. $Asset_{i,t}$ is the ending balance of total assets. The error term ε captures the accruals that can not be estimated by cash flow realisations. The larger the absolute value of the residual, the lower the earnings quality.

Second, we follow Roychowdhury (2006) to estimate the real earnings management. First, cross-sectional regressions for every industry and year has been run to estimate the cash flow from operation using Equation (6), production cost using Equation (7) and discretionary expense using Equation (8) as follows:

$$\frac{CFO_{i,t}}{Asset_{i,t-1}} = a_1 \frac{1}{Asset_{i,t-1}} + a_1 \frac{Sales_{i,t}}{Asset_{i,t-1}} + a_2 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + \varepsilon_t \qquad (6)$$

$$\frac{PROD_{i,t}}{Asset_{i,t-1}} = a_1 \frac{1}{Asset_{i,t-1}} + a_1 \frac{Sales_{i,t}}{Asset_{i,t-1}} + a_2 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + a_3 \frac{\Delta Sales_{i,t-1}}{Asset_{i,t-1}} + \varepsilon_t \qquad (7)$$

$$\frac{DISX_{i,t}}{Asset_{i,t-1}} = a_1 \frac{1}{Asset_{i,t-1}} + a_1 \frac{Sales_{i,t}}{Asset_{i,t-1}} + \varepsilon_t \qquad (8)$$

where, the abnormal cash flow from operation (R_CFO), abnormal production cost (R_PROD) and abnormal discretionary cost (R_DISX) is the difference between the real value and the estimated value. The real earnings management (REM) index is calculated with the formula (9) below. The higher value of REM indicates the higher level of earnings management, and hence lower earnings quality.

$$REM = R\_PROD - R\_CFO - R\_DISX \qquad (9)$$

In the above models, $CFO_{i,t}$ is the cash flow from operation for firm *i* during year t; $Asset_{i,t-1}$ is the total assets at the end of year *t*; $Sales_{i,t}$ is the sales revenue during fiscal year t; $\Delta Sales_{i,t-1}$ is the change of the sales revenue compared with previous fiscal year; $DISX_{i,t}$ is the discretionary expenses, which is the sum of sales expenditure and management cost; and $PROD_{i,t}$ is the production cost during year *t*, which is the sum of operation costs and the change of inventories.

Regression results are presented in Table 8.

*****Insert Table 8 roughly here*****

We find that the coefficients are 0.164 (t-stat = 2.76) and 0.116 (t-stat = 1.93) for the column (1) and (2) regressions, respectively, and that the coefficients for the column (3) and (4) are 0.157 (t-stat = 2.52) and 0.099 (t-stat = 1.76), respectively. However, the bootstrapped between-group difference for the first two columns is 0.162 while the corresponding difference for the other two columns is 0.123, which implies that the positive relation between institutional investor distraction and debt concentration is not different between these two subsamples. Thus, we conclude that it is unlikely that institutional investor distraction affects debt concentration through information quality.

6. Cross-sectional tests

To complement our baseline analysis, we also perform several cross-sectional tests and examine whether the positive relation between institutional investor distraction and debt concentration varies across firms with different bankruptcy costs and default risk, and firms with different financial constraints.

6.1 Bankruptcy cost and default risk

Bolton and Scharfstein (1996) and Bris and Welch (2005) argue that the avoidance the possibility of inefficient liquidations and the negative outcomes of coordinate between debtors are the main motives of the choice of debt concentration. Therefore, we posit that the

coordination cost plays an important role in the relationship between the institutional investor's distraction and the choice of debt concentration. We expect that the influence of the distracted institutional investors on the debt concentration is more pronounced when the default probability and the anticipated bankruptcy cost are higher for two main reasons: first, when companies are in fiscal distress, the chance to have coordination between companies and debtors are high, and the coordination efficiency will be lower under such situation, especially when companies have more dispersed debt structure. Meanwhile when companies are anticipated to have more chance to go into bankruptcy, the demand for the debtors to have coordination discussion is high to avoid liquidation. Second, companies in fiscal distress are more likely to transfer the risk (Leland, 1998). The debtors usually bear the cost of risk investment failure. Therefore the importance of the external monitoring through institutional investors is significant within firms with higher bankruptcy cost. Hence we expect that the distracted institutional investors will give more incentive to the companies to adopt more centralised debt structure.

We use four measures for default risk and anticipated bankruptcy cost: First, we use cash flow volatility for anticipated bankruptcy cost (Titman and Wessels, 1998), Z-score for default risk (Altman, 1968), asset tangibility for anticipated bankruptcy (Colla et al.,2013), leverage ratio as a measure of estimated bankruptcy cost Elkamhi et al., (2012). A high cash volatility implies greater anticipated bankruptcy costs. A lower Z-score indicates a higher probability of going into bankruptcy. A higher asset tangibility means a lower bankruptcy cost. A higher leverage suggests that the estimated bankruptcy costs are higher.

We separate the whole sample into two groups using the median of each measure. We repeat our multivariate analysis using subsamples defined by these four measures and regression results are presented in Table 9.

*****Insert Table 9 roughly here*****

Regression results presented in Panel A suggest that the coefficients on institutional investor distraction is only significant for those with high cash volatility and low Z-score. Regression results presented in Panel B suggest that the coefficients on institutional investor distraction is only significant for high leverage ratio and low asset tangibility. These findings are consistent with the idea that firms with higher default risks and expected bankruptcy costs tend to have more concentrated debt structure.

6.2 Financial constraint

Firms with financial constraints should rely more on internal financing as they are restricted by external financing. More financially constrained firms have lower financial reporting quality (Linck et al., 2013; Andreou et al., 2021). We, therefore, expect that the institutional investor distraction should have more impacts on debt concentration for firms with financial constraints. To examine this idea, we first measure financial constraint with the SA index (Hadlock and Pierce, 2010) as following:

$$SA = -0.737 * Size + 0.043 * Size^2 - 0.040 * Age$$

where *Size* is the natural logarithm of the total assets of a company; *Age* is the length of time a company has been in operation.

Second, we measure the financial constraint with KZ index (Kaplan and Zingales, 1997, Lamont et al., 2001). Kaplan and Zingales (1997) categorise firms into discrete categories of financial constraint in terms of $\frac{net\ cashflow_{it}}{Asset_{it}}$, $\frac{Cash_{it}}{Asset_{it}}$, $\frac{Dividend_{it}}{Asset_{it}}$, leverage ratio and Tobin's Q. We follow Lamont et al. (2001) method to use regression coefficients to construct KZ index consisting of a linear combination of these five accounting ratios. firms with higher KZ index are more financially constrained. The regression results, with two sub-samples classified into low and high KZ and SA groups by the median of KZ and SA indices respectively, are presented in Table 10.

*****Insert Table 10 roughly here*****

Consistent with our expectation, both KZ and SA regressions reveals that the effect of institutional investor distraction on debt concentration is statistically significant at 1% level for those more financially constrained firms in columns (2) and (4), while insignificant for firms less financially constrained in columns (1) and (3).

7. Conclusion

Using a sample of 25,434 Chinese firm-year observation from 2007 to 2021, this paper empirically examines whether and how institutional investor distraction affects the choice of debt types. We document evidence of a positive relation between institutional investor distraction and debt concentration, even after controlling for a wide range of firm characteristics and considering several alternative variable specifications. These findings seem to indicate that firms tend to adopt a more concentrated debt structure in response to unexpected institutional inattention. Further analysis suggests that the positive relation between institutional investor distraction and debt concentration is concentrated among firms subject less to external monitoring or internal governance, implying that institutional investor distraction can affect debt concentration through external monitoring and internal governance. However, we do not find evidence in favour of the possibility that institutional investor distraction affects debt concentration through improving earnings quality, an important link documented by Li et al., (2021). Taken together, these findings are very much consistent with the important role of institutional monitoring in mitigating concerns over the risk and cost of coordination failure due to a dispersed debt structure, and the view that firms have to adjust debt concentration in response to less effective institutional monitoring due to unexpected distraction.

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Table 1 Sample Distribution

Year	Number of Observation from beginning	percentage（%）	Ending number of observation	percentage（%）
2007	1464	3.57	689	2.71
2008	1563	3.82	725	2.85
2009	1595	3.89	880	3.46
2010	1928	4.71	1028	4.04
2011	2241	5.47	1185	4.66
2012	2443	5.96	1294	5.09
2013	2464	6.01	1427	5.61
2014	2540	6.2	1776	6.98
2015	2744	6.7	1955	7.69
2016	2916	7.12	2095	8.24
2017	3350	8.18	2088	8.21
2018	3529	8.61	2281	8.97
2019	3677	8.98	2432	9.56
2020	4028	9.83	2587	10.17
2021	4485	10.95	2992	11.76
Total	40967	100	25434	100

Table 2 Descriptive Statistics

Table 2 presents descriptive statistics of main variables used in the empirical analysis. The sample consists 25,434 firm-year observations from China between 2007 and 2021. All continuous variables are winsorised at 1% and 99% levels. Appendix A provides a full list of variables with the definitions.

Variable	N	Mean	SD	Min	P25	Median	P75	Max
Distraction	25434	0.030	0.028	0.000	0.008	0.023	0.042	0.131
HHI	25434	0.273	0.166	0.023	0.152	0.232	0.354	0.819
Size	25434	22.445	1.283	19.963	21.553	22.277	23.178	26.359
Lev	25434	0.465	0.199	0.070	0.313	0.467	0.616	0.891
Tangibility	25434	0.225	0.170	0.002	0.091	0.190	0.325	0.718
Profitability	25434	0.036	0.063	-0.235	0.012	0.034	0.064	0.217
RD	25434	3.081	3.989	0.000	0.037	2.040	4.320	22.110
Rating	25434	0.190	0.393	0.000	0.000	0.000	0.000	1.000
CFvolatility	25434	0.051	0.037	0.007	0.027	0.041	0.065	0.207
BTM	25434	0.312	0.150	0.046	0.203	0.289	0.398	0.773
ZScore	25434	4.567	5.467	0.032	1.659	2.836	5.086	35.540
Divpayer	25434	0.688	0.463	0.000	0.000	1.000	1.000	1.000
Age	25434	2.376	0.568	1.099	1.946	2.398	2.833	3.296
IO	25434	6.003	6.145	0.012	1.358	3.994	8.640	28.598
BO	25434	0.446	2.170	0.000	0.000	0.000	0.000	14.979
MO	25434	2.590	3.631	0.000	0.000	1.234	3.593	19.061
IHHI	25434	0.001	0.002	0.000	0.000	0.000	0.001	0.018
BoardSize	25012	2.147	0.203	1.609	1.946	2.197	2.197	2.708
Duality	25012	0.226	0.418	0.000	0.000	0.000	0.000	1.000
Indir	25012	0.374	0.053	0.308	0.333	0.333	0.429	0.571

Table 3 Correlation Analysis

Table 3 reports the Pearson correlations for all variables used in our main empirical analysis. ***, **, * indicate coefficients statistically different from zero at the 1%, 5% and 10% level (two-tailed), respectively. All continuous variables are winsorised at the 1% and 99% levels. Appendix A provides a full list of variables with definitions.

	Distraction	*HHI*	*Size*	*Lev*	*Tangibility*	*Profitability*	*RD*	*Rating*	*CFvolatility*	*BTM*	*ZScore*	*Divpayer*	*Age*	*IO*
Distraction		0.015**	0.112***	0.076***	0.083***	0.120***	-0.194***	0.014**	0.036***	-0.050***	-0.021***	0.105***	-0.013**	0.173***
HHI	0.026***		-0.266***	-0.231***	-0.058***	0.092***	-0.004	-0.341***	0.050***	-0.036***	0.276***	-0.001	-0.043***	-0.036***
Size	0.065***	-0.246***		0.444***	-0.002	0.017***	-0.160***	0.398***	-0.108***	0.151***	-0.509***	0.215***	0.298***	0.244***
Lev	0.083***	-0.223***	0.441***		-0.008	-0.370***	-0.319***	0.235***	0.117***	-0.417***	-0.786***	-0.156***	0.221***	0.008
Tangibility	0.095***	-0.074***	0.062***	0.041***		-0.040***	-0.092***	0.013**	-0.170***	0.109***	-0.103***	-0.033***	-0.040***	-0.030***
Profitability	0.094***	0.084***	0.055***	-0.321***	-0.037***		0.060***	-0.041***	-0.022***	0.059***	0.489***	0.479***	-0.124***	0.294***
RD	-0.165***	0.043***	-0.182***	-0.313***	-0.193***	-0.026***		-0.055***	-0.172***	0.038***	0.278***	0.074***	-0.301***	0.035***
Rating	-0.009	-0.298***	0.419***	0.230***	0.037***	-0.023***	-0.078***		-0.082***	0.057***	-0.258***	0.120***	0.087***	0.071***
CFvolatility	0.043***	0.073***	-0.116***	0.112***	-0.183***	-0.008	-0.150***	-0.078***		-0.172***	0.013**	-0.115***	0.026***	-0.032***
BTM	-0.062***	-0.020***	0.134***	-0.438***	0.099***	0.044***	-0.025***	0.041***	-0.152***		-0.069***	0.180***	0.030***	-0.140***
ZScore	-0.027***	0.274***	-0.374***	-0.621***	-0.121***	0.306***	0.256***	-0.183***	0.013**	-0.176***		0.171***	-0.214***	0.107***
Divpayer	0.057***	0.007	0.212***	-0.162***	-0.040***	0.463***	0.033***	0.120***	-0.121***	0.168***	0.069***		-0.104***	0.202***
Age	0.004	-0.042***	0.279***	0.229***	0.012*	-0.080***	-0.266***	0.083***	0.060***	0.040***	-0.152***	-0.110***		-0.053***
IO	0.110***	-0.008	0.177***	0.005	-0.046***	0.266***	0.016**	0.045***	-0.041***	-0.158***	0.087***	0.175***	-0.035***	

Table 4 Institutional Investor Distraction and Debt Concentration

Table 4 presents baseline regression results on the relationship between institutional investor distracted and debt concentration. The dependent variable is debt concentration. independent variable is distraction for column (1) and with other control variables for column (2). Firm fixed effects and year fixed effects are controlled in all regressions. *t*-statistics in parentheses are calculated using standard errors clustered by firm. ***, ** and * indicate statistical significance at 1%, 5% and 10% levels respectively. Appendix A provides a full list of variables with the detailed definitions.

	HHI	
	（1）	（2）
Distraction	0.097**	0.125***
	(2.30)	(3.03)
Size		-0.023***
		(-5.25)
Lev		-0.035
		(-1.59)
Tangibility		-0.097***
		(-5.04)
Profitability		-0.033
		(-1.50)
RD		0.000
		(0.12)
Rating		-0.062***
		(-17.06)
CFVolatility		0.010
		(0.20)
BTM		0.024
		(1.25)
ZScore		0.004***
		(7.44)
Divpayer		0.007**
		(2.49)
Age		-0.049***
		(-4.85)
IO		0.000
		(1.59)
_cons	0.306***	0.883***
	(50.45)	(9.76)
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	25434	25434
Adj-R^2	0.020	0.090

Table 5 Alternative Variable Specifications

Table 5 Panel A presents regression results using alternative measures for institutional investor distraction. The institutional investor distraction in column (1) is measured with median of the distracted indices; average weight of the institutional investors attention is used to calculate the institutional investor distraction in column (2). The shareholding proportion and the proportion that the company has within the portfolio of institutional investor are used separately to construct the measure of institutional investor distraction in column (3) and (4). Panel B presents regression results using alternative measures for debt concentration. The debt concentration in column (1) includes long-term debt due within the next year; the result for the dummy variable, which is 1 when 70% of debt comes from one type of debt, is presented in column (2). The control variables are the same as those used in the Table 5-3 regressions. The control variables are the same as those used in the Table 5-3 regressions. Firm fixed effects and year fixed effects are controlled in all regressions. *T*-statistics in parentheses are calculated using standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Appendix A provides a full list of variables with their detailed definitions.

Panel A Alternative measures for institutional investor distraction

	HHI			
	(1)	(2)	(3)	(4)
Distraction	0.133***	0.116***	0.121***	0.128***
	(2.72)	(2.83)	(2.99)	(3.10)
constant	0.884***	0.883***	0.883***	0.883***
	(9.76)	(9.76)	(9.76)	(9.76)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	25434	25434	25434	25434
Adj-R^2	0.090	0.090	0.090	0.090

Panel B Alternative measures of debt concentration

	HHI	*Excl70*
	(1)	(2)
Distraction	0.124***	0.300***
	(2.87)	(2.64)
constant	0.770***	0.988***
	(8.08)	(4.71)
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	25434	25434
Adj-R^2	0.084	0.026

Table 6 External Monitoring

Table 6 presents regression results using subsamples by low and high analyst coverage and by big-four auditor or not. Low (high) analyst coverage is defined as the number of analysts following a firm is less (greater) than the industry median each year. The control variables are the same as those used in the baseline regressions. Big 4 is defined as the auditor of a firm is one of Big 4 auditing firms. The control variables are the same as those used in the baseline regressions. Firm fixed effects and year fixed effects are controlled in all regressions. *t*-statistics in parentheses are calculated using standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Appendix A provides a full list of variables with their detailed definitions.

	HHI		*HHI*	
	(1) Low analyst coverage	(2) High analyst coverage	(3) Non-Big 4	(4) Big 4
Distraction	0.127**	0.057	0.128***	0.094
	(2.26)	(0.94)	(2.93)	(0.75)
Size	-0.026***	-0.024***	-0.021***	-0.035**
	(-4.13)	(-4.43)	(-4.51)	(-2.03)
Lev	-0.015	-0.053*	-0.033	-0.039
	(-0.49)	(-1.72)	(-1.45)	(-0.45)
Tangibility	-0.077***	-0.119***	-0.101***	-0.053
	(-2.98)	(-4.46)	(-4.97)	(-0.86)
Profitability	0.007	-0.108***	-0.044*	0.162
	(0.24)	(-2.96)	(-1.93)	(1.35)
RD	-0.001	0.001	0.000	0.001
	(-0.94)	(0.62)	(0.05)	(0.38)
Rating	-0.061***	-0.063***	-0.066***	-0.036***
	(-10.38)	(-14.01)	(-16.86)	(-3.64)
CFVolatility	-0.024	0.047	0.020	-0.268
	(-0.32)	(0.65)	(0.36)	(-1.42)
BTM	0.022	0.012	0.018	0.077
	(0.79)	(0.48)	(0.90)	(1.11)
ZScore	0.004***	0.004***	0.004***	0.006*
	(5.53)	(5.01)	(7.22)	(1.70)
Divpayer	0.010**	0.005	0.007**	-0.009
	(2.53)	(1.22)	(2.45)	(-0.92)
Age	-0.070***	-0.041***	-0.048***	-0.068*
	(-4.57)	(-2.98)	(-4.52)	(-1.74)
IO	0.001	0.001**	0.000	0.002
	(1.40)	(1.98)	(1.57)	(1.08)
_cons	0.979***	0.925***	0.832***	1.217***
	(7.30)	(7.91)	(8.84)	(3.02)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	12009	13425	23712	1722
Adj-R^2	0.074	0.110	0.089	0.143

Table 7 Corporate Governance

Table 7 presents regression results using separate samples with low and high levels of corporate governance. The impact on debt concentration for companies with low corporate governance is presented in column (1), and the impact with high corporate governance is presented in column (2). The control variables are the same as those used in the base-line regressions. Firm fixed effects and year fixed effects are controlled in all regressions. *t*-statistics in parentheses are calculated using standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Appendix A provides a full list of variables with their detailed definitions.

	HHI	
	(1)	(2)
	Low corporate governance	High corporate governance
Distraction	0.183***	0.063
	(2.82)	(1.22)
Size	-0.018***	-0.030***
	(-3.18)	(-5.14)
Lev	-0.056*	-0.024
	(-1.66)	(-0.84)
Tangibility	-0.143***	-0.078***
	(-5.58)	(-3.05)
Profitability	-0.081**	-0.012
	(-2.08)	(-0.44)
RD	0.001	-0.000
	(0.59)	(-0.12)
Rating	-0.059***	-0.058***
	(-12.40)	(-10.20)
CFVolatility	-0.021	-0.009
	(-0.29)	(-0.14)
BTM	0.029	0.015
	(1.02)	(0.58)
ZScore	0.004***	0.004***
	(3.90)	(5.87)
Divpayer	-0.001	0.009**
	(-0.23)	(2.32)
Age	-0.037**	-0.058***
	(-2.35)	(-4.43)
IO	0.001**	0.001
	(2.30)	(0.86)
_cons	0.789***	1.040***
	(6.41)	(8.79)
Year FE	Yes	Yes
Firm FE	Yes	Yes
N	11651	13783
Adj-R^2	0.094	0.085

Table 8 Tests for Earnings Quality

Table 8 presents regression results using subsamples with low and high earnings quality. Low (high) accrual quality is for firms with Dechow and Dichev (2002) discretionary accruals less (greater) than the industry median each year. Low (high) real earnings management is for firms with Roychowdhury (2006) real activities management measures less (greater) than the industry median each year. The control variables are the same as those used in the base-line regressions. Firm fixed effects and year fixed effects are controlled in all regressions. *t*-statistics in parentheses are calculated using standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Appendix A provides a full list of variables with their detailed definitions.

	HHI		*HHI*	
	(1) Low accruals quality	(2) High accruals quality	(3) Low real earnings management	(4) High real earnings management
Distraction	0.164***	0.116*	0.157**	0.099*
	(2.76)	(1.93)	(2.52)	(1.76)
Size	-0.020***	-0.026***	-0.024***	-0.021***
	(-3.59)	(-4.79)	(-4.17)	(-3.45)
Lev	-0.035	-0.052*	-0.065**	-0.019
	(-1.18)	(-1.75)	(-2.16)	(-0.61)
Tangibility	-0.084***	-0.119***	-0.119***	-0.094***
	(-3.37)	(-4.55)	(-4.47)	(-3.66)
Profitability	-0.030	-0.035	-0.039	-0.039
	(-0.91)	(-1.08)	(-1.08)	(-1.32)
RD	0.002**	-0.000	0.002*	-0.001
	(2.12)	(-0.24)	(1.76)	(-1.33)
Rating	-0.060***	-0.064***	-0.068***	-0.056***
	(-11.83)	(-13.02)	(-12.98)	(-12.22)
CFVolatility	0.090	-0.018	0.007	0.039
	(1.25)	(-0.28)	(0.10)	(0.56)
BTM	0.038	0.003	0.030	0.016
	(1.58)	(0.11)	(1.22)	(0.57)
ZScore	0.004***	0.003***	0.005***	0.004***
	(5.26)	(3.97)	(6.69)	(4.02)
Divpayer	0.009**	0.005	0.007*	0.006
	(2.32)	(1.14)	(1.75)	(1.62)
Age	-0.035***	-0.059***	-0.054***	-0.042***
	(-2.68)	(-4.31)	(-3.88)	(-2.98)
IO	0.000	0.001*	0.000	0.001***
	(0.68)	(1.89)	(0.67)	(3.11)
_cons	0.794***	0.991***	0.935***	0.819***
	(6.77)	(8.75)	(7.61)	(6.53)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	12447	12461	12710	12724
Adj-R^2	0.099	0.084	0.105	0.080
Bootstrapped between-groups difference	0.162		0.123	

Table 9 Heterogeneity test for bankruptcy cost and default risk

Table 9-Aand Table 9-B present regression results using separate samples to test for the heterogeneity for bankruptcy cost and default risk. The impact on debt concentration for companies with classification of cash volatility are reported in column (1) and (2) in table 9-A, and the impact with classification of low and high Z-score are represented in column (3) and column (4) in table 9-A separately. The control variables are the same as those used in the base-line regressions. The impact on debt concentration for companies with classification of leverage ratio are reported in column (1) and (2) in table 9-B, and the impact with classification of tangibility are represented in column (3) and column (4) in table 9-B separately. For simplicity purpose only main variables are presented. *t*-statistics in parentheses are calculated using standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Appendix A provides a full list of variables with their detailed definitions.

Panel A

	HHI		*HHI*	
	(1)	(2)	(3)	(4)
	Low cash volatility	High cash volatility	Low Z-Score	High Z-Score
Distraction	0.069	0.108*	0.137***	0.092
	(1.26)	(1.82)	(2.61)	(1.48)
Size	-0.020***	-0.020***	-0.020***	-0.029***
	(-2.96)	(-3.36)	(-3.29)	(-4.60)
Lev	-0.042	-0.052	-0.037	-0.105***
	(-1.41)	(-1.64)	(-0.68)	(-3.40)
	(-3.10)	(-3.59)	(-3.52)	(-4.52)
Profitability	-0.042	-0.051*	0.117***	-0.012
	(-1.34)	(-1.66)	(3.05)	(-0.34)
_cons	0.817***	0.868***	0.890***	1.030***
	(5.83)	(7.15)	(6.00)	(7.94)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	12717	12717	11962	13472
Adj-R^2	0.089	0.081	0.097	0.087

Panel B

	HHI		*HHI*	
	(1)	(2)	(3)	(4)
	Low leverage ratio	High leverage ratio	Low tangibility	High tangibility
Distraction	0.098	0.134***	0.177***	0.074
	(1.53)	(2.63)	(2.81)	(1.43)
Size	-0.025***	-0.017***	-0.030***	-0.016***
	(-3.57)	(-2.85)	(-4.43)	(-2.79)
Lev	-0.232***	0.034	-0.075**	-0.022
	(-6.59)	(0.77)	(-2.28)	(-0.73)
Profitability	-0.009	0.016	0.001	-0.065**
_cons	0.972***	0.730***	1.115***	0.701***
	(6.75)	(5.64)	(7.75)	(5.64)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	12717	12717	12717	12717
Adj-R^2	0.084	0.100	0.087	0.091

Table 10 Heterogeneity test for financial constraint

Table 10 presents regression results using separate samples with financial constraint. The impact on debt concentration for companies with classification of low and high KZ index is presented in column (1) and column (2) separately, and the impact on debt concentration for the sub samples with low and high financial constraint classified with SA index is presented in column (3) and column (4) separately. The control variables are the same as those used in the base-line regressions. Firm fixed effects and year fixed effects are controlled in all regressions. t-statistics in parentheses are calculated using standard errors clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Appendix A provides a full list of variables with their detailed definitions

	HHI		HHI	
	(1)	(2)	(3)	(4)
	Low financial constraint (KZ)	High financial constraint (KZ)	Low financial constraint (SA)	High financial constraint (SA)
Distraction	0.075	0.149***	0.069	0.158***
	(1.16)	(2.93)	(1.22)	(3.06)
Size	-0.031***	-0.022***	-0.028***	-0.024***
	(-4.60)	(-4.02)	(-4.08)	(-3.51)
Lev	-0.171***	0.021	-0.001	-0.091***
	(-5.32)	(0.62)	(-0.04)	(-2.76)
Tangibility	-0.075**	-0.074***	-0.098***	-0.114***
	(-2.40)	(-3.20)	(-3.29)	(-4.31)
Profitability	-0.014	-0.004	-0.019	-0.072**
	(-0.33)	(-0.13)	(-0.64)	(-2.11)
RD	0.000	-0.000	-0.000	0.000
	(0.05)	(-0.37)	(-0.30)	(0.26)
Rating	-0.068***	-0.049***	-0.060***	-0.054***
	(-12.65)	(-10.27)	(-11.04)	(-10.96)
CFVolatility	0.015	0.035	-0.022	0.016
	(0.18)	(0.52)	(-0.29)	(0.22)
BTM	0.003	0.000	0.052**	-0.021
	(0.12)	(0.01)	(1.99)	(-0.76)
ZScore	0.003***	0.004***	0.004***	0.003***
	(4.86)	(4.01)	(4.40)	(3.88)
Divpayer	0.007	0.003	0.005	0.005
	(1.44)	(0.90)	(1.29)	(1.30)
Age	-0.042***	-0.045***	-0.048***	-0.085***
	(-2.93)	(-3.11)	(-2.63)	(-5.20)
IO	-0.000	0.001***	0.000	0.001*
	(-0.14)	(2.91)	(0.92)	(1.75)
_cons	1.087***	0.825***	0.972***	0.993***
	(7.68)	(7.15)	(6.80)	(7.10)
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
N	12717	12717	12716	12718
Adj-R2	0.102	0.090	0.062	0.097

Appendix A

Variable Definitions

This table provides names and definitions of all variables used in the empirical analysis

Variable			Measurement
Dependent Variable	*Distraction*	Firm-level institutional investor distraction	See detailed description within the text
Independent Variables	*HHI*	Debt concentration	See detailed description within the text
Control Variables	*Size*	Size	Natural logarithm of total market value
	Lev	Leverage ratio	Total liabilities divided by total assets
	Profitability	profitability	$\frac{Net\ Profit}{Average\ Total\ Assets}$ $Average\ Total\ Asset = \frac{Total\ Assets_{\ Begin} + Total\ Assets_{\ End}}{2}$
	BTM	Book to Market Ratio	$\frac{Book\ Value}{Market\ Value}$
	Divpayer	Dividend Payout	A dummy variable that equals 1 if the company pays dividend and 0 otherwise
	Tangibility	Tangible Assets	$\frac{Total\ tangible\ assets}{Average\ Total\ Assets}$
	CFvolatility	Cash Volatility	Standard deviation of net cash flow between t-4 and t
	ZScore	Bankruptcy risk	ZScore measure by Altman (1969)
	RD	Research Expense （%）	$\frac{Research\ Expense}{Total\ Operational\ Income}$ RD=0 if the data is missing
	Age	The age of a company	The number of years a firm has been listed
	IO	percentage of shares held by institutional investors 1 （%）	Percentage of shares held by institutional investors
	BO	percentage of shares held by institutional investors 2 （%）	Percentage of shares held by institutional investors by at least 5%
	MO	percentage of shares held by institutional investors 3 （%）	Percentage of shares held by institutional investors by at least 10 %
Other variables	*IHHI*	concentration of shareholding	Sum of square of all percentage of institutional investors
	Duality	director duality	A dummy variable that equals 1 if director and manager are the same person and 0 otherwise
	BoardSize	Board Size	Natural logarithm of the size of the board
	Indir	Percentage of independent board directors	$\frac{independent\ board\ directors}{total\ number\ of\ board\ directors}$