

The Inhibition of Institutional Investors' Shareholding on Insider Trading Profitability

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Abstract: Insider trading, as an important phenomenon affecting market fairness, market efficiency and investor information in the capital market, has been the focus of research for a long time. Based on the data of all A-share listed companies from 2018 to 2023, this paper deeply discusses the inhibitory effect of institutional investors' Shareholding on insider trading profitability, and analyzes its path through the intermediary variable of information asymmetry. On this basis, the study further distinguishes the differential impact of institutional investors on insider trading profitability under different types of institutional investors (such as funds, securities companies, insurance institutions) and different equity properties (state-owned enterprises and non-state-owned enterprises). At the same time, the results are verified by a series of robustness tests.

Keywords: Insider trading, Institutional Ownership, Information Asymmetry.

1. Introduction

Some studies have shown that insider trading can improve market efficiency[1] and is regarded as a compensation for successful entrepreneurial entrepreneurs[2, 3], but the mainstream view is that insider trading is an opportunistic behavior that allows internal personnel or related personnel of enterprises to profit from investors (especially individual investors) [4, 5]. Since most of the insiders of enterprises obtain excess returns through private information[6], the vast majority of literatures investigate the factors affecting the profitability of insider trading from the perspective of corporate governance and information asymmetry[7, 8].

Previous studies believe that institutional investors tend to supervise the management, which can largely alleviate the principal-agent problem[9]. At the same time, institutional investors will actively participate in corporate governance, will communicate directly with the management[10], and can significantly improve the value of the company[11]. Even passive institutional investors can improve corporate governance through voting and potential exit threats[12]. In addition, institutional investors can reduce the company's information opacity by increasing the number of analysts to track[13], the accuracy of earnings forecasts and the number of earnings forecasts issued[14, 15]. American institutional investors participate more in corporate governance and are very effective[11, 12], while Chinese institutional ownerships' participation in governance is relatively low, and their attendance rate at the shareholders' meeting is less than 30%, and they are unable to put forward constructive or dissenting opinions[13]. The researchers believe that the main reason for this phenomenon is "major shareholder control", that is, institutional investors, as minority shareholders, do not have the right to speak and make decisions[14]. At the same time, the government also has an absolute say in the corporate governance of state-owned enterprises, which also weakens the supervision and governance ability of institutional investors [15].

This paper verifies the inhibitory effect of institutional investors' Shareholding on insider trading profitability and finds that fund investors' shareholding has the most

significant inhibitory effect on insider trading profitability, highlighting the important role of fund investors in inhibiting insider trading; Using three different measurement methods of information asymmetry, this paper verifies the mediating role of information asymmetry in the process of institutional investors' shareholding inhibiting insider trading profitability through the mediation effect test.

2. Research hypothesis

Existing studies believe that as professional investors, institutional investors have rich investment experience and professional analysis ability and can effectively supervise listed companies. At the same time, institutional investors can influence the behavior of management through the exit threat mechanism and reduce Insider Trading, especially active funds can reduce opportunistic behavior within the company through direct intervention. Further research found that institutional investors can form pressure on the management of the company through the "voting with their feet" mechanism, forcing the company to improve information disclosure and strengthen corporate governance. In companies with weak supervision of institutional investors, insiders get higher abnormal returns. Institutional investors can effectively influence the profit margin of insider trading by increasing the information content of stock prices. Based on above reasons, the inhibitory effect of institutional investors' shareholding ratio on insider trading should be obvious.

2.1. Shares hold by institutional investors

Among all kinds of institutional investors, the fund's supervision ability is much stronger than that of other institutional investors because of its higher activity and more emphasis on short-term performance. At the same time, fund investors have a more professional investment research team and information processing technology, which can more accurately find violations within the company. From the perspective of investment habits, fund investors generally have a high turnover rate and a long working experience, which makes them more sensitive to abnormal prices. Its investment also prefers enterprises with better financial

quality and strong sense of social responsibility (the so-called "responsible investment"). Institutional investors in China's market also have similar characteristics, such as: the personal reputation of fund managers is closely linked to products. Prefer to invest in companies with high governance and good information transparency. Public funds can be freely purchased and redeemed, which makes fund managers have to pay attention to the quality and risk of investment companies. Existing empirical studies also show that the higher the proportion of active funds in the U.S. market, the better the corporate governance level of enterprises, and the lower the abnormal return rate of Insider Trading.

2.2. Fund investors

The problem of information asymmetry in financial markets can be traced back to the "lemon market" theory, which describes how information differences lead to market dysfunction. In the securities market, insiders naturally have information advantages because of their positions and decision-making positions, and this information advantage will eventually be transformed into insiders' earnings, that is, companies with low information transparency have higher profitability of Insider Trading. On the contrary, external investors will suffer losses such as increased transaction costs,

increased volatility of transaction risks, and missed investment opportunities due to information disadvantage. However, the participation of institutional investors can effectively reduce the degree of information asymmetry between the enterprise and the outside world, and reduce the advantages of informed traders within the company. First, institutional investors can reduce the information gap between internal and external companies through their advanced technology and powerful data collection capabilities, and accelerate the integration of company specific information into stock prices. Secondly, the existence of institutional investors will make enterprises consciously improve the quality of financial information. Finally, institutional investors can release internal information directly by communicating directly with the management and attending the shareholders' meeting, so as to reduce the degree of information asymmetry in the overall market.

3. Variable construction

This study uses Prof it as a proxy variable to measure the profitability of a company's insider trading. Construct the following equation to calculate the profit.

$$profit_{i,t} = \sum_{j=1}^n (BHARs_{i,t,j} * soldValue_{i,t,j} - BHARp_{i,t,j} * purchaseValue_{i,t,j}) / MV_{i,t} \quad (1)$$

For company I on day J, this study aggregates all insider trading transactions occurring on the same day, calculating the total insider sales value (soldvalue: selling volume multiplied by selling price per unit) and total insider purchase value (purchasevalue: buying volume multiplied by buying price per unit). N represents the total number of insider trading activities for company I in year t. The study then calculates the buy-and-hold abnormal returns over a six-month period (BHARs for sales transactions and BHARp for purchase transactions), and multiplies these BHAR values by their respective transaction values. These results are then divided by market value (MV). The profitability of insider trading is measured as the difference between sales profitability and purchase profitability. If a company has no insider trading within a six-month period, the value is left blank.

$$BHAR = \prod_{m=1}^6 (1 + R_d) - \prod_{m=1}^6 (1 + R_{md}) \quad (2)$$

This study employs three distinct proxies to quantify information asymmetry: the Amihud illiquidity index (illiq_y), share price synchronicity (SYN), and the quality of corporate information disclosure (AIQ).

For the AIQ metric, the research utilizes information disclosure evaluation data from CSMAR for publicly traded firms. The evaluation framework employs a categorical rating system wherein 1 denotes "Excellent," 2 signifies "Good," 3 indicates "Qualified," and 4 represents "Unqualified" disclosure practices.

The comprehensive set of explanatory and control variables implemented in this empirical investigation is delineated in Table 1

Table 1. Other variables

Name	Symbols	Method
Shareholding ratio of institutional investors	InsInvestorProp	Shares held by institutional investors/total shares
Shareholding ratio of fund investors	FundHoldProportion	Number of shares held by fund investors/total number of shares
Shareholding ratio of securities investors	BrokerHoldProportion	Number of shares held by securities investors/total number of shares
Shareholding ratio of insurance institutional investors	InsuranceHoldProportion	Shares held by insurance institutional investors/total shares
Company age	Age	Ln (total market value of the company+1)
company size	Size	Total liabilities/total assets
Asset liability ratio	Leverage	ln(EBIT+1)
Profitability	ebit	Number of shares held by top ten shareholders/total number of shares
Shareholding ratio of top ten shareholders	H10	Shares held by institutional investors/total shares

Table 1 shows the descriptive statistical results of the main variables used in this paper. From the perspective of institutional investors' shareholding, the average shareholding ratio of institutional investors (*insinvestorprop*) is 35.902%, the standard deviation is 24.441%, the minimum value is 0.338%, the maximum value is 91.117%, and the median is 33.910%, indicating that institutional investors generally hold a high proportion of shares in China's A-share market, but the shareholding ratio of institutional investors varies greatly among different companies. Further subdivided into different types of institutional investors, we found that the average *fundholdproportion* was 5.626%; *Brokerholdproportion* averaged 2.389%. The average *insuranceholdproportion* of insurance institutions is 1.990%. This shows that among various types of institutional investors, funds hold a higher proportion of shares than other types of institutional investors.

In examining information asymmetry metrics, the Amihud illiquidity index (*illiq_y*) exhibits a mean value of 0.049, with a minimum approaching zero and a maximum of 6.310, revealing pronounced heterogeneity in market liquidity across sample firms. This distribution indicates a bifurcation wherein a small subset of companies demonstrates exceptional trading activity while the majority experiences relatively illiquid trading conditions.

Share price synchronicity (*SYN*) presents a mean value of 0.388, suggesting that approximately 38.8% of stock price variations among sampled firms can be attributed to systematic market factors, with firm-specific information playing a substantial role in price formation mechanisms.

The information disclosure quality index (*AIQ*) demonstrates a mean value of 1.893, indicating that the sampled firms maintain, on average, "Good" disclosure practices according to established evaluation criteria. This finding suggests generally satisfactory compliance with information transparency standards across the sample population.

4. Empirical results

4.1. Baseline regression

The total shareholding ratio of institutional investors (*insinvestorprop*) and insider trading profitability (*profit*) showed a negative correlation, the coefficient was -0.002, and at the significance level of 5%. This shows that for every 1% increase in the shareholding ratio of institutional investors, the yield of insider trading will drop by 0.2% on average. This result is still robust after controlling the age, size, leverage, profitability, current ratio, shareholding ratio of the top ten shareholders (*H10*), annual fixed effect and company fixed effect of the company. It verifies the hypothesis H1, which is consistent with the conclusion of the study.

Interestingly, among the control variables, enterprise size has a significant positive impact on insider trading profitability (the coefficient is 0.118 and is significant at the significance level of 1%). This shows that the profitability of insider trading of larger enterprises is higher. It is speculated that the possible reason is that the information environment of large enterprises is more complex, the management has more unpublished information or the lag effect in the process of information transmission is more obvious, so the profitability of insider trading is stronger. It is shown in Table 2.

Table 2. Baseline regression

Profit1	Profit2	Profit3
-0.001	-0.001	-0.001
0.000	0.000	(0.001
/	0.001	/
/	0.001	/
/	0.009	/
/	0.007	/
/	0.028	/
/	0.032	/
/	-0.008	/

4.2. Robustness check

To ensure the robustness of our findings, we employ alternative specifications of the dependent variable by substituting profit with the abnormal returns from 9-month and 12-month buy-and-hold strategies (denoted as *profit_9m* and *profit_12m*, respectively) in our benchmark regression model. The empirical evidence suggests that institutional ownership exhibits a significant constraining effect on corporate insider trading profitability. However, this relationship may be bidirectional, as firms characterized by highly profitable insider trading may systematically attract lower institutional ownership. To address potential endogeneity concerns, we implement a two-stage least squares (2SLS) estimation procedure following the methodology established by Li et al. [16]. Specifically, we utilize the number of publicly traded companies headquartered in the same province as the sample firm (*insnum*) as an instrumental variable. The selection of this instrument is predicated on two critical conditions: first, the geographic clustering of listed companies tends to attract institutional investor attention [15], thereby satisfying the relevance criterion; second, this provincial concentration of firms exhibits no direct relationship with insider trading profitability, thus fulfilling the exogeneity requirement. The instrumental variable successfully passes both the under-identification test and the weak instrument test. As presented in Table 5, the coefficient of the explanatory variable (-0.002) maintains statistical significance at the 5% level, corroborating our benchmark regression results. This consistency indicates that Hypothesis 1 remains supported after controlling for endogeneity, thereby affirming the reliability of our original model specification.

In order to further prevent the explanatory variable and the explained variable from having a reverse causal relationship, that is, the stronger profitability of an enterprise's insider trading will cause institutional investors to reduce their holdings of the company's shares, this paper uses the first-order lag term of institutional investors' holdings (*l.insinvestorprop*) to regress profit.

The empirical results demonstrate that the coefficient of the lagged institutional investor ownership proportion (*l.insinvestorprop*) is -0.007 and statistically significant at the 1% level ($p < 0.01$), providing further confirmation of the robustness of our benchmark regression findings. This consistent statistical relationship across alternative model specifications substantiates the validity of our initial conclusions.

4.3. Heterogeneity test

In order to explore what kind of institutional investors can

inhibit the profitability of insider trading and test hypothesis H2, this paper divides institutional investors into three categories: funds, securities companies and insurance, and tests their impact on the profitability of insider trading. For every 1% increase in the fund shareholding ratio, the return on insider trading will decrease by an average of 0.2%. Compared with table 2, the inhibitory effect of the increase in the fund investor shareholding ratio on the profitability of insider trading is stronger than that of institutional investors as a whole. This result supports the hypothesis H2 that fund holdings can inhibit the profitability of insider trading.

This result shows that in the Chinese market, as the main force of institutional investors, funds play a more prominent role in corporate governance and insider trading supervision, while the supervision effect of securities companies and insurance institutions is weaker than that of funds. The possible reasons are as follows: on the one hand, the fund scale is generally large, the proportion of holding company shares is relatively high, the management has stronger bargaining power and the potential exit threat is strong; On the other hand, the compensation of fund managers is directly related to investment performance, and they have a stronger incentive to supervise the company's behavior, so as to maximize their own interests; In addition, the fund may pay more attention to the quality of corporate governance and long-term value creation than other types of institutional investors in the investment decision-making process, that is, it is more inclined to "responsible investment".

Given China's distinctive institutional environment regarding state-owned enterprises (SOEs), we conduct subsample analyses to examine the differential impact of institutional ownership on insider trading profitability between SOEs and non-SOEs. The regression results are presented in Table 7. The empirical evidence reveals that within non-SOEs ($soe=0$, column (2)), institutional investor ownership exhibits a statistically significant constraining effect on insider trading profitability. Specifically, a one percentage point increase in institutional ownership corresponds to a 0.002 unit reduction in insider trading returns. Conversely, within SOEs ($soe=1$, column (1)), although the coefficient maintains a negative sign, it fails to achieve statistical significance. These findings suggest that the inhibitory influence of institutional ownership on insider trading profitability is predominantly concentrated in non-SOEs. This heterogeneous effect can be attributed to several institutional factors. First, SOEs are subject to multi-layered governmental oversight, which may inherently impose stringent constraints on insider trading activities. Second, the governance structure in SOEs typically entails more complex principal-agent relationships, potentially limiting institutional investors' supervisory effectiveness. Finally, non-SOEs exhibit greater dependence on capital market financing, thereby incentivizing these firms to be more responsive to institutional investors' concerns and more compliant with their monitoring requirements.

4.4. Mediating effect

In the preceding sections, we have theoretically posited that increased institutional investor ownership can attenuate insider trading profitability by mitigating information asymmetry between the firm and external stakeholders, as articulated in Hypothesis 3. To empirically validate this mediating mechanism, we employ the methodology developed by Jiang [12], constructing a series of equations to

test for mediation effects.

Our benchmark regression results establish that institutional investor ownership proportion exhibits a negative association with insider trading profitability (coefficient = -0.002), statistically significant at the 5% level. When incorporating the Amihud illiquidity index ($illiq_y$) as a mediating variable, we observe that institutional ownership demonstrates a negative impact on $illiq_y$ (coefficient = -0.003), significant at the 1% level. This indicates that elevated institutional ownership substantially enhances market liquidity by reducing illiquidity. Similarly, when share price synchronicity (SYN) serves as the information asymmetry proxy, institutional ownership exhibits a negative influence on SYN (coefficient = -0.004), significant at the 1% level. This finding suggests that increased institutional participation significantly reduces stock price co-movement with market factors, facilitating more comprehensive incorporation of firm-specific information into price formation processes.

When employing information disclosure quality (AIQ) as the mediating variable, institutional ownership demonstrates a negative impact on AIQ (coefficient = -0.004), significant at the 1% level. Given that lower AIQ values correspond to superior disclosure quality, this evidence indicates that heightened institutional ownership significantly enhances corporate transparency and disclosure practices. Considering the established literature documenting that reduced information asymmetry between firms and external stakeholders diminishes insider trading profitability, our empirical findings substantiate the presence of the hypothesized mediating effect. Institutional investors appear to constrain insider trading returns primarily through their capacity to enhance informational efficiency and corporate transparency.

5. Conclusions

Based on empirical analysis of data from Chinese A-share listed companies spanning 2018-2023, this study yields several significant findings. First, we document a robust negative relationship between institutional investor ownership proportion and insider trading profitability. Specifically, higher institutional ownership is associated with diminished insider trading returns, a conclusion substantiated through multiple robustness tests employing alternative specifications and methodological approaches. Our disaggregated analysis of heterogeneous institutional investor categories reveals that mutual fund ownership demonstrates the most pronounced constraining effect on insider trading profitability. This differential impact across institutional investor types suggests variation in monitoring effectiveness and governance influence.

Furthermore, the observed relationship exhibits significant heterogeneity across ownership structures. The inhibitory effect of institutional ownership on insider trading profitability is considerably more pronounced in non-state-owned enterprises compared to their state-owned counterparts, highlighting the contextual importance of China's unique institutional environment. Finally, through formal mediation analysis, we establish that institutional investor ownership reduces information asymmetry between firms and external stakeholders. This finding elucidates the mechanism through which institutional investors constrain insider trading activities—namely, by enhancing informational efficiency, market transparency, and corporate disclosure quality.

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