# Research on the Impact of Institutional Investor Co-ownership on Stock Price Crashes

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**Abstract.**The phenomenon of co-ownership by institutional investors has become more common in capital markets, and academics have begun to explore the impact of this phenomenon on enterprises.Based on the panel data of A-share listed non-financial industries from 2010 to 2022, this paper empirically analyzes whether the impact of institutional investors' joint shareholding on stock price crash risk is a collusion effect or a governance effect.The results show that the joint holding of shares by institutional investors can exert a governance effect and significantly reduce the risk of corporate stock price collapse.Further, after passing the robustness tests such as Heckman's two-stage regression and substitution variables, the conclusion still holds.This paper provides a new empirical basis for the governance effect of institutional investors' joint shareholding, and expands and deepens the research on the influencing factors of institutional investors' joint shareholding on the risk of corporate stock price crash.

**Keywords:** institutional investors; Joint shareholding; stock price crash risk; Governance effects

## 1 Introduction

In the emerging capital market, in order to reduce investment risks and obtain high investment returns, major institutional investors hold the equity of multiple enterprises at the same time through their own skilled professional experience and strong financial strength, thus forming the phenomenon that the equity of multiple enterprises is held by the same institution, which is the joint holding of institutional investors.With the development of China's capital market, more and more enterprises and investors have joined the stock market, making stock market fluctuations have an important impact on the capital market.In recent years, the phenomenon of stock price crashes in China's stock market has also emerged one after another, causing significant damage to the interests of companies and investors, and the academic community has also set off a wave of research on the risk of stock price crash.

A large number of studies have been carried out on the joint shareholding of institutional investors in the existing domestic and foreign literature, but there is still controversy about whether the joint shareholding of institutional investors has a governance effect or a collusion effect on the risk of stock price collapse, which is mainly divided into the following two aspects:Scholars who support the governance effect believe that institutional investors have a stronger motivation and ability to participate in corporate governance in terms of capital scale and information, and can reduce the possibility of corporate stock price collapse by supervising

managers' information disclosure behavior and avoiding managers from concealing negative information [00].Scholars who support the collusion effect believe that compared with foreign capital markets, Chinese institutional investors not only do not play a positive role because they hold fewer shares, are weaker, and lack the motivation and ability to participate in corporate management, but also promote the expansion of stock price bubbles because of herd behavior, and also aggravate the risk of corporate stock price collapse. (Kang et al., 2018[16]; DU Yong et al.,2021[2];GaoFeng.,2018[0]).The above research shows that the impact of institutional investors' joint shareholding on enterprises has two sides, and whether it is a governance effect or a collusion effect has not yet reached a consensus in the academic community[8]. Based on this, this paper combines the characteristics of institutional investment co-shareholding, and demonstrates the governance effect and collusion effect of institutional investors' co-shareholding from the perspective of stock price crash risk, and verifies it empirically[9][14].

## 2 Theoretical basis and research hypothesis

### 2.1 The governance effect of co-ownership by institutional investors

Studies have found that the co-ownership of institutional investors affects the trading behavior of the entire group investment institution, improves corporate information transparency, communicates information between industries more efficiently , and reduces the risk of stock price collapse.On the other hand, institutional investor co-shareholding can help improve governance capabilities (Kang et al., 2018[0]) and play a supervisory role over management (Tian Kunru and You Zhujun, 2021[0]) by gaining professional experience from network connections, thereby reducing the risk of stock price crash. In summary, institutional investors jointly hold shares to exert governance effects, improve market information transparency, and reduce the risk of stock price collapse.Based on this, this paper proposes the hypothesis H1a:

H1a: Institutional investor co-ownership reduces the risk of stock price crash.

The greater the number of co-holdings held by institutional investors, the more access to information and the higher the quality of information obtained ; At the same time, the higher the co-shareholding ratio, the more investment decisions it adopts can influence the market, thereby enhancing the information effectiveness of the market and reducing the risk of a collapse in stock prices.In summary, this article assumes H2a:

H2a: The greater the number of shares held by institutional investors, the lower the risk of stock price crash.

### 2.2 The collusion effect of institutional investor co-ownership

Stock prices are similar among firms in which institutional investors share a stake , and a crash in one company has a knock-on effect that causes the other companies to crash as well.In addition, institutional investors will strengthen the information exchange between enterprises with common shareholdings and grasp the private information between each other, so as to build information barriers and enhance their own information advantages , making information asymmetry between industries and causing the risk of stock price collapse.Finally, the collusive behavior of institutional investors to jointly hold shares will upset the balance between markets (Yu et al., 2021[0]), thereby reducing market competition and influencing management oversight

and governance, thereby affecting the risk of stock price crash.Based on this, this paper proposes a hypothesis H1b：

H1b: Institutional investor co-ownership increases the risk of stock price crash.

When institutional investors obtain more co-shares, the more likely it is for co-holding companies to collude and conceal negative market information, causing corporate information to deviate from the stock market, resulting in the risk of stock price crash. Therefore, this paper proposes to assume that H2b:

H2b: The greater the number of shares held by institutional investors, the higher the risk of a stock price crash.

## 3 Research design

### 3.1 Samples and data sources

This paper selects A-share listed non-financial companies from 2010 to 2022 as a research sample. The samples were from the CSMAR database and processed as follows: ① financial and STPT samples were excluded; ② Exclude missing value samples; ③ Tail shrinkage on the 1% quantile. After processing, 28136 observations were obtained in this paper. This paper uses Excel 2021 and Stata17.0 to process and analyze related data.

### 3.2 Variable definitions

**Explanatory variables.** According to existing research (He and Huang, 2017[0]), Cldum is set to measure the co-ownership of institutional investors based on institutional investors who hold more than 5% of the equity of more than two companies in the same industry, and if there are investors with co-shareholdings in the quarter, Cldum is 1, otherwise 0; Set Clnum to the number of institutional investors with common holdings in the enterprise, and add 1 to the logarithm after finding the annual average.

**The variable being explained.** Referring to the existing literature (Kim et al., 2011[0]), stock price crash risk is measured by the negative return skew coefficient (NCSKEW) and the return volatility ratio (DUVOL). The larger the values of these two indicators, the greater the risk of stock price crash. In addition, in order to ensure the reliability of the research conclusions, according to the existing research (Callen and Fang, 2015[0]), CRASH is set to measure the risk of stock price crash, when the stock yield is less than 3.09 standard deviations for one week in a year, the variable value is 1, indicating that the stock has a crash event, otherwise it is 0, and this data is used for robustness testing.

### 3.3 Model settings

In order to test the relationship between institutional investors' joint shareholding and stock price crash risk, this paper establishes the following model (1)：

$$NCSKEW_{i.t}/DUVOL_{i.t}=\beta_0+\beta_1 Cldum_{i.t}/Clnum_{i.t}+\gamma CVs_{i.t}+\sum_j Industry_j+\sum_t year_t+\varepsilon_{i.t}. \quad (1)$$

Among them,$NCSKEW_{i.t}/DUVOL_{i.t}$ is the degree of corporate stock price crash risk, $Cldum_{i.t}/Clnum_{i.t}$ is the joint shareholding of corporate institutional investors, if the regression

coefficient $\beta_1$ of $Cldum_{i,t}/Clnum_{i,t}$ is significantly negative, it means that the governance effect of institutional investors' joint shareholding on the stock price crash risk has been confirmed; conversely, the collusion effect has been proven.$\beta_0$ is a constant term $CVs_{i,t}$ is the control variable,indu-stry$_j$ and year$_t$ are the fixed effects of industry and year, and $\varepsilon_{i,t}$ is the error term.

## 4 Analysis of empirical results

### 4.1 Descriptive statistics

According to the descriptive statistical analysis results in Table 1, the standard deviation and mean values of NCDKEW and DUVOL were 0.705, 0.464, -0.306 and -0.201, respectively, indicating that there were large differences in the stock price crash risk of each enterprise, which was consistent with the existing research (Xu et al., 2014; Wang et al., 2015[00]). The average value of CLDUM is 0.093, indicating that about 9.3% of A-share listed companies have institutional investors with common shareholdings. The mean value of Clnum is 0.060, indicating that there are 0.6 institutional investors with common shares per enterprise on average; the maximum value is 0.811, and the standard deviation is 0.192, indicating that there are significant differences between enterprises in common holdings of institutional investors and are within a reasonable range (Pan et al., 2020[0]).

**Table 1.** Variable definition and descriptive statistics

| Type | Variable | N | Mean | p50 | Min | Max | SD |
|---|---|---|---|---|---|---|---|
| Dependent variable | NCSKEW$_{i,t}$ | 28136 | -0.306 | -0.266 | -2.463 | 1.652 | 0.705 |
| | DUVOL$_{i,t}$ | 28136 | -0.201 | -0.200 | -1.352 | 1.006 | 0.464 |
| Argument | Cldum$_{i,t}$ | 28136 | 0.093 | 0.000 | 0.000 | 1.000 | 0.290 |
| | Clnum$_{i,t}$ | 28136 | 0.060 | 0.000 | 0.000 | 0.811 | 0.192 |
| Control variables | ROA$_{i,t}$ | 28136 | 0.046 | 0.043 | -0.373 | 0.247 | 0.062 |
| | Top10$_{i,t}$ | 28136 | 58.810 | 59.820 | 20.840 | 90.970 | 15.020 |
| | Size$_{i,t}$ | 28136 | 22.220 | 22.020 | 19.590 | 26.450 | 1.284 |
| | ROE$_{i,t}$ | 28136 | 0.072 | 0.076 | -0.926 | 0.437 | 0.115 |
| | Liquid$_{i,t}$ | 28136 | 2.638 | 1.752 | 0.268 | 35.500 | 2.786 |
| | INV$_{i,t}$ | 28136 | 0.138 | 0.113 | 0.000 | 0.772 | 0.119 |
| | BM$_{i,t}$ | 28136 | 0.625 | 0.622 | 0.064 | 1.246 | 0.247 |
| | Mfee$_{i,t}$ | 28136 | 0.084 | 0.068 | 0.007 | 0.641 | 0.066 |
| | ATO$_{i,t}$ | 28136 | 0.657 | 0.559 | 0.057 | 3.087 | 0.438 |

### 4.2 Benchmark regression analysis

According to the basic regression results in Table 2, the regression coefficients of the two indicators of investor common ownership dummy variable (Cldum), investor common holding number (Clnum) and stock price crash risk (NCSKEW, DUVOL) are -0.0358, -0.0345, -0.0698 and -0.0373, respectively, which are significant at the level of 1% and 5%, respectively. From an economic point of view, the basic regression results show that institutional investors can

greatly reduce the risk of stock price collapse by holding shares together, and the more institutional investors who hold shares together, the lower the possibility of stock price crash risk. For every 1% increase in the number of institutional investors holding common shares, the two stock price crash risk indicators of the company decreased by 0.0698 and 0.0373, respectively. The empirical results confirm the hypothesis that H1a and H2a, i.e., institutional investors jointly holding shares, can reduce the risk of corporate stock price collapse. In addition, it can be seen from the table that the two indicators of stock price crash risk are clearly positively correlated with the level of corporate profitability (ROE), and the analysis concludes that it may be related to the company's high debt operation, which can improve the company's short-term profits on the one hand, and increase the company's debt risk on the other hand, thereby increasing the risk of the company's stock price crash. The abnormal fluctuation of stock prices is a concrete embodiment of financial market turbulence and rising risks, and the governance role of institutional investors' joint shareholding on stock price crash risk can promote the healthy, stable and high-quality development of the capital market.

**Table 2.** Institutional investor co-ownership and stock price crash risk: a basic return

|  | (1) | (2) | (3) | (4) |
| --- | --- | --- | --- | --- |
| Variable | NCSKEW | NCSKEW | DUVOL | DUVOL |
| Cldum | -0.0358** |  | -0.0345*** |  |
|  | (-2.2753) |  | -(3.3457) |  |
| Clnum |  | -0.0698*** |  | -0.0373** |
|  |  | (-2.9246) |  | (-2.3848) |
| CVs | Yes | Yes | Yes | Yes |
| Year fe | Yes | Yes | Yes | Yes |
| Industry fe | Yes | Yes | Yes | Yes |
| N | 28136 | 28136 | 28136 | 28136 |
| r2_a | 0.0333 | 0.0334 | 0.0405 | 0.0403 |

## 4.3 Endogenous testing

**Heckman two-stage**

The research sample selected in this paper may have the problem of bias, because listed companies in the same industry may have similar stock selection preferences, which may result in a higher degree of equity linkage jointly held by institutional investors. Therefore, in order to prevent the empirical conclusion from being caused by factors with similar characteristics among listed companies, this paper uses the Heckman two-stage method for testing. A Probit regression model is established to examine whether the corporate governance and financial characteristics of the lagging period affect the number of co-holdings of institutional investors, and the model is as follows:

$$Cldum_{i,t}=\alpha_0+\alpha_1 LagControls_{i,t} +\mu_{i,t} . \qquad (2)$$

The inverse Mills ratio (IMR) is calculated according to the model (2), and the IMR is added to the model (2) for regression. According to Table 3, the IMR is significant at the level of 1%, indicating that there is indeed a bias in the distribution of institutional investors' common holdings, and sample testing is necessary. Adding IMR, Clnum's regression coefficient was

significantly negative, indicating that after controlling for selection bias, the conclusion that institutional investors jointly held shares to reduce the risk of stock price collapse still holds.

**Replace the stock price crash risk indicator**

In this paper, the difference between the frequency of downward and upward movements in the company's stock returns within one year is used to replace NCSKEW and DUVOL for robustness testing. The results show that the estimation coefficient of the degree of common shareholding association (Clnum) of institutional investors is still significant, indicating that the empirical conclusion of this paper is still valid after replacing the dependent variable.

**Table 3.** Institutional Investor Co-Ownership and Stock Price Crash Risk:Heckman Two-Phase

Regression and Replacement Dependent Variable Results

| | (1) | (2) | | (1) |
|---|---|---|---|---|
| Variable | NCSKEW | DUVOL | Variable | CRASH |
| Clnum | -0.3626*** | -0.1237* | Clnum | 0.0219** |
| | (-3.6328) | (-1.7652) | | (1.9767) |
| IMR | 0.5194*** | 0.3933*** | | |
| | (4.0131) | (4.3265) | | |
| _cons | -2.5331* | -2.6106*** | _cons | 0.4472*** |
| | (-1.9465) | (-2.8566) | | (8.3582) |
| CV1s | Yes | Yes | CVs | Yes |
| Year fe | Yes | Yes | Year fe | Yes |
| Industry fe | Yes | Yes | Industry fe | Yes |
| N | 28136 | 28136 | N | 27176 |
| r2_a | 0.0333 | 0.0405 | r2_a | 0.0165 |

# 5 Conclusions and revelations

## 5.1 Conclusions

In recent years, the development of the capital market has become more mature, stock price crash events have been frequent, and academic discussions on how to reduce the risk of stock price crash have become increasingly intense. Under today's network-connected business model, more and more scholars are beginning to pay attention to the governance role played by institutional investors in co-holding. Combined with social network theory, this paper discusses the impact of institutional investors' joint shareholding on stock price crash risk, and finds that institutional investors' joint shareholding can exert governance effect and significantly reduce the risk of stock price crash, and the more shares co-held, the lower the risk of stock price crash. After passing the Heckman two-stage method and the robustness test, the results still hold.

## 5.2 Revelations

Based on the above conclusions, this paper draws the following enlightenment:

Investors should make use of their own information resource advantages to obtain high-quality market information. Identify the right investment opportunities to maximize the benefits of your

portfolio, rather than creating information barriers to capture excess profits. Therefore, in the highly competitive capital market, it is not a long-term solution for institutional investors to jointly hold shares to obtain excess returns through collusion, and it is necessary to make full use of the information resource advantages of joint holdings to reduce the risk of stock price collapse.

Enterprises should give full play to the information advantages of institutional investors' joint shareholding, optimize investment portfolios, promote cooperation and exchanges between enterprises, and improve the supervision efficiency and ability of management. In addition, in addition to maintaining the original institutional investors with common shareholding, enterprises should increase the number of investors holding common shares, and obtain sufficient management experience advantages and information resources, so as to reduce the risk of stock price collapse.

Government departments should actively encourage institutional investors to jointly hold shares, provide channels and protection for institutional investors to jointly hold shares at the level of institutional supply, and promote the joint shareholding of institutional investors to play a governance role in the capital market. In addition, government departments should monitor and crack down on behaviors that undermine fair competition in the market, such as some enterprises in the capital market that use the information advantage of institutional investment and joint shareholding to monopolize, and once discovered, they must regulate and correct them.

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