

Institutional Investor Distraction and Firm Profitability Volatility: The Mediating and Moderating Roles of Market Value, Digitalization, and Audit Quality

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Abstract. This study investigates the impact of institutional investors' distraction on firm profitability volatility, focusing on the mediating role of market value and the moderating effects of digitalization and audit fees. Using a sample of Chinese listed firms from 2010 to 2022, we find that institutional investor distraction significantly increases profitability volatility. Our results show that market value positively mediates this relationship, while digitalization and higher audit fees mitigate the effect. Furthermore, the impact is more pronounced for firms without star analyst coverage, those not audited by Big Four firms, and non-high-tech companies. This research contributes to the literature by revealing a new channel through which investor attention affects firm outcomes, and by identifying factors that can moderate this effect. Our findings have important implications for understanding the consequences of institutional investor behavior and for developing strategies to mitigate associated risks.

Keywords: Distraction, Profitability Volatility, Market Value, Digitalization, Audit Quality

1. Introduction

Institutional investors are crucial in financial markets for overseeing corporate management, influencing decision-making, and improving information disclosure. Holding significant shares enables them to monitor management and safeguard shareholder interests (Chuang and Susmel, 2011). They can use voting rights to intervene in profit-making activities and lower agency costs. Their expertise and time allow for better scrutiny of information, enhancing transparency and reducing information asymmetry (El-Diftar et al., 2017).

However, institutional investors' attention isn't always on individual companies due to their diverse portfolios, economic fluctuations, or changes in industry regulations and technology. Unlike other investors, institutional investors' portfolios span various industries, requiring them to assess diverse returns and risks (Fich, Harford and Tran, 2015). Macroeconomic changes, like inflation or reserve requirement adjustments, can also distract them (Abramova, Core and Sutherland, 2020). Additionally, industry-specific technological and regulatory shifts can change profitability and divert their focus.

Recent research highlights the impact of institutional investors' distraction on corporate performance and management. Distraction reduces their engagement in decision-making, allowing management to engage in short-term speculative activities, increasing agency costs, and raising operational uncertainties (Kim et al., 2019). This can harm long-term development and decrease information transparency, preventing timely access to accurate information. Consequently, market prices may inaccurately reflect company value, causing significant stock price fluctuations (Xiang, Chen and Wang, 2020). Few studies have addressed the negative impact of this distraction on profitability volatility.

To fill this gap, this paper analysed how institutional investors' distraction would have an impact on the profitability volatility of companies. The variable measuring institutional investors' distraction is calculated following the approach of Kempf et al. (2017). They defined distraction as when institutional investors' portfolios experience either the highest or lowest returns in industries other than the one the company operates in. For the profitability volatility, it is measured by calculating the standard deviation of the adjusted return on asset of the company, referring to Yu, Li & Pan (2013) and Yang, Xu & Bai (2022).

We analysed data from Chinese common stocks on the main board of the Shanghai and Shenzhen Stock Exchange from 2010 to 2022. We obtained company financial data and information related to management from the WIND and China Stock Market and Accounting Research Database. After processing those data, we obtained approximately 18,900 company-year observations. In setting up the model, we employed firm fixed effects and year fixed effects. First, we investigated the main focus of this paper, which is how institutional investors' distraction affects profitability volatility. Regression results indicate that distraction increases the profitability volatility of company. To test the robustness of this conclusion, we conducted a series of robustness tests, including alternating dependent variable, lagging the independent variable and altering the time spans.

Our second focus is on how institutional investors' distraction affects profitability volatility and which variables can mitigate this effect. We examined the mediating effect of market value (measured by TOBINQ and BM ratio) and the moderating effects of digitalization and audit fees. Using the method of Liu and Wang (2023), we calculated the digitalization level of the province where the company is located. We found that company market value positively mediates the impact of distraction on profitability volatility. Digitalization and audit fees mitigate this effect through a negative moderating influence.

To investigate whether company characteristics would influence the significance of distraction in increasing profitability volatility, this paper categorized the sample into groups according to the method of Chen et al. (2023) and Hu et al. (2023). We found that for companies characterized by without the coverage of star analysts, audited by non-Big Four accounting firms and non-high-tech, institutional

investors' distraction would significantly increase company profitability volatility.

This paper addresses the research gap on how institutional investors' distraction affects companies, explores the mechanisms through which it increases corporate risk, and offers recommendations for mitigating these risks.

First, this study fills a significant research gap on the impact of institutional investors' distraction on profitability volatility. While existing research examines how distraction affects company behaviours or increases operational and market risks (Garel et al., 2021; Xiang et al., 2021), limited focus has been on its direct influence on profitability volatility. Garel et al. (2021) showed distraction increases earnings management but did not link it to profitability volatility. Ni et al. (2020) and Yang et al. (2021) noted increased stock price crash and audit risks due to distraction but did not explore its effect on profitability volatility. Other studies examined its impact on debt choices (Asamoah, Dak-Adzaklo, and Ofori, 2022) and corporate social responsibility (Xiang et al., 2021), focusing on specific behaviours rather than profitability changes. By analysing the relationship between investor distraction and profitability volatility, this study reveals a novel link, showing that distraction increases profitability volatility, advancing the literature in this area.

The second contribution is filling the research gap on how institutional investors' distraction increases corporate operational or market risk. Ni et al. (2020) suggested that distraction reduces accounting conservatism, allowing management to hide bad news and increase stock price crash risk. However, they did not analyse if this leads to profit fluctuations. Yang, Wu, and Yu (2021) noted that distraction increases audit risk, resulting in higher fees and delays, but did not detail its effect on auditors' risk perception. Astvansh, Chen, and Qu (2023) and Xiang et al. (2021) found that distraction negatively impacts corporate social responsibility, raising investment risk, but did not explore its effect on profitability volatility. Our study extends these findings by proposing that market value positively mediates the impact of distraction on profitability volatility, building on agency theory (Jensen and Meckling, 1976), which posits that institutional investors reduce agency costs and align management's interests with shareholders. We show that distraction weakens this role, introducing new risks mediated through market value dynamics.

Third, this paper extends the frameworks on institutional investor behaviour. Previous analyses focus on site visits (Gao, Wang, and Zhang, 2023; Yang and Ma, 2022), personal characteristics and relationships of analysts (Cao et al., 2020; Cao, Xue, and Zhu, 2022; Gu et al., 2019), and forecast accuracy (Luo and Wu, 2022). Our study recommends mitigating investment risks from the perspective of institutional investors' distraction. We found that digitalization and audit fees can reduce the impact of distraction on profitability volatility by acting as negative moderators. When significant profitability fluctuations occur, institutional investors may become distracted, reducing oversight in other industries. During such times, other investors might prefer companies in highly digitalized regions for better transparency or those with higher audit fees for increased scrutiny. Additionally, our heterogeneous analysis suggests avoiding investments in companies without star analyst coverage, without Big Four audits, or non-high-tech status, as they are more susceptible to the negative effects of distraction.

The practical implications of this study are significant. For investors, it highlights the importance of monitoring institutional investor distraction levels, as these can signal increased profitability volatility. Investors should incorporate distraction indicators into their risk assessments and diversify portfolios to mitigate these effects. For regulators, the findings suggest that policies encouraging institutional investors to focus on long-term performance could reduce risks from distraction. Promoting transparency in investment decisions and enhancing institutional investor accountability can help manage the broader impacts on market stability and corporate governance.

The structure of the remaining sections of this paper is as follows. Section 2 reviews the relevant literature and outlines our hypotheses. Section 3 details the data sources and key variables used in the study. Section 4 describes the research design, presents the main findings, and discusses their

implications. Section 5 offers the results of further analysis. Finally, Section 6 concludes with a summary of the findings and their significance.

2. Literature Review and Hypotheses Development

In this section, we reviewed the literature and proposed seven hypotheses. These include the main hypothesis exploring the relationship between institutional investors' distraction and company profitability volatility, mechanisms involving mediating and moderating effects, and further analyses.

Institutional Investors' Distraction and Profitability Volatility of the Company

Institutional investors significantly impact corporate management and decision-making. With extensive resources and expertise, they are more professional and active in supervision and participation (Garel et al., 2021). Research shows their involvement enhances financial transparency, reduces earnings management, and mitigates tax avoidance (Garel et al., 2018; Li, Liu, and Wang, 2021).

However, Abramova et al. (2020) found that when institutional investors' attention is diverted, their oversight of corporate management weakens. This results in slower reactions to management actions, reduced supervision, and less participation in decision-making, potentially missing opportunities for timely intervention (Longoni, 2019). Consequently, management may adopt riskier or short-term practices, increasing operational risks. These actions include making more provisions for contingencies, cost-cutting, reducing long-term investments, or postponing maintenance, harming long-term profitability and increasing profitability volatility (Ni et al., 2021).

Opportunistic behaviours by management tend to undermine the stability of company profits (Hasan and Khoo, 2021). To achieve short-term profit goals, management often increases debt or enters higher-risk markets, leading to greater profitability volatility (Asamoah, Dak-Adzaklo, and Ofosu, 2022). While those research shows institutional investors positively impact corporate management, there is a lack of detailed studies on the specific mechanisms and long-term effects of diverted attention. Additionally, more research is needed on the impact of management's opportunistic behaviours because of the diverted attention on profitability volatility and sustainability. This led us to set the first hypothesis:

H1: There is the positive relationship between institutional investors' distraction and profitability volatility of the company

The Mechanisms

(1) The mechanism involves company market value. When institutional investors' attention is diverted to other investments or events, they allocate fewer resources and focus less on overseeing and intervening in the affairs of the company (Xiang, Chen, and Wang, 2020; Yang, Wu, and Yu, 2021). This reduction in oversight leads to a decline in corporate information transparency, allowing management to conceal negative news while selectively disclosing positive news. This practice increases information asymmetry for market participants (Ni et al., 2020). As a result, investors, basing their decisions on inaccurate information, tend to make overly optimistic judgments about the company's prospects, leading to an increase in the company's market value.

The increase in the company's market value, driven by misinformation, is unsustainable without genuine profitability and growth potential. This inflated market value encourages the company's management to engage in more earnings management or short-term speculative activities (Zhang and Nam, 2016). These short-term approaches fail to address the fundamental issues of improving the company's profitability and growth potential, leading to significant fluctuations in profit levels.

While existing research highlights the detrimental effects of reduced oversight by institutional investors, there is a need for more detailed studies on how misinformation impacts market value and the subsequent managerial behaviour. Furthermore, the mechanisms through which inflated market value contributes to profitability volatility require further exploration. Based on the above analysis, we

proposed the second hypothesis of this paper.

H2: Company market value plays a positive mediating role in the process where institutional investors' distraction increases company profitability volatility.

(2) The mechanism involves digitalization.

The level of digitalization in a province reflects the extent of digital technology applications there (Liu and Wang, 2023). This benefits companies by improving digital transformation, operational efficiency, and investor access to information. Companies in more digitalized provinces generally have greater information transparency and efficiency, helping them respond to market changes. Increased digitalization also aids investor access, enhancing assessments of growth potential and financial transparency, which supports stable financial strategies and reduces profitability volatility.

Existing research shows regional digitalization enhances corporate transparency and efficiency, but more detailed studies are needed on its impact on managerial behaviours with reduced institutional investor oversight. Further exploration is also required on how digitalization mitigates the effects of reduced investor supervision on profitability volatility. These arguments led to the third hypothesis.

H3: The level of digitalization in the province where the company is located can mitigate the positive effect of institutional investors' distraction on company profitability volatility by exerting a negative moderating effect.

(3) The mechanism involves audit quality.

Audit fees reflect the audit work required for financial reports, with higher fees indicating greater attention to accuracy and transparency. The market trusts companies with higher audit fees, perceiving them as having lower investment risks (Cahan and Sun, 2015). These companies often show higher financial transparency and are more trusted by investors, reducing market uncertainty and risk in investment assessments (Salimi, 2017).

While institutional investors' distraction may reduce oversight, higher audit fees imply increased scrutiny from auditors, ensuring management adopts strategies that protect shareholders' long-term interests and reduce profitability volatility. Existing research shows a positive link between higher audit fees and financial transparency, but further investigation is needed into how audit fees moderate the impact of reduced institutional investor oversight on profitability volatility and their long-term effects on corporate governance and stability. Based on these analyses, we proposed the fourth hypothesis.

H4: The audit fees of company can exert a negative moderating effect, reducing the positive impact of institutional investor distraction on company profitability volatility.

The Effects of the Characteristics of the Companies

Star analysts, as recognized by *New Fortune* magazine, attract more attention to the companies they cover, and investors often rely on their recommendations (Xu et al., 2013). Companies without such coverage may face greater impacts from institutional investor distraction, with limited information access and risk assessment (Fang, 2014). Consequently, management might engage in short-term speculative activities during institutional investors' distraction, increasing profitability volatility. We set forth the fifth hypothesis based on these arguments as follows:

H5: The positive relationship between institutional investors' distraction and company profitability volatility would be more significant for companies without the coverage of star analysts.

The Big Four accounting firms—PwC, Deloitte, EY, and KPMG—are known for stricter auditing standards and higher report quality, leading to greater credibility (Che, Hope, and Langli, 2020). Non-Big Four firms face lower market acceptance and investor trust issues. Institutional investors' distraction can reduce oversight and increase risky management strategies (Hasan and Khoo, 2021). Companies audited by non-Big Four firms may be more affected by this distraction, leading to higher profitability volatility. Based on these points, we proposed the sixth hypothesis of this study.

H6: The positive relationship between institutional investors' distraction and company profitability volatility would be more pronounced for companies audited by non-Big Four accounting firms.

High-tech companies, defined by Yang and Zhou (2020) using the China Securities Regulatory Commission's 2012 guidelines (codes C25-C29, C31-C32, C34-C41, I63-I65, M73), are more market-sensitive and adaptable than non-high-tech firms, which rely on market stability and investor trust (Bao, Chen, and Zhou, 2012; Wang et al., 2013). When institutional investors are distracted, high-tech companies' market assessments become more uncertain, leading to increased earnings management and profitability volatility. Based on these views, we formulated the seventh hypothesis.

H7: The positive relationship between institutional investors' distraction and company profitability volatility would be more significant for non-high-tech companies.

3. Data

Data Source

The sample includes all stocks on the main boards of the Shanghai and Shenzhen Stock Exchanges from 2010 to 2022, with financial data sourced from WIND and the China Stock Market and Accounting Research Database. We started from 2010 to avoid the influence of the 2008 global financial crisis and the subsequent recovery period of 2009, aiming for more generalizable results. The data processing involved excluding observations with missing variables, financial companies, and "Special Treatment" listings, and winsorizing constant variables at the 1st and 99th percentiles. This process yielded approximately 18,900 company-year observations.

Main Variables

(1) Profitability volatility: The profitability volatility is the dependent variable, and it is calculated following Yu, Li & Pan (2013) and Yang, Xu & Bai (2022). It is derived by calculating the moving standard deviation of the company's adjusted ROA (Return on Assets). Because different industries have varying levels of profitability, raw ROA of the company can be influenced by the overall profitability of the industry. By subtracting the industry average ROA from the ROA of the company, we can control for this industry effect and more accurately measure the company's own profitability. Moreover, this method allows us to accurately calculate changes in the company's own profitability rather than industry-wide profitability fluctuations.

First, we calculated the adjusted ROA according to the following equations.

$$ROA_{i,t} = \frac{EBITDA_{i,t}}{Total\ Assets_{i,t}} \quad (1)$$

$$Adjusted_ROA_{i,t} = ROA_{i,t} - Industry_ROA_{i,t} \quad (2)$$

In Equation (1), $EBITDA_{i,t}$ means the earnings before interest, taxes, depreciation and amortization. $ROA_{i,t}$ is the return on asset of company i in year t .

In Equation (2), $Industry_ROA_{i,t}$ is the ROA of industry average and the industry is which the company belongs to. $Adjusted_ROA_{i,t}$ reflects the value of the company i 's own ROA in year t , excluding industry-specific factors.

Then, we used the $Adjusted_ROA_{i,t}$ to calculate profitability volatility.

$$PV_{i,t} = \sqrt{\frac{1}{2} \sum_{n=1}^3 (Adjusted_ROA_{i,t} - \frac{1}{3} \sum_{n=1}^3 Adjusted_ROA_{i,t})^2} \quad (3)$$

In Equation (3), $PV_{i,t}$ is the moving standard deviation of company i 's adjusted ROA over a three-year period. The larger the moving standard deviation, the higher the volatility of the adjusted ROA.

(2) Distraction: We followed the approach of Kempf et al. (2017) to construct the variable $Distraction_{i,t}$ to measuring institutional investors' distraction for company i in year t . $Distraction_{i,q}$ means the distraction caused by the industries excluding the industry which company i belongs to, turn

out to be highest or lowest return in quarter q. $Distraction_{i,t}$ is the sum of $Distraction_{i,q}$ across the four quarters of the calendar year t of company i.

$$Distraction_{i,q} = \sum_{v \in F_{q-1}} \sum_{IND \neq IND_f} w_{v,i,q-1} \times w_{v,q-1}^{IND} \times IS_q^{IND} \quad (4)$$

$v \in F_{q-1}$ means the column of institutional investors who invest in company i in the end of quarter q-1. IND refers to the industries of twelve Fama-French industry. $IND \neq IND_f$ means the industry which company i belongs to is excluded.

$w_{v,q-1}^{IND}$ measures the weight of industry IND in the portfolio of investor v on the calendar quarter q-1.

If the return for industry IND is the highest or lowest among all twelve Fama-French industries in quarter q, IS_q^{IND} equals to 1. Otherwise, IS_q^{IND} equals to 0.

$w_{v,i,q-1}$ measures the weight of company i in the investment portfolio of investor v in quarter q-1. It is calculated by Equation (5).

$$w_{v,i,q-1} = \frac{QPFW_{v,i,q-1} + QPercOwn_{v,i,q-1}}{\sum_{v \in F_{q-1}} (QPFW_{v,i,q-1} + QPercOwn_{v,i,q-1})} \quad (5)$$

$QPFW_{v,i,q-1}$ and $QPercOwn_{v,i,q-1}$ are calculated by sorting $PFW_{v,i,q-1}$ and $PercOwn_{v,i,q-1}$ into quintiles. $PFW_{v,i,q-1}$ is the weight of company i in investor v' portfolio in quarter q-1. $PercOwn_{v,i,q-1}$ is the shares hold by investor v in quarter q-1.

(3) Mediating variables: market value of the company: To test hypothesis H2, we selected two variables that could measure the market value of the company: one is book-to-market ratio, and the other is TOBINQ. They are calculated by Equation (6) and (7).

$$BM\ ratio_{i,t} = \frac{Book\ value\ of\ equity_{i,t}}{Market\ value\ of\ equity_{i,t}} \quad (6)$$

BM ratio $_{i,t}$ reflects the book-to-market ratio of company i in year t. It is calculated by dividing the company's net asset book value by its market value.

$$TOBINQ_{i,t} = \frac{Market\ value_{i,t}}{Total\ asset_{i,t}} \quad (7)$$

TOBINQ $_{i,t}$ reflects the market value of the company i to total assets in year t. It illustrates the relationship between a company's market value and its cost of invested capital.

Both of TOBINQ $_{i,t}$ and BM ratio $_{i,t}$ could reflect a company's market value. However, the difference lies in that, if other factors remain constant, companies with higher market values have smaller BM ratio $_{i,t}$ values and larger TOBINQ $_{i,t}$ values. Conversely, companies with lower market values have larger BM ratio $_{i,t}$ values and smaller TOBINQ $_{i,t}$ values. We used both variables as mediating variables to comprehensively measure the company's market value, ensuring robust conclusions.

(4) Moderating variables: To explore which variables can mitigate the effect of institutional investors' distraction on increasing company profitability volatility, we introduced the following variables as moderating variables.

First, to test hypothesis H3, we introduced the digitalization level of the province where the company is located as a moderating variable. We followed the method of Liu and Wang (2023) to calculate the level of digitalization.

$$Digitalization_{prov,t} = \frac{\sum_{n=1}^{N=365} Term_{prov,t}}{1,000,000} \quad (8)$$

In Equation (8), Digitalization $_{prov,t}$ reflects the number of occurrences of terms related to the digital economy in year t of the province where the company located. We first captured daily data related to digitalization terms using R-studio, then aggregated it annually by province, and finally divided by 1 million to prevent the numbers from being too small.

Second, we utilized the audit fee as a moderating variable in order to test hypothesis H4. Following Cao et al. (2024), we measured Audit fee_{*i,t*} by calculating the natural logarithm of the audit fee of company *i* in year *t*.

(5) Control variables: Based on prior studies (Zhang, 2023), we included the following control variables into our regression model. We selected these control variables because they all have an impact on company profitability volatility. They could also explain some of the variations in profitability volatility. This would improve the fitness of the model and estimation the impact of institutional investor distraction on company profitability volatility.

SA is a financial constraint index measuring a firm's financing ability. Higher financial constraints indicate greater financial risk, potentially increasing profitability volatility. SOE is an indicator for state-owned enterprises, where SOE equals 1 for state-owned firms and 0 otherwise. State-owned enterprises often have higher risk tolerance due to potential government support and policy influence, affecting profitability volatility. Balance measures equity balance by summing the ownership percentages of the second to fifth largest shareholders and dividing by the largest shareholder's percentage. It controls for variations in shareholder structure that influence profitability volatility. INST is the ownership percentage of institutional investors multiplied by 1000, reflecting their share among all investors. It accounts for how institutional investor distraction affects profitability volatility. Bank is an indicator for whether the company holds bank shares, where Bank = 1 if it does and 0 otherwise. Bank shareholdings reflect risk management strategies impacting financial stability and profitability. Dual is an indicator for whether the Chairman is also the Managing Director, where Dual = 1 if they are the same person and 0 otherwise. Dual roles can affect decision-making efficiency and profit volatility, with shared roles potentially leading to reduced volatility.

The definitions of all the variables are listed in Table 1.

Table 1 Descriptive Statistics

Variable	Definition
PV	The variable which measures profitability volatility.
Distraction	The degree of institutional investors' distraction towards the company.
BM ratio	Book-to-Market ratio measures a company's market value relative to its book value.
TOBINQ	The ratio of market value to total assets.
Digitalization	This variable measures the province's digitalization degree where the company is located.
Audit fee	The natural logarithm of the audit fee.
SA	A financial constraint index proposed by Hadlock and Pierce (2010).
SOE	An indicator variable, taking a value of 1 if the company is a state-owned company.
Balance	Equity balance is the sum of the second to fifth largest shareholders' ownership percentages divided by the largest shareholder's percentage.
INST	The ownership percentage of institutional investors among all investors which multiplied by 1000.
Bank	An indicator variable indicating whether bank shares are held, with 1 indicating holding bank shares.
Dual	An indicator variable for whether the chairman and managing director are the same person, taking the value of 1 if they are.

Table 2 shows the number of observations, mean, standard deviation, minimum, and maximum values for all variables. The mean of PV is 0.0333, indicating average profitability volatility. Distraction has a mean of 0.0061, reflecting the average degree of institutional investors' distraction. The average BM ratio is 0.6031, TOBINQ is 2.1862, Digitalization is 0.063, Audit fee is 13.779, SA is -3.7881,

Balance is 0.7507, and INST is 48.1992. 36.22% of companies are state-owned, 6.74% hold bank shares, and 28.33% have a dual Chairman and Managing Director.

Table 2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
PV	18829	.0333	.0445	.0003	.4482
Distraction	18829	.0061	.0113	0	.0695
BM ratio	18829	.6031	.2573	.0098	1.5592
TOBINQ	18829	2.1862	1.9184	.6413	102.4296
Digitalization	18829	.063	.051	0	.192
Audit fee	18829	13.779	.7	11.513	17.676
SA	18829	-3.7881	.2695	-5.6459	-2.1094
SOE	18829	.3622	.4807	0	1
Balance	18829	.7507	.6223	.0056	4
INST	18829	48.1992	25.2909	.0014	157.0978
Bank	18829	.0674	.2507	0	1
Dual	18829	.2833	.4506	0	1

4. Research Design and Main Results

Research Design

The main regression in this paper aims to explore whether institutional investors' distraction leads to increased profitability volatility in companies. Following the approach proposed by Zhang, Feng and Lin (2021), we employed a model with both firm fixed effects and year fixed effects. We set the model as the Equation (9) shows.

$$PV_{i,t} = \alpha_0 + \alpha_1 Distraction_{i,t} + \alpha_2 SA_{i,t} + \alpha_3 SOE_{i,t} + \alpha_4 Balance_{i,t} + \alpha_5 INST_{i,t} + \alpha_6 Bank_{i,t} + \alpha_7 Dual_{i,t} + Year_{FE} + Firm_{FE} + \varepsilon_{i,t} \quad (9)$$

$PV_{i,t}$ is the dependent variable to measure the profitability volatility of the company. $Distraction_{i,t}$ is the main independent variable. $Year_{FE}$ and $Firm_{FE}$ means the year-fixed effects and firm-fixed effects. $\varepsilon_{i,t}$ is the error term. To test hypothesis H1, namely whether distraction increases profitability volatility of the company, we focused on the coefficient of $Distraction_{i,t}$. We expected the coefficient α_1 is significant and positive.

Then, to explore whether the market value of the company can play a mediating role in the process of distraction increasing profitability volatility (hypothesis H2), we used BM ratio and TOBINQ as mediating variables and set up the regression equations as follows. We still applied the year fixed effects and company fixed effects.

$$TOBINQ_{i,t} = \beta_0 + \beta_1 Distraction_{i,t} + \beta_2 SA_{i,t} + \beta_3 SOE_{i,t} + \beta_4 Balance_{i,t} + \beta_5 INST_{i,t} + \beta_6 Bank_{i,t} + \beta_7 Dual_{i,t} + Year_{FE} + Firm_{FE} + \varepsilon_{i,t} \quad (10)$$

$$BM\ ratio_{i,t} = \beta_0 + \beta_1 Distraction_{i,t} + \beta_2 SA_{i,t} + \beta_3 SOE_{i,t} + \beta_4 Balance_{i,t} + \beta_5 INST_{i,t} + \beta_6 Bank_{i,t} + \beta_7 Dual_{i,t} + Year_{FE} + Firm_{FE} + \varepsilon_{i,t} \quad (11)$$

$$PV_{i,t} = \gamma_0 + \gamma_1 Distraction_{i,t} + \gamma_2 TOBINQ_{i,t} + \gamma_3 SA_{i,t} + \gamma_4 SOE_{i,t} + \gamma_5 Balance_{i,t} + \gamma_6 INST_{i,t} + \gamma_7 Bank_{i,t} + \gamma_8 Dual_{i,t} + Year_{FE} + Firm_{FE} + \varepsilon_{i,t} \quad (12)$$

$$PV_{i,t} = \gamma_0 + \gamma_1 Distraction_{i,t} + \gamma_2 BM\ ratio_{i,t} + \gamma_3 SA_{i,t} + \gamma_4 SOE_{i,t} + \gamma_5 Balance_{i,t} + \gamma_6 INST_{i,t} + \gamma_7 Bank_{i,t} + \gamma_8 Dual_{i,t} + Year_{FE} + Firm_{FE} + \varepsilon_{i,t} \quad (13)$$

Because, with other factors held constant, the company's BM ratio $_{i,t}$ decreases as market value

increases, and $TOBINQ_{i,t}$ increases as the company's market value increases. Therefore, we expected the value of β_1 in Equation (10) to be significantly positive, and the value of β_1 in Equation (11) to be significantly negative. In other words, distraction will have an increasing effect on the company's market value since the company's market value is the numerator in TOBINQ and the denominator in BM ratio.

In Equation (12), if the value of γ_2 is significantly positive, it indicates that the mediating effect is established, meaning distraction can increase company's profitability volatility by increasing the company's market value. Moreover, if the value of γ_1 is also significantly positive, it indicates that this mediating effect is partial. If the value of γ_1 is not significant, it indicates that this mediating effect is complete.

For Equation (13), if the value of γ_2 is significantly negative, it indicates that the mediating effect is established. A significantly negative value of γ_2 implies that an increase in BM ratio will lead to a decrease in profitability volatility. With other factors held constant, an increase in the company's market value meaning the decrease of BM ratio, and since BM ratio and profitability volatility move inversely, a decrease in BM ratio will cause an increase in profitability volatility. This indirectly indicates that an increase in the company's market value, which is caused by the increase of distraction, will lead to an increase in profitability volatility. Furthermore, if the coefficient of γ_1 is significantly positive, it indicates a partial mediating effect. If the coefficient of γ_1 is not significant, it indicates that BM ratio plays a complete mediating role.

Finally, for the test of hypotheses H3 and H4, namely whether the degree of digitalization and audit fees can play the moderating roles in the process of distraction increasing company profitability volatility, we set up regression Equations (14) and (15).

$$PV_{i,t} = \rho_0 + \rho_1 Distraction_{i,t} + \rho_2 Digitalization_{prov,t} + \rho_3 Distraction_{i,t} \times Digitalization_{prov,t} + \rho_4 SA_{i,t} + \rho_5 SOE_{i,t} + \rho_6 Balance_{i,t} + \rho_7 INST_{i,t} + \rho_8 Bank_{i,t} + \rho_9 Dual_{i,t} + Year_{FE} + Firm_{FE} + \varepsilon_{i,t} \quad (14)$$

$$PV_{i,t} = \delta_0 + \delta_1 Distraction_{i,t} + \delta_2 Audit\ fee_{i,t} + \delta_3 Distraction_{i,t} \times Audit\ fee_{i,t} + \delta_4 SA_{i,t} + \delta_5 SOE_{i,t} + \delta_6 Balance_{i,t} + \delta_7 INST_{i,t} + \delta_8 Bank_{i,t} + \delta_9 Dual_{i,t} + Year_{FE} + Firm_{FE} + \varepsilon_{i,t} \quad (15)$$

In these two regression equations, we focused on the coefficients of the interaction terms. If the value of ρ_3 and δ_3 are both significantly negative, it indicates that digitalization and audit fees can have a negative effect on the process of distraction increasing profitability volatility. In other words, they can mitigate the increase in profitability volatility caused by institutional investors' distraction.

Main Results

Table 3 presents the main regression results of this study. The column (1) shows the regression results without control variables, while the column (2) includes control variables. Both the regressions in the first and second columns apply year fixed effects and firm fixed effects. In this regression, we were most interested in the coefficient of Distraction. When not including control variables, the coefficient of Distraction is 0.0627 and significant at the 5% level of significance. After including control variables, the coefficient of Distraction increases to 0.0667 and its significance level rises to 1%. This indicates that, after including control variables, one standard deviation increase of distraction would cause 1.69% increase in profitability volatility of the company. This regression result validates hypothesis H1, which suggests that institutional investors' distraction leads to an increase in the profitability volatility of the company.

Table 3 Main results

	(1) PV	(2) PV
Distraction	.0627** (.0252)	.0667*** (.0251)
SA		-.0488*** (.005)
SOE		.0049** (.0023)
Balance		.0044*** (.001)
INST		-.0002*** (0)
Bank		.0044*** (.0014)
Dual		.0002 (.001)
_cons	.0329*** (.0003)	-.1498*** (.0191)
Firm FEs	YES	YES
Year FEs	YES	YES
Obs	18829	18829
R-squared	.507	.513

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

Table 5 Mechanism- moderating effect

	(1) PV	(2) PV
Distraction	.1374*** (.0397)	1.4897*** (.4629)
Digitalization	.062*** (.0237)	
Distraction× Digitalization	-1.4747** (.5773)	
Audit fee		.0114*** (.0011)
Distraction× Audit fee		-.1044*** (.0338)
Control variables	YES	YES
_cons	-.1516*** (.0209)	-.3085*** (.0253)
Obs	18829	18829
Firm FEs	YES	YES
Year FEs	YES	YES
R-squared	.5305	.5254

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

Mechanism Analysis

(1) Mechanism analyses about mediating effect of company market value.

To test whether the company market value mediates the process through which institutional investors' distraction increases profitability volatility of the company (hypothesis H2), we conducted the following regressions with TOBINQ and BM ratio as mediating variables. The column (1) and (3) present the mediating effect regression results for TOBINQ. The column (2) and (4) present the mediation effect regression results for BM ratio.

In table 4, when TOBINQ is used as the mediating variable, we observed that its coefficient of distraction is 2.0904 and significant at the 1% level of significance level. In other words, one standard deviation increase of distraction would lead to 1.23% increase in TOBINQ. In the third column, the coefficient of TOBINQ is 0.0009 and remains significant at the 1% level. This indicates that, one standard deviation increase of TOBINQ would cause 4% increase in profitability volatility. This indicates that company market value can act as a mediator, supporting hypothesis H2. Additionally, we noted that in the regression results of the column (3), the coefficient of Distraction is 0.0648 and significant at the 1% level, suggesting that TOBINQ serves as a partial mediator.

Next, we analysed the regression results in column (2) and (4), where BM ratio serves as the mediating variable. In column (2), the coefficient of Distraction is -0.4768 and statistically significant. This indicates one standard deviation increase of distraction would generate -2.09% decrease in BM ratio. In column (4), we observed that the coefficient of BM ratio is -0.0062 and significant at the 1% level, which suggest that one standard deviation increase of BM ratio would lead to -3.58% decrease in profitability volatility. This result aligns with our hypothesis H2. Additionally, we noted that the coefficient of Distraction is significantly positive (0.0638), indicating that BM ratio also serves as a partial mediator.

Since both TOBINQ and BM ratio represent company market value, we could conclude that company market value can partially and positively mediate the process through which institutional investors' distraction increases profitability volatility of the company. Therefore, hypothesis H2 is proven to be valid.

Table 4 Mechanism- mediating effect

	(1) TOBINQ	(2) BM ratio	(3) PV	(4) PV
Distraction	2.0904*** (.8077)	-.4768*** (.0976)	.0648*** (.0251)	.0638** (.0251)
TOBINQ			.0009*** (.0002)	
BM ratio				-.0062*** (.0021)
Control variables	YES	YES	YES	YES
_cons	5.0113*** (.614)	1.4048*** (.0742)	-.1545*** (.0191)	-.1411*** (.0193)
Firm FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES
Obs	18829	18829	18829	18829
R-squared	.644	.7878	.5134	.5132

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

(2) Mechanism analyses about moderating effect of Digitalization and Audit fee

To investigate whether Digitalization and Audit fee can serve as moderating variables to mitigate the effect of distraction on profitability volatility increase (hypotheses H3 and H4), we analyzed the regression results in Table 5. The column (1) examines Digitalization as a moderating variable, while the column (2) examines Audit fee as a moderating variable. Both regressions include company fixed effects and year fixed effects.

We observed that the coefficient of interaction term between Distraction and Digitalization is -1.4747 and significant at the 5% level. This indicates one standard deviation increase of the interaction term would lead to -2.52% decrease of profitability volatility. In other words, this suggests that digitalization mitigates the increase of profitability volatility due to distraction, thus supporting hypothesis H3.

In the column (2) of Table 5, we observed that the coefficient of the interaction term between Distraction and Audit fee is -0.1044 and significant at the 1% level. This result shows that one standard deviation increase of the interaction term would generate -36.04% decrease of profitability volatility. This shows that Audit fee can also serve as a moderating variable to mitigate the effect of distraction on profitability volatility. Hypothesis H4 is proven to be true.

Robustness Tests

In this section, we employed the methods of alternating dependent variable, lagging the independent variable and altering the time spans to conduct the robustness test for the main regression results.

(1) Alternating dependent variable. The volatility of stock returns (standard deviation) reflects the fluctuation in stock prices, which are correlated with the company's profitability (Su, 2015). Both stock return volatility and profitability volatility can measure the company's level of risk and uncertainty. Therefore, we replaced PV with SRV (stock return volatility) as the the dependent variable. Following the approach of Su (2015), the calculation of SRV is as follows:

$$SRV1_{i,w,t} = \ln \left[\sqrt{\frac{1}{T} \sum_{t=1}^T (r_{i,w,t} - \frac{1}{T} \sum_{t=1}^T r_{i,w,t})^2} \right] \quad (16)$$

$$SRV2_{i,m,t} = \ln \left[\sqrt{\frac{1}{T} \sum_{t=1}^T (r_{i,m,t} - \frac{1}{T} \sum_{t=1}^T r_{i,m,t})^2} \right] \quad (17)$$

$SRV1_{i,w,t}$ is the logarithm of the annualized weekly return standard deviation of the stock, whereas $SRV2_{i,m,t}$ is the logarithm of the annualized monthly return standard deviation of the stock. $r_{i,w,t}$ is the stock return of company i on week w of year t , and T is the total number of weeks in one year. $r_{i,m,t}$ is the stock return of company i on month m of year t , and T is the total number of months in one year.

The regression results with $SRV1$ and $SRV2$ as the dependent variables are presented in Table 6. The coefficients of *Distraction* are 0.8191 and 0.9405 for $SRV1$ and $SRV2$ respectively and they are both significant at the 1% significance level. Furthermore, one standard deviation increase of *distraction* would cause 2.41% increase of annualized weekly return standard deviation of the stock or lead to 2.31% increase of annualized monthly return standard deviation of the stock. The regression results indicate that *distraction* has a positive effect on the volatility of stock returns. The main regression results have not been affected by changes in the measurement of dependent variable. Therefore, the main regression result of this paper is robust.

Table 6 Robustness test- alternating dependent variable

	(1) SRV1	(2) SRV2
<i>Distraction</i>	.8191*** (.1898)	.9405*** (.2602)
Control variables	YES	YES
_cons	-2.499*** (.1443)	-2.0406*** (.1978)
Firm FEs	YES	YES
Year FEs	YES	YES
Obs	18829	18829
R-squared	.6332	.5186

Standard errors are in parentheses
 *** $p < .01$, ** $p < .05$, * $p < .1$

Table 7 Robustness test- lagged distraction

	(1) PV	(2) PV
<i>Distraction</i>	.0667*** (.0251)	
Lagged <i>Distraction</i>		.0618** (.0268)
Control variables	YES	YES
_cons	-.1498*** (.0191)	-.092*** (.0211)
Firm FEs	YES	YES
Year FEs	YES	YES
Observations	18829	14628
R-squared	.513	.5844

Standard errors are in parentheses
 *** $p < .01$, ** $p < .05$, * $p < .1$

(2) Lagging the independent variable (*distraction*)

Considering that the *distraction* of institutional investors may have a time lag effect on the volatility of company profits, we lagged this variable by one period to analyze whether the impact of lagged institutional investors' *distraction* on company profitability volatility remains positive.

In Table 7, for comparison, in column (1), the main independent variable is institutional investor *distraction* without being lagged. In column (2), the independent variable is institutional investor *distraction* lagged by one period. From the regression results, we could see that the coefficient of lagged *distraction* is 0.0618 and significant at the 5% level of significance. This regression result indicates that, one standard deviation increase of the lagged *distraction* would generate 1.59% increase of profitability volatility. For *Distraction* without being lagged, one standard deviation increase of *distraction* would cause 1.69% increase of profitability volatility.

This indicates that although the impact of institutional investor *distraction* lagged by one period on company profitability volatility is less than the impact of current period's *distraction*, both of the impacts

are positive. Therefore, our main regression results are robust.

(3) Altering the time spans

To prevent the influence of different time spans on the main regression results, we set three time-intervals which are different from the interval of the main regression: year 2011- year 2019 for column (1), year 2013-year 2020 for column (2), and year 2014-year 2022 for column (3).

In Table 8, we could observe that the coefficients of Distraction are 0.0744, 0.0986 and 0.0689 for the time intervals of year 2011- year 2019, year 2013-year 2020 and year 2014-year 2022 respectively. All these coefficients are significant at the 5% level of significance. One standard deviation increase of distraction would lead to 1.78%, 2.06% and 1.46% increase of profitability volatility for the time intervals of year 2011- year 2019, year 2013-year 2020 and year 2014-year 2022 respectively. Although the influence of distraction on profitability volatility varies across different time intervals, it remains positive. This indicates that our main regression results are significant, showing that institutional investor distraction could increase the company's profitability volatility.

Table 8 Robustness test- altering the time spans

	2011-2019	2013-2020	2014-2022
	(1)	(2)	(3)
	PV	PV	PV
Distraction	.0744** (.0303)	.0986** (.039)	.0689** (.0328)
Control variables	YES	YES	YES
_cons	-.2581*** (.0268)	-.2876*** (.0426)	-.1308*** (.0294)
Firm FEs	YES	YES	YES
Year FEs	YES	YES	YES
Obs	14009	10576	14533
R-squared	.5566	.63	.5865

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

Endogeneity Tests

Although we have concluded that institutional investor distraction increases company profitability volatility, the presence of endogeneity issues may affect our conclusions. To address this issue, we conducted the following endogeneity tests.

(1) Adding control variables: First, we introduced new control variables following the approach of Dong et al. (2024) to address the endogeneity issues.

Opinion is an indicator variable that equals 1 if the financial report received an unqualified opinion, and 0 otherwise. An unqualified opinion indicates higher financial reporting quality and transparency, which is associated with lower profitability volatility. Additionally, it reflects better corporate governance and internal controls, leading to greater operational stability and reduced volatility. Indep represents the proportion of independent directors on the board. Independent directors more effectively supervise management, reducing agency problems and conflicts of interest (Wheeler, 2012). Including this proportion in regression models aims to mitigate the impact of corporate governance differences on profitability volatility. FinBack indicates whether board members, supervisory board members, and executives have a financial background. It takes the value of 1 if they do, and 0 otherwise. A financial background may affect management’s abilities and decision-making in financial matters, influencing profitability volatility. FinInst indicates whether the company holds shares in financial institutions other

than banks. It takes the value of 1 if shares are held, and 0 otherwise. This variable controls for how the company's financial investments might impact profitability volatility. TMTAge measures the average age of management. Older executives are likely to have more experience and a steadier decision-making style, which can reduce profit volatility (Tanikawa and Jung, 2016). Employee is the natural logarithm of the number of employees, reflecting the company's scale and complexity. More employees indicate a larger scale with more complex operations, which can impact profitability.

Table 9 Endogeneity test- Adding control variables

	Original controls	New controls
	(1)	(2)
	PV	PV
Distraction	.0667***	.0627**
	(.0251)	(.025)
Original controls	YES	YES
New controls	NO	YES
_cons	-.1498***	-.1355**
	(.0191)	(.0222)
Firm FEs	YES	YES
Year FEs	YES	YES
Obs	18829	18829
R-squared	.513	.5195

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

In Table 9, the column (1) corresponds to the model without the additional control variables, while the column (2) is the result for the regression that includes the additional control variables.

We could see that after adding new control variables, the coefficient of Distraction is 0.0627 and significant at the 5% level of significance. This shows that one standard deviation increase of distraction would lead to 1.58% increase of profitability volatility. This regression result supports the finding that institutional investors' distraction would lead to an increase in the company's profitability volatility.

(2) Industry fixed effects

Then, since some omitted variables may vary across industries but not over time, we used industry fixed effects instead of firm fixed effects to verify the accuracy of our main conclusions. The regression results for this are shown in Table 10. The first column presents the regression with firm fixed effects and time fixed effects, while the second column presents the regression with industry fixed effects and time fixed effects.

From the regression results, we could see that after applying industry fixed effects, the coefficient for distraction is 0.0686 and significant at the 5% level of significance. This indicates that one standard deviation increase of distraction would cause 1.73% increase of profitability volatility. Despite the decrease in the fitness of model for company profitability volatility after substituting firm fixed effects with industry fixed effects, the regression results are still aligned with our main research findings.

5. Further Research

Following Chen et al. (2023) and Hu et al. (2023), we categorized our sample based on whether the company is covered by star analysts, audited by Big Four firms, and classified as a high-tech enterprise. We assessed the impact of these factors on the significance of the positive effect of institutional

investors' distraction on profitability volatility.

5.1 Coverage of Star Analysts

To test hypothesis H5, which examines if star analyst coverage affects the positive effect of institutional investors' distraction on profitability volatility, we categorized the sample into two groups based on the presence of star analysts. The results for the group without star analysts are in column (1) of Table 11, and those for the group with star analysts are in column (2).

From the regression results of the group without coverage by star analysts, the coefficient of Distraction is 0.1136 and significant at the 5% level of significance. This shows that one standard deviation increase of distraction would generate 2.73% increase of profitability volatility. The coefficient of Distraction in the group with coverage by star analysts, although positive, is not statistically significant. This result validates hypothesis H5, indicating that for companies without coverage by star analysts, the positive impact of institutional investors' distraction on profitability volatility is more significant.

5.2. Audited by the Big Four Accounting Firms

We categorized our sample into two groups based on whether the auditing firm for the company is one of the Big Four accounting firms, namely the group audited by the Big Four accounting firms and the group audited by non-Big Four accounting firms. The regression analysis here is to validate hypothesis H6.

In Table 11, the column (3) is the regression result for the group audited by non-Big Four accounting firms and the column (4) is for the group audited by the Big Four accounting firms. For the group audited by non-Big Four accounting firms, the coefficient of Distraction is 0.0692 and significant at the 1% level of significance. In other words, one standard deviation increase of distraction would lead to 1.7% increase of profitability volatility. For the group audited by the Big Four accounting firms, the coefficient of Distraction is positive, but not statistically significant. For the group audited by non-Big Four accounting firms, the positive effect of institutional investors' distraction on company profitability volatility is more significant. This aligns with our hypothesis H6.

5.3. Industry heterogeneity

We considered industry heterogeneity from the perspective of whether the company is high-tech or not. Following the approach of Yang and Zhou (2020), we categorized our sample into high-tech company group and non-high-tech company group. In Table 11, the column (5) is the regression result for non-high-tech company group and column (6) is for high-tech company group.

The coefficient of Distraction for the non-high-tech company group is 0.0827 and significant at the 5% level of significance, which suggests that one standard deviation increase of distraction would cause 2.37% increase in profitability volatility. For the high-tech company group, although the coefficient of Distraction is positive, it is not significant. This indicates that for non-high-tech companies, the positive effect of institutional investors' distraction on the profitability volatility of the company is more pronounced. This regression finding confirms hypothesis H7.

Table 11 Further research

	Without star analysts	With star analysts	Audited by non-Big4	Audited by Big4	Non-high-tech	High-tech
	(1)	(2)	(3)	(4)	(5)	(6)
	PV	PV	PV	PV	PV	PV
Distraction	.1136**	.033	.0692**	.0211	.0827*	.0492
n			*		*	

	(.0532)	(.0306)	(.0267)	(.0579)	(.0345)	(.0345)
Control variables	YES	YES	YES	YES	YES	YES
_cons	-.3262** *	-.0896** *	-.1811***	.1505** *	-.0356	-.263** *
	(.0555)	(.0214)	(.0219)	(.0369)	(.024)	(.0309)
Firm FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES
R-squared	.6614	.5121	.5164	.5709	.5294	.5255

Standard errors are in parentheses

*** p<.01, ** p<.05, * p<.1

6. Conclusion

This study provides empirical evidence on the relationship between institutional investors' distraction and firm profitability volatility. Our findings demonstrate that distraction leads to increased volatility, with this effect mediated by firm market value and moderated by digitalization levels and audit fees. These results extend the existing literature on institutional investor behavior by identifying a new mechanism through which investor attention impacts firm outcomes.

Our analysis reveals that the effect of distraction is not uniform across all firms, being more pronounced for companies without star analyst coverage, those not audited by Big Four firms, and non-high-tech firms. These findings suggest that certain firm characteristics can exacerbate the vulnerability to investor distraction.

This research has important implications for both theory and practice. Theoretically, it contributes to our understanding of the complex interactions between institutional investors and firm outcomes. Practically, it suggests that firms and regulators should be aware of the potential risks associated with investor distraction, particularly in less closely monitored or less technologically advanced sectors.

Future research could explore additional mechanisms through which investor distraction affects firm outcomes, investigate the long-term consequences of distraction-induced volatility, and examine these relationships in different institutional contexts. Despite its limitations, including its focus on the Chinese market, this study provides valuable insights into the dynamics of institutional investor behavior and its impact on firm performance.

References

- Abramova, I., Core, J., & Sutherland, A. (2020). Institutional Investor Attention and Firm Disclosure. *The Accounting Review*, 95(6), 1–21. <https://doi.org/10.2308/tar-2018-0494>
- Alexandre, G., Martin-Flores, J., Petit-Romec, A., & Scott, A. (2018). Distracted Investors and Earnings Management. *SSRN eLibrary Working Journal*. <https://doi.org/10.2139/ssrn.302375>
- Alexandre, G., Martin-Flores, J., Petit-Romec, A., & Scott, A. (2021). Institutional investor distraction and earnings management. *Journal of Corporate Finance*, 66, 101801. <https://doi.org/10.1016/j.jcorpfin.2020.101801>
- Asamoah, J. M., Dak-Adzaklo, C. S. P., & Ofori, E. (2022). Institutional investors distraction and debt choice. *Managerial Finance*, 48(5), 706–719. <https://doi.org/10.1108/MF-12-2021-0601>
- Astvansh, V., Chen, T., & Qu, J. C. (2023). The social cost of investor distraction: Evidence from institutional cross-blockholding. *PLOS ONE*, 18(12), e0286336.

<https://doi.org/10.1371/journal.pone.0286336>

Bao, Y., Chen, X., & Zhou, K. (2011). External learning, market dynamics, and radical innovation: Evidence from China's high-tech firms. *Journal of Business Research*, 65, 1226–1233. <https://doi.org/10.1016/j.jbusres.2011.06.036>

Cahan, S., & Sun, J. (2014). The Effect of Audit Experience on Audit Fees and Audit Quality. *Journal of Accounting, Auditing & Finance*, 30, 78–100. <https://doi.org/10.1177/0148558X14544503>

Cao, Y., Guan, F., Li, Z., et al. (2020). Analysts' beauty and performance. *Management Science*, 66(9): 4315-4335.

Cao, S., Xue, S., & Zhu, H. (2022). Analysts' knowledge structure and performance. *Accounting & Finance*, 62(5): 4727-4753.

Cao, F., Zhang, X., & Yuan, R. (2024). Rookie independent directors and audit fees: Evidence from China. *Research in International Business and Finance*, 69, 102207-. <https://doi.org/10.1016/j.ribaf.2023.102207>

Che, L., Hope, O.-K., & Langli, J. C. (2020). How Big-4 Firms Improve Audit Quality. *Management Science*, 66(10), 4552–4572. <https://doi.org/10.1287/mnsc.2019.3370>

Chen, T., Kamiya, S., Lou, P., & Milidonis, A. (2023). Analyst coverage, executive compensation and corporate risk - taking: Evidence from property - casualty insurance firms. *Journal of Risk and Insurance*, 90(4), 899-939.

Cheung, A., Hasan, M., & Khoo, J. (2020). Distracted Institutional Shareholders and Corporate Cash Holdings. *International Review of Economics & Finance*, 71. <https://doi.org/10.1016/j.iref.2020.08.018>

Chuang, W., & Susmel, R. (2011). Who is the More Overconfident Trader? Individual vs. Institutional Investors. *Journal of Banking & Finance*, 35(7), 1626–1644. <https://doi.org/10.1016/j.jbankfin.2010.11.013>

Dong, M., Li, M., Wang, H., et al. (2024). ESG Disagreement and Stock Price Crash Risk: Evidence from China. *Asia-Pacific Financial Markets*, 1-33.

El-Diftar, D., Jones, E., Ragheb, M., & Soliman, M. (2017). Institutional investors and voluntary disclosure and transparency: The case of Egypt. *Corporate Governance: The International Journal of Business in Society*, 17(1Rudd), 134–151. <https://doi.org/10.1108/CG-05-2016-0112>

Fang, L., & Yasuda, A. (2011). Are Stars' Opinions Worth More? The Relation Between Analyst Reputation and Recommendation Values. *Journal of Financial Services Research*, 235–269. <https://doi.org/10.2139/ssrn.1973334>

Fich, E. M., Harford, J., & Tran, A. L. (2015). Motivated monitors: The importance of institutional investors' portfolio weights. *Journal of Financial Economics*, 118(1), 21–48. <https://doi.org/10.1016/j.jfineco.2015.06.014>

Gao, K., Wang, M., & Zhang, R. (2023) Institutional investors' corporate site visits and firm management earnings forecasts. *Accounting & Finance*, 63(4): 4479-4504.

Gu, Z., Li, Z., Yang, Y., et al. (2019). Friends in need are friends indeed: An analysis of social ties between financial analysts and mutual fund managers. *The Accounting Review*, 94(1): 153-181.

Hadlock, C. J., & Pierce, J. R. (2010). New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index. *The Review of Financial Studies*, 23(5), 1909–1940.

Hu, X., Hua, R., Liu, Q., & Wang, C. (2023). The green fog: Environmental rating disagreement and

corporate greenwashing. *Pacific-Basin Finance Journal*, 78, 101952.

Kempf, E., Manconi, A., & Spalt, O. (2017). Distracted Shareholders and Corporate Actions. *The Review of Financial Studies*, 30(5), 1660–1695. <https://doi.org/10.1093/rfs/hhw082>

Kim, H.-D., Kim, Y., Mantecon, T., & Song, K. (2019). Short-term institutional investors and agency costs of debt. *Journal of Business Research*, 95, 195–210. <https://doi.org/10.1016/j.jbusres.2018.10.019>

Li, B., Liu, Z., & Wang, R. (2021). When dedicated investors are distracted: The effect of institutional monitoring on corporate tax avoidance. *Journal of Accounting and Public Policy*, 40(6), 106873. <https://doi.org/10.1016/j.jaccpubpol.2021.106873>

Liu, G., & Wang, S. (2023). Digital transformation and trade credit provision: Evidence from China. *Research in International Business and Finance*, 64, 101805.

Luo, K., & Wu, S. (2022). Corporate sustainability and analysts' earnings forecast accuracy: Evidence from environmental, social and governance ratings. *Corporate Social Responsibility and Environmental Management*, 29(5): 1465-1481.

Ni, X., Peng, Q., Yin, S., & Zhang, T. (2020). Attention! Distracted institutional investors and stock price crash. *Journal of Corporate Finance*, 64, 101701. <https://doi.org/10.1016/j.jcorpfin.2020.101701>

Salimi, M. (2017). Assessment of Transparency Impact of Accounting Information on the Cost of the Audit for each Type of Industry. *Advances in Mathematical Finance and Applications*, 2(3), 13–27.

Tanikawa, T., & Jung, Y. (2016). Top management team (TMT) tenure diversity and firm performance: Examining the moderating effect of TMT average age. *International Journal of Organizational Analysis*, 24(3), 454–470. <https://doi.org/10.1108/IJOA-02-2014-0739>

Wang, C.-H., Lu, Y.-H., Huang, C.-W., & Lee, J.-Y. (2013). R&D, productivity, and market value: An empirical study from high-technology firms. *Omega*, 41, 143–155. <https://doi.org/10.1016/j.omega.2011.12.011>

Wheeler, S. (2012). Independent directors and corporate governance. *Australian Journal of Corporate Law*, 27(2), 168–187.

Xiang, C., Chen, F., Jones, P., & Xia, S. (2021). The effect of institutional investors' distraction on firms' corporate social responsibility engagement: Evidence from China. *Review of Managerial Science*, 15(6), 1645–1681.

Xiang, C., Chen, F., & Wang, Q. (2019). Institutional investor inattention and stock price crash risk. *Finance Research Letters*, 33. <https://doi.org/10.1016/j.frl.2019.05.002>

Xu, N., Chan, K. C., Jiang, X., & Yi, Z. (2013). Do star analysts know more firm-specific information? Evidence from China. *Journal of Banking & Finance*, 37(1), 89–102.

Yang, X., & Ma, Z. (2022). Institutional investors' corporate site visits and dividend payouts. *International Review of Economics & Finance*, 80: 697-716.

Yang, J., Wu, H., & Yu, Y. (2020). Distracted institutional investors and audit risk. *Accounting & Finance*, 61(3), 3855–3881. <https://doi.org/10.1111/acfi.12718>

Yang, X., & Zhou, X. (2020). Governance Effect or Financing Effect? The Impact of Stock Liquidity on Tax Avoidance Behavior of Listed Companies. *Accounting Research*, 395(09), 120–133.

Yang, Y., Xu, X., & Bai, L. (2022). Subsidiary Autonomy, Risk-taking and Innovation Investment. *SCIENCE & TECHNOLOGY PROGRESS AND POLICY*, 39(6), 82–91. <https://doi.org/10.6049/kjbydc.2021020214>

Yu, M., Li, W., & Pan, H. (2013). Managerial Overconfidence and corporate Risk-Taking. *Journal of Financial Research*, 1, 149–163.

Zhang, D. (2023). Can digital finance empowerment reduce extreme ESG hypocrisy resistance to improve green innovation? *Energy Economics*, 125, 106756-.
<https://doi.org/10.1016/j.eneco.2023.106756>

Zhang, H., & Nam, C. (2016). The Effect of Information Disclosure Quality on Stock Price Crash Risk: Evidence from Listed Companies in China. *Journal of Modern Accounting and Auditing*, 12(8).
<https://doi.org/10.17265/1548-6583/2016.08.001>

Zhang, J., Feng, Y., & Lin, Y. (2021). Can ESG performance enhance firm value?—Based on the mediating effect of analyst coverage. *Economic Vision*, 40(6), 8–22.