



Institutional investors and corporate performance in the
context of COVID-19 crisis: Evidence from China

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¹ I would like to express my gratitude to all those who helped me during the writing of the thesis. My deepest gratitude goes first and foremost to my supervisor, Professor Abdulkader, for his constant encouragement and guidance. He helped me through all stages of the writing. Also, I would like to thank all my professors who taught me during this remarkable year. I learned a lot from you and I will always miss you and the time I had in UU after graduation.

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Abstract

It is well-established that COVID-19 is an extreme public health crisis. It dramatically damaged the global economy, transportation, health care, and so on from January 2020. Using data from Chinese listed companies, this paper investigates the relationship between institutional investors and corporate performance and tests if institutional investors could help resist the adverse effect of COVID-19 on corporate performance. The main hypothesis of this paper is that institutional ownership, stability, and sensitivity have a positive effect on firm performance and weaken the negative impact of COVID-19 on firm performance. This paper uses a panel data model and first-quarter financial data and data of institutional investors from 2014 to 2020 to proceed with the study. The empirical test will be divided into three parts, analyzes the relationship between, institutional ownership, the stability of institutional investors, the sensitivity of institutional investors, and firm performance under COVID-19. The majority of previous research independently study the impact of institutional investors or COVID-19 on corporate performance. This paper enriches the literature that whether institutional investors can help companies resist the impact of covid-19, and provides recommendations for listed companies to introduce institutional investors

JEL: C33, G30, G32, G34, G20

Keywords: Institutional investors, Corporate governance, Corporate performance, COVID-19

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I. Introduction

The outbreak of COVID-19 seriously influences the medical, economy, transportation, and other fields around the world. China, where the outbreak is centered, is expected to have two-thirds of the worldwide impact (Abiad et al. 2020). In an attempt to halt the virus's spread and protect people's lives and health, the Chinese government adopted a lockdown in Wuhan on January 24, 2020, and then throughout China for two months. During the lockdown, factories were shut down, schools and shops were closed, export was interrupted and the entire economy came to a standstill.

At a macro level, China's GDP of the first quarter of 2020 decreased by 6.8% compared to the GDP of the same period of 2019, national per capita consumption expenditure fell by 12.5%. In addition, with the spread globally, March 2020 saw one of the most dramatic stock markets crashes in history (Mazur and Dang, 2021). There is no previous epidemic influencing the stock markets so adversely as COVID-19 (Baker et al. 2020). As the death toll increases due to COVID-19, the stock market index decreases in China, Korea, Italy, Germany, France, and Spain's stock markets. More specifically, the impact of COVID-19 on export trade, manufacturing, and small and micro enterprises is significant. In India, compared with 2019, the manufacturing industry is expected to shrink by 5.5%-20% in 2020, and trade exports are expected to decline by 15%. SMEs are the lifeblood of manufacturing and trade. Under the epidemic, the income of SMEs has declined, and many small and micro companies may terminate their operations because the decline in income makes it difficult for them to maintain their employees and machines (Sahoo and Ashwani, 2020). The impact of the epidemic on the power sector is also far-reaching because the closure and control policies adopted by the epidemic have led to a surge in residential electricity consumption and a decline in industrial and commercial electricity loads, which challenges the operation and control of power sector (Elavarasan, Shafiullah et al). Overall price levels in most electricity markets have fallen

sharply since March 2020 due to reduced electricity demand and a slump in gas and oil prices. Among them, the price of electricity in the European electricity market fell the most, with the monthly average price falling to the lowest level in the past six years (AleaSoft, 2020). The operating income of power companies has shrunk, among which coal power companies are the most negatively affected (Figuro and Counts, 2020). COVID-19's pandemic impact on tourism has a similar shock effect, with worldwide production falling by 7% when only China locked down, but by 23% when other countries instituted lockdowns during the height of the crisis (Mandel and Veetil, 2020). We can see that under the influence of covid-19, the economies of the world have been hit hard, and the downturn of the economy has caused many problems, such as business failures, worker unemployment and increased poverty. It is meaningful to study the impact of this extreme public health event on companies' corporate performance. Also, how to help companies withstand the impact of external negative events is a meaningful topic because of the importance of listed companies to the national economy.

Institutional investors grew rapidly since the 1980s in the US (Jan Fichtner, 2020). After world war II, by the end of 2010, institutional investors owned 67% of the stock in the US stock market (Blume and Keim, 2012). The development of institutional investors has a significantly positive impact on economic growth. According to Ruiz's research based on Chile (2018), the more insurance companies, mutual funds, and pension funds, the higher the GDP. Pressure-sensitive institutional investors represented by banks promote companies to improve their social responsibility reporting and disclose additional information to minimize the financial risks associated with social and environmental risks (García-Meca and Pucheta-Martínez, 2018). In the field of mergers and acquisitions, active institutional investors can restrict corporate earnings management in M&A activities by monitoring (Njah and Jarboui, 2013). Andriosopoulos and Yang (2015) find out that institutional investors increase the likelihood of overseas M&A by British acquirers, and is positively correlated with the size of

overseas M&A. Further, they find that the longer the investment horizon of institutional investors, the greater the scale of overseas M&A by UK acquirers. Borochin and Yang (2017) define the dedicated institutional investors in their study and find dedicated institutional investors could help reduce the misvaluation of the firms and strength the corporate governance. The development of institutional investors in China is later than that of Europe and the United States. It is generally believed that the emergence of mutual funds in the 1990s marked the emergence of institutional investors in China. In recent years, with the continuous improvement of China's securities market, institutional investors' ownership experienced a big growth and reached 15.74% by the end of 2019 (Shanghai Stock Exchange statistics annuals, 2020). Chinese institutional investors prefer to invest in small stocks that can earn quick returns, as opposed to international institutional investors who prefer to invest in blue-chip stocks with a long track record. Chinese institutional investors keep stocks for a shorter amount of time than foreign institutional investors, and the equity concentration of their invested companies is smaller (Zou, Tang, Li, 2016).

Concluding the previous literature on institutional investors, we can roughly conclude that the growth of institutional investors has a positive impact on the economy, stock market, mergers and acquisitions, and company value, therefore this paper asks questions: Can institutional investors have a positive impact on listed companies' performance under extreme public health crises or help listed companies withstand the impact of extreme negative external events? What types of institutional investors can help listed companies withstand the impact of extremely negative external events? and tries to get answers.

An abundance of previous researches study the relationship between institutional investors and companies' performance in stable economic periods. For example, Jiang and Liu (2021) find that the stability of investment institutions has a positive impact on corporate performance, Elyasiani and Jia (2010) find that there is a positive relationship between long-

term institutional investors and corporate governance and firm performance. Cornett and Marcus's research (2007) shows the positive relationship between institutional investors and operational income cash flow. Previous studies in the same period (COVID-19) focus more on the macro level, the impact of covid-19 on macroeconomic indices, commodity prices, stock markets, mass psychological health, and the ecological environment. Ezeaku and Asongu (2021) find as the pandemic proceeded to disrupt global supply and demand channels, commodity price indices plummeted after the outbreak of the virus. Baker and Bloom (2020) find that as of the fourth quarter of 2020, real GDP in the United States fell by over 11% year on year. Hagerty (2020) expounded theoretically that covid-19 affects normal human interpersonal communication, poses a major threat to interpersonal relationships and affects human mental health. Rume and Islam's research (2020) shows the double impact of covid-19 on the environment, on the one hand, the covid-19 outbreak has reduced greenhouse gas emissions, water pollution and sound pollution, and on the other hand, medical waste due to covid-19 increasing, harming the environment. Although some studies discuss the COVID-19 impact on the industry, no institutional investors are introduced as a variable to discuss if institutional investors could help resist the adverse impact of COVID-19.

Accordingly, this paper will bridge the gaps by tackling the link between institutional investors and their firm performance under the COVID-19 pandemic and answer the research question in detail: (1) How does institutional ownership/stability of institutional investors/sensitivity of institutional investors affect the firm performance in the context of COVID-19; (2) Whether institutional ownership/stability of institutional investors/ sensitivity of institutional investors could weaken the effect of COVID-19 on firm performance.

This paper has two steps, firstly tests the separate effect that the institutional investors and covid-19 have on corporate performance using the data from China which is the biggest developing country and also the most affected country this time, secondly examines the joint

effect of institutional investors and covid-19 to figure out the question if institutional investors help public listed companies resist the effect of the extreme event—COVID-19. In this paper, three measures of effective institutional investors are considered: shareholding percentage, the stability of investment and the sensitivity of institutional investors.

The contribution of this paper is as follows. Firstly, this paper shifts the COVID-19 research perspective from the macro-level to the micro-level of institutional investors and corporate performance. Secondly, this paper introduces COVID-19, an extreme external variable, to explore the effect of institutional investors on firm performance in crisis periods (non-financial crises). Thirdly, this paper enriches the literature that what characteristics of company holders could help resist the negative effect of the external crisis, especially public health crisis, and provide practical suggestions to listed companies about introducing institutional investors.

II. Literature review

Institutional investors and corporate performance.

Considerable previous research explain institutional investors' effect on corporate performance through their monitoring role. Due to the separation of ownership and control, the proxy problem arises. The information asymmetry and potentially conflicting interests between shareholders and management may motivate the company's management to harm the interests of shareholders, damage the value of the company, and reduce the performance of the company for personal gain. Many scholars believe good corporate governance could alleviate this “lemon problem”, so their research mostly explain the impact of institutional investors on firm performance through corporate governance theory. Elyasiani and Jia (2010) find that long-term institutional ownership has different channels, including decreasing information asymmetry, and adjust executive compensation plans to help with the improvement of corporate

governance and finally corporate performance. And they also mention that long-term institutional investors have more opportunities to get insight into the firm and pay more attention to monitoring firm operation. McCahery and Sautner (2016) note that Short-term institutional investors' engagement in monitoring is motivated by short-term performance while long-term investors have a stronger incentive to engage in corporate governance or strategy and long-term institutional investors use behind-the-scenes discussions with management and boards of directors to engage in. Kango and Luo's research (2018) find that large institutional investors who invest in multiple companies in the same industry have better monitoring capability for investee companies in this industry, which has a positive impact on the value of investee companies. Jiang and Liu (2021) study the role of institutional investors as directors, and they find that the supervision by institutional investors as directors can make corporate management pay more attention to the long-term performance and development of the company. Maug (1998) insists that institutional investors' effect on corporate performance comes from their shareholding size. When they have a high level of share in the company, they have a higher probability to hold the share instead of selling them, therefore they have stronger motivation to monitor corporate performance.

In addition, some scholars study the direct relationship between institutional investors and firm performance without going through corporate governance theory or the monitoring effectiveness hypothesis. Musallama and Fauzi (2019) find that family ownership has a positive effect on firm performance while institutional ownership has a negative effect on firm performance. McConnell and Servaes (1990) use find that the greater the number of stocks held by institutional investors, the better the TOBIN's Q of companies invested by these institutional investors. Cornett and Marcus (2007) examine the relationship between institutional investor ownership and corporate operating cash flow returns, they find that pressure-sensitive institutional investors' shareholding positively affects the companies' operating cash flow

returns. On the contrary, some scholars' findings show no association between institutional investors and corporate performance, for example, Lasfer and Faccio (2000) find no significant positive or negative effect of pension funds on corporate performance.

There doesn't seem to be a consensus view on how institutional investor ownership and corporate performance are related. Li and Zhao (2014) note this is because previous research do not distinguish different type of institutional investors clearly and study the relationship only from the perspective of institutional investors as a whole. According to Garcia-Meca and Lopez-Iturriaga (2017), institutional investors should not be viewed as a homogeneous group because they each have unique incentive to engage in corporate governance. For different motives, institutional investors may behave differently and have diametrically opposed effects on business performance.

Classification of institutional investors

In fact, the research on the type of institutional investors begins with Brickley (1988), in his study, institutional investors are categorized as pressure-sensitive or pressure-resistant depending on whether they have a existing or potential business relationship with the investee company.

According to previous literature, mutual funds, investment banks, pension funds, and venture capital are representatives of pressure-resistant institutional investors. Some scholars believe that pressure-resistant investors can play a better monitoring role on investee companies than pressure-sensitive investors do. Pucheta-Martínez and García-Meca (2019) note that because pressure-resistant institutional investors have only investment relationships with the companies they invest in, rather than business relationships, they have fewer conflicts of interest with the investee companies. As a result, pressure-resistant institutional investors can reduce agency issues between managers and shareholders and serve as a supervisor. The research of Jara-Bertin et al. (2012) also supports this viewpoint. Their study shows that

pension funds and mutual funds participate more actively in corporate governance and raise firm value more than pressure-sensitive institutional investors do. Muniandy and Tanewski (2016) find that pressure-resistant institutional investors have a significantly positive effect on the short-term performance of listed companies, but the result of the empirical analysis shows they do not have the ability for long-term monitoring. However, there are also some literature studies showing that pressure-resistant institutional investor directors, who have no business relationship with the investee companies, are more independent than sensitive institutional investor directors and therefore lack motivation and interest in corporate governance, and have a negative impact on firm performance. Bona-Sánchez et al. (2018) find pressure-resistant institutional investor directors are more likely to fall into opportunistic behavior than pressure-sensitive institutional investor directors, incentivizing management to engage in surplus management and thus reducing the credibility of surplus information. In addition to this, private pension funds and public pension funds, even though they are both pressure-resistant institutional investors, have different effects on firm performance. The study of the Woidtke (2020) indicates that private pension fund ownership is positively related to TOBIN's Q of companies while aggressive public pension fund ownership is negatively related to firm value.

Pressure-sensitive institutional investors have been defined in previous literature as institutional investors who have business relationship with investee companies. Banks and insurance companies are their representatives. Banks may have lending relationships with investee companies, and insurance companies may sell insurance to investee companies. Such business relationships result in institutional investors not be able to fulfill their oversight role well, as they, in order to maintain the business relationship with investee companies, may be influenced and restricted by management (David et al., 1998). The research of Bhattacharya and Graham (2007) supports this point of view. Based on the data of Finnish listed companies, they empirically find that the ownership of pressure-sensitive institutional investors has a

negative impact on company performance. However, Pucheta-Martínez (2019) García-Meca and López-Iturriaga (2017) hold the opposite view. The study of Pucheta-Martínez (2019) shows that pressure-sensitive institutional investors have a positive impact on firm performance and explain that pressure-sensitive institutional investors are more concerned about the long-term performance of the firm than pressure-resistant institutional investors and therefore are also more interested in increasing the firm value. García-Meca and López-Iturriaga (2017) study the relationship between institutional investors and the financial leverage of the corporates and find that the higher the shareholding of pressure-sensitive institutional investors, the lower the corporates' financial leverage, which indicates that pressure-sensitive institutional investors intentionally reduce company financial risk. In addition, pressure-sensitive institutional investors, such as banks, undertake lower monitoring costs than other institutional investors do according to proxy theory and are therefore more willing to participate in the construction of corporate governance systems and management mechanisms, which is conducive to the improvement of corporate performance.

In addition to classifying investors by the whether there is a commercial relationship between institutional investors and investee companies, scholars also classify institutional investors by the length of their holdings in investee companies, and studies of stable and unstable institutional investors have been ongoing. Elyasiani and Jia (2010) believe that stable institutional investors can inhibit management's earnings management behavior, thus prompting management to pay more attention to the long-term value creation of the enterprise. Stable institutional investors who hold large equity stakes can strengthen corporate governance by promoting alignment of management and shareholder interests. Niu and Wu (2013) distinguish stable institutional investors and transactional institutional investors based on the volatility of institutional investors' holdings of investee companies. They find that stable institutional investors are positively related to firm performance. Following Niu and Wu,

Sakaki and Jory (2019) explore the role of stable institutional investors in enhancing corporate value from the perspective of corporate innovation. They find that stable institutional investors pay attention to the long-term value of enterprises and encourage enterprises to innovate. The empirical results show that the higher the holding rate of stable institutional investors, the more patents of enterprises. Nguyen and Shiu (2022) conduct an empirical study of the relationship between institutional investors and corporate valuation using data on companies listed on the UK stock market. To avoid possible endogeneity issues, they employed a two-stage least squares method. They point out that only stable, long-term institutional investors will increase enterprise value. Stable institutional investors are more capable and willing to participate in the activities of regulatory management than short-term institutional investors.

Borochin and Yang (2017) point out that institutional investors, corporate value and corporate governance have a more nuanced relationship. They divide institutional investors into dedicated institutional investors and transient institutional investors. Dedicated institutional investors have lower investment diversification, and they hold stocks for longer periods of time. Transient institutional investors invest in a wider variety of companies and hold shares for a shorter period of time on average. The investment philosophy of the two types of institutional investors is different. One focuses on long-term interests and the other focuses on short-term gains. Therefore, the degree of participation in corporate governance is different, and the impact on corporate performance is also different. Dedicated institutional investor ownership levels are positively correlated with firm performance.

Apart from these classifications of institutional investors, a number of studies that emerge recently focus on global institutional investors because of the growth of institutional investors' holdings in global capital markets (Kim and Miller, 2016). Kim and Miller put forward two hypotheses for global institutional investors. One is the hometown advantage hypothesis. This hypothesis proposes that domestic institutional investors, because of their

geographical advantages, can monitor management better than global institutional investors and limit earnings management behavior of management; Another hypothesis is the global institutional investor hypothesis, which holds that global institutional investors have more advanced supervision techniques and are more active in supervising management, so they are more able to limit management's earnings management behavior. The results of the empirical study support the hometown advantage hypothesis, but at the same time, the researchers find that if global institutional investors have institutions in the countries where they invest, that is, in the absence of geographical advantages, global institutional investors' advanced monitoring techniques help with its supervisory role.

Institutional investors in crisis period

Papers discussed above are in regular times, the behavior of institutional investors in crisis times are also studied before. Stein and Jeremy C (2009) find, on the one hand, the rise of professional investors is beneficial to market efficiency, on the other hand, institutional managers tend to deleverage during crisis periods will do fire-selling and amplify the negative impact of the crisis and result in lower stock price. Van Essen and Engelen (2013) find good corporate governance, including high ownership concentration, vigilant boards and etc., not only enhances firm value during the normal period but also helps maintain firm performance in a financial crisis. However, they point out that institutional investors have little motivation to support and save underperforming companies. In the financial crisis period, transactional institutional investors are known to sell out stocks if they are not satisfied with the returns.

More specifically, Glossnery et al. investigate the institutional investor behavior during the COVID-19 pandemic. They find that companies that had higher stakes held by institutional investors before the pandemic collapsed more severely during the pandemic on the U.S. stock market. This is because institutional investors are actively retreating during the pandemic to reduce financial risk through "fire-sales" and rebalance their investment portfolio. They also

found that the higher the percentage of publicly traded companies' stocks held by hedge funds, the worse the corporate performance. Xiong and Wu (2020) get the same result from the research of Chinese A-share stock markets. They confirm that there is a negative relationship between institutional ownership and cumulative abnormal returns during COVID-19 period.

The impact of COVID-19 and corporate performance.

The unpredictable outbreak of covid-19 dramatically influences the world in society, economy, healthcare, and other sectors. The running of Public listed companies is affected in this period. Abiad (2020) estimates that 2/3 of the economic impact is in China.

Zhang and Mao (2021) study the transaction behavior of foreign institutional investors in China's capital market during the COVID-19 outbreak. They selected the transaction data of foreign institutional investors on 958 companies in 11 industries in China to explore the reasons for the flight of foreign capital and its impact. They found that covid-19 outbreaks in home countries reduced foreign inflows, and covid-19 outbreaks in host countries did not, on average, reduce net foreign inflows. They also found that net inflows of foreign capital had different effects on stock returns in different industries, but were generally positively correlated. Finally, they find that under the influence of extreme external events, foreign institutional investors tend to sell illiquid financial assets in exchange for liquidity, and this "flight" can cause a decline in stock returns

Shen and Fu (2020) find COVID-19 has an adverse impact on corporate performance and the negative extent is deeper to the firm that has less revenue or smaller scale. Also, they find the effect degree of COVID-19 on firm performance is different. High-impact industries suffer more than low-impact industries do. Xiong and WU (2020) get the same result that the COVID-19 outbreak is more harmful to the corporates within the industries that are more sensitive to the virus. Their empirical results also show that firms with good financial conditions (higher combined leverage, larger scale, and better growth opportunity) experience

lower negative impact of COVID-19 and that with high institutional investors holding share experience more negative effects.

In addition to Chinese scholars, there are also scholars from other countries studying the impact of COVID-19 on local business performance and industry development. Bloom et al. (2021) investigate COVID-19's influence on small businesses in the United States. They collected data on 2,500 small businesses in the United States by sending survey to small business owners. According to the data, the average revenue of the sample companies fell by 29% in the second quarter of 2020. This negative impact is long-lasting, and businesses who experienced a drop in sales in the second quarter of 2020 were continue to see large revenue losses in the middle of 2021. Sahoo and Ashwani (2020) analyze the impact of COVID-19 on the performance of manufacturing, trading industries and SMEs in India. They use the official published economic statistics of India for estimating the losses of manufacturing, trade sector and SMEs separately. According to their estimates, India's manufacturing and import/export trade may contract by 20% at worst, and the outbreak of COVID-19 adds to the already downward pressure on manufacturing and import/export trade; the value addition of the MSME sector will decline by about 3.9%, and many small and micro companies may terminate their operations because the decline in income makes it difficult for them to maintain their employees and machines. COVID-19 has also negatively impacted the value of companies in the energy sector. 2020 data published by AleaSoft shows that overall energy prices in electricity markets have fallen in most countries around the world, with the biggest drop being in the European market, where monthly average prices fell to the lowest level in six years. A report by Figuero and Counts (2020) examines the impact of COVID-19 on the U.S. energy sector, they find that the operating income of power companies has shrunk, among which coal power companies are the most negatively affected.

The majority of previous research independently study the impact of institutional investors or COVID-19 on corporate performance, seldom combining the two variables. This paper adds to the literature on the joint effect of institutional investors and COVID-19 on the performance of public listed companies and tries to find which characteristic of institutional investors can help listed companies resist the negative effect of external emergency events.

III. Hypothesis

COVID-19 is an international public health emergency. The majority of countries and regions are affected. Many quarantine measures were adopted by the Chinese government to prevent infection of COVID-19 and these measures resulted in a sharp and temporary drop in consumption and exports in the PRC in the first quarter of 2020 (Abiad et al, 2020). Consequently, China's GDP of the first quarter of 2020 decreased by 6.8%. Shen and Fu (2020) confirm the negative impact of COVID-19 on the firm value of various industries in China.

Institutional investors have more intentions to monitor firms' governance and operation than individual investors because they hold a high percentage of stock, have knowledge of management, the ability to undertake monitoring costs, and a longer-term horizon (Jiang and Liu, 2021; Kanga and Luo 2018; Maug 1998). These factors facility in good governance. Van Essen and Engelen (2013) find good corporate governance, not only enhances firm value during the normal period but also helps maintain firm performance in a financial crisis. Based on previous research, a positive relationship between Institutional ownership and firm performance is to be assumed.

H1: Institutional ownership has a positive impact on corporate performance, and weakens the negative impact of COVID-19 on corporate performance

Niu and Wu (2013) point out that stable institutional investors focus on the operation and governance of their portfolio companies over the long term, expecting to profit from

dividends and increase in company value. Li and Zhao (2014) agree with them, they find compared to transactional investors, stable institutional investors have stronger motivation to supervise the company's day-to-day operation and managers' behavior, focus on long-term strategy instead of short-run interest (buy/sell Spreads). Therefore, the second hypothesis is:

H2: The stability of institutional investors has a positive impact on corporate performance, and weakens the negative impact of the COVID-19 corporate performance

Brickley (1988) classify institutional investors into pressure-sensitive and pressure-resistant institutional investors according to whether they had existing or potential business relationships with the investee company. Banks and insurance companies represent stress-sensitive institutional investors, while hedge funds, mutual funds and securities firms represent pressure-resistant companies. Under this classification, Lopez-Iturriaga and Tejerina-Gaite (2017) find that pressure-sensitive institutional investors prefer lower financial leverage and pay more attention to corporate governance. Research by Pucheta-Martíne et al. (2019) also shows that pressure-sensitive institutional investors have a higher interest in value creation rather than value capture. Therefore, the third hypothesis is:

H3: Pressure-sensitive institutional investors have a positive impact on corporate performance, and weaken the negative impact of the COVID-19 corporate performance

IV. Methodology

Data resources.

The samples of this study are public listed companies in the A-share market of China. To make it more comparable, (1) ST, *ST companies (unnormal operation); (2) companies in the financial sector; (3) companies with missing data, are excluded. Financial data and data of institutional investors are from the China Stock Market & Accounting Research (CSMAR).

Shen and Fu (2020) use financial data and data of institutional investors for the first quarter of 2014-2020 to test the relationship between revenue/industry and corporate performance in the context of COVID-19. Following their research, I use data of the first quarter from 2014 to 2020 as well.

Models and Variables.

In order to test the impact of the institutional investors on corporate performance and the joint effect of institutional investors and COVID-19 on corporate performance, I use the following three models, variables are in Table1.

TABLE 1 *Variable Description*

Variables	Description
NROA	Net return of assets, net profit/assets
Period	the dummy variable of "outbreak time", later than 24 Jan 2020 is 1, or 0 otherwise
IO	Institutional investor's ownership. The share held by institutional investors/ total shares
IS	Institutional investors' stability, When $SD_{i,t} \geq MEDIAN_{i,t}$ $IS = 1$, otherwise 0
IPS	Institutional investors' pressure sensitivity. The share held by pressure-sensitive institutional investors (banks and insurance companies) /total shares
SIZE	The size of an enterprise is measured by log (assets)
LEV	The leverage ratio of the total liabilities/total assets
Growth	The growth rate of operation income, (current operating income - previous operating income)/ previous operating income
LIQ	The liquidity ratio is measured by current assets/ current liabilities
FCF	Free Cash Flow, EBIT+ Depreciation and Amortization-Capitalization expenditure - working capital increase
INDUSTRY	Control industry fixed effect
YEAR	Control time fixed effect

Model (1) is used to test the H1, focusing on institutional investors' ownership and corporate performance. Model (2) is used to test the H2, focusing on institutional investors' stability and corporate performance. Model (3) is used to test the H3, focusing on institutional investors' pressure-sensitivity and corporate performance.

$$\begin{aligned}
NROA_{i,t} = & \beta_0 + \beta_1 * IO_{i,t} * PERIOD_{i,t} + \beta_2 * IO_{i,t} + \beta_3 * PERIOD_{i,t} + \beta_4 * SIZE_{i,t} \\
& + \beta_5 * LEV_{i,t} + \beta_6 * GROWTH_{i,t} + \beta_7 * LIQ_{i,t} + \beta_8 * FCF_{i,t} + \beta_9 \\
& * INDUSTRY + \beta_{10} * YEAR_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{1}$$

$$\begin{aligned}
NROA_{i,t} = & \beta_0 + \beta_1 * IS_{i,t} * PERIOD_{i,t} + \beta_2 * IS_{i,t} + \beta_3 * PERIOD_{i,t} + \beta_4 * SIZE_{i,t} \\
& + \beta_5 * LEV_{i,t} + \beta_6 * GROWTH_{i,t} + \beta_7 * LIQ_{i,t} + \beta_8 * FCF_{i,t} + \beta_9 \\
& * INDUSTRY + \beta_{10} * YEAR_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{2}$$

$$\begin{aligned}
NROA_{i,t} = & \beta_0 + \beta_1 * IPS_{i,t} * PERIOD_{i,t} + \beta_2 * IPS_{i,t} + \beta_3 * PERIOD_{i,t} + \beta_4 \\
& * SIZE_{i,t} + \beta_5 * LEV_{i,t} + \beta_6 * GROWTH_{i,t} + \beta_7 * LIQ_{i,t} + \beta_8 * FCF_{i,t} + \beta_9 \\
& * INDUSTRY + \beta_{10} * YEAR_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{3}$$

In this paper, corporate performance is measured as NROA (net return of asset). The main independent variables are Period, IO, IS and IPS. Period is a dummy variable, presents the outbreak of COVID-19, Period after the outbreak date (24th Jan, 2020) is 1, otherwise 0. IO is institutional investors' shareholding percentage. IS is also a dummy variable measuring the stability of institutional investors. The model proposed by Niu and Wu (2013) is adopted to distinguish stable institutional investors and transaction institutional investors, detailed explanation about the model is in Table 2. IPS is pressure-sensitive institutional investors' shareholding percentage, IPS= Banks' shareholding percentage + insurance companies' shareholdings.

$$SD_{i,t} = \frac{IO_{i,t}}{STD(IO_{i,t-3}, IO_{i,t-2}, IO_{i,t-1})}$$

$$IS_{i,t} = \begin{cases} 1, & SD_{i,t} \geq MEDIAN_{i,t}(SD_{i,t}) \\ 0, & otherwise \end{cases} \quad (4)$$

TABLE 2 *IS explanation*

	Description
$STD(IH_{i,t-3}, IH_{i,t-2}, IH_{i,t-1})$	Standard deviation of the IO in the previous three years of the i company
$MEDIAN_{i,t}(SD_{i,t})$	Median of SD industry j in year t
$IS_{i,t}$	The stability of institutional investors, When $SD_{i,t} \geq MEDIAN_{i,t} INVS = 1, otherwise 0$

In addition to the main variable, control variables are as below: company scale (SIZE), leverage ratio (LEV), the growth rate of operating income (GROWTH), liquidity ratio (LIQ), and free cash flow (FCF). Year and Industry denote the time fixed effect and industry fixed effect respectively, and Year and Industry are controlled in this paper.

V. Empirical Results

Descriptive Statistics

Table 3 *Descriptive statistical results*

Variables	N	Mean	SD	Min	Max	Median
NROA	13209	0.0075	0.0147	-0.1114	0.2107	0.0057
IO	13209	0.4214	0.2199	0.0000	0.9791	0.4386
IS	13209	0.4998	0.5	0	1	0
IPS	13209	0.0087	2.393	0	0.5747	0
SIZE	13209	9.7417	0.5606	7.4191	12.2585	9.6799
LEV	13209	0.4469	0.2378	0.005	9.8664	0.4381
GROWTH	13209	-0.1458	2.9728	-0.9994	326.5772	-0.2001
LIQ	13209	2.4596	7.4749	0.0191	741.9034	1.5623
FCF	13209	-3.05E+08	3.31E+09	-2.08E+11	5.84E+10	-1274140

The mean of NROA is 0.75%, which is low and means low profitability, the standard deviation is 0.0147, and the volatility is low, the profitability of example companies is smooth at low levels. The median is 0.5735%, which is lower than the mean. This reflects that a small number of companies account for the majority of profits. The mean of IO is 42.14%, the median is 43.86%, and the standard deviation is 0.2199, so the institutional investors' shareholdings fluctuate a lot from 2014 to 2020. This also shows institutional investments are not stable generally. The mean of IS is 0.4998, and the median is 0, which reflects transactional institutional investors account for more percentage of institutional investors. The mean of IPS is 0.87% and median is 0, max is 57.47% and min is 0, the standard deviation is quite big (2.393), we can see pressure-sensitive institutional investors' holdings account for low percent in institutional investors' holdings and the big difference in pressure-sensitive institutional investors holdings among companies.

In terms of control variables, SIZE is log term of total assets. the mean of it is 9.7417, max is 12.2585 and min is 7.4191, which reflects there is no large difference in the size of listed firms. The mean of GROWTH is -0.1458 and the median is -0.2001, which reflect the operational income is decreasing. Max is 326.5572 and min is -0.9994 and the stand deviation is 2.9728, this shows the huge difference between companies' operations and development capability. The average of LEV is 0.4469 and the average of LIQ is 2.4596, which indicated reasonable level of long-term and short-term solvency. The mean of free cash flow is negative which reflects a tight overall cash flow in listed companies.

Correlation Tests

Before conducting the regression, it is necessary to test the correlation relationship between the variables to avoid the multicollinearity between the dependent variables from affecting the accuracy of the regression model parameter estimation and causing inaccurate

conclusions of the studied. The test results for multicollinearity of three models are shown in Table 4.1, Table 4.2, and Table 4.3.

TABLE 4.1 *Correlation Test for model 1*

Variable	VIF	1/VIF
PERIOD*IO	5.06	0.197491
PERIOD	5.64	0.17741
IO	1.42	0.705555
SIZE	1.43	0.699357
LIQ	1.06	0.946299
LEV	1.18	0.846328
GROWTH	1	0.998606
FCF	1.03	0.973308
Mean VIF	2.2275	

TABLE 4.2 *Correlation Test for model 2*

Variable	VIF	1/VIF
PERIOD*IS	3.34	0.299679
PERIOD	3.71	0.269731
IS	1.25	0.802373
SIZE	1.27	0.787279
LIQ	1.06	0.946559
LEV	1.19	0.843814
GROWTH	1	0.998372
FCF	1.03	0.9732
Mean VIF	1.7313	

TABLE 4.3 *Correlation Test for model 3*

Variable	VIF	1/VIF
PERIOD*IPS	1.28	0.780191
IPS	1.25	0.800894
PERIOD	1.85	0.541932
SIZE	1.29	0.774996
LIQ	1.06	0.944575
LEV	1.18	0.846184
FCF	1.03	0.972411
Mean VIF	1.2425	

Since the maximum value of VIF in Model 1 is 5.64 and the mean value is 2.2275, both of which are much smaller than 10; the maximum value of VIF in Model 2 is 3.71 and the mean value is 1.7313, both of which are much smaller than 10; the maximum value of VIF in Model 3 is 1.85 and the mean value is 1.2425, both of which are much smaller than 10. Therefore, it can be concluded that the possibility of co-linearity among the variables used in this paper is very small and will not affect the subsequent regression results.

Regression Results

Table 5 Results of joint correlation coefficients

VARIABLES	Panel A NROA	Panel B NROA	Panel C NROA
PERIOD*IO	0.0044*** (0.0016)		
PERIOD*IS		0.0003 (0.0007)	
PERIOD*IPS			0.0003** (0.0001)
PERIOD	-0.0051*** (0.0008)	-0.0038*** (0.0007)	-0.0036*** (0.0005)
IO	0.0022*** (0.0007)		
IS		0.0006** (0.0003)	
IPS			0.0002*** (5.62e-05)
SIZE	0.0036*** (0.0003)	0.0039*** (0.0002)	0.0039*** (0.0002)
LIQ	3.38e-05** (1.65e-05)	3.41e-05** (1.65e-05)	3.70e-05** (1.66e-05)
LEV	-0.0204*** (0.0005)	-0.0204*** (0.0006)	-0.0203*** (0.0006)
GROWTH	0.0001*** (4.05e-05)	0.0001*** (4.05e-05)	0.0002*** (4.05e-05)
FCF	0** (0)	0* (0)	0** (0)
IND	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-0.0203*** (0.0025)	-0.0229*** (0.0024)	-0.0218*** (0.0026)
Observations	13,209	13,209	13,209
R-squared	0.121	0.119	0.120

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

From the panel A, we could see the impact of institutional investors' shareholdings, COVID-19, and their joint impact on the performance of listed companies. We found IO has a positive impact on firms' performance, this result indicates that the higher the institutional shareholdings, the better the monitoring and better company performance, supporting the effective monitoring hypothesis. COVID-19 has a negative impact on firms' performance,

which is consistent with the professional valuation and normal intuition. In addition, the joint coefficient of IO and COVID-19 is 0.0044 which is higher than the coefficient of IO (0.0021). This indicates that under COVID-19, good monitoring shows better control and management and helps companies resist the negative impact of emergent public events.

From the panel B, we could see the impact of institutional investors' stability, COVID-19, and their joint impact on the performance of listed companies. The coefficient of IS is positive (0.0005694) and is significant at 5% level. This result indicates in normal times, the stability of institutional investors has a positive impact on firms' performance. The coefficient of PERIOD is negative(-0.003758) which indicates the negative effect COVID-19 cause on firms' performance. The coefficient of PERIOD*IS is not significant at 5% level or even 10% level, indicating that IS does not help listed companies resist the impact of the epidemic.

This can be explained by following reasons. Firstly, the occurrence of covid-19 caused a drop in the stock price index and the stock market was no longer a sound investment choice in this extraordinary period. Based on the data of deaths and stock market indices since the outbreak of COVID-19 in China, Korea, Italy, France, Spain, and Germany (the most affected countries), Zeren and Hizaric studied the relationship between the number of deaths due to the epidemic and the stock market. The higher deaths toll, the lower the stock market indices. Many investors choose to sell their shares in public listed companies and invest in the gold market, which is considered safe in the long run, the cryptocurrency (e.g., bitcoin) market, which has become hot with the rise of the Internet, and the financial derivatives market. In addition, institutional investors also choose to invest their money in countries and regions where there are fewer cases of COVID-19 and fewer deaths due to COVID-19. Thus institutional investors who were stable in normal times may become unstable institutional investors under the impact of an unpredictable epidemic, selling shares of listed companies in stock markets in areas with severe epidemics to invest in other markets with more stable or promising returns. Secondly,

institutional investors backward actively when COVID-19 hits the stock markets (Glossner, Matos et al, 2020), they do fire-selling to rebalance their portfolio and eventually amplify the collapse. In addition, China's stock market is an emerging and unstable market (Jiang and Kim, 2015). Institutional investors in the Chinese stock market generally do not hold the same stock for more than 6 months. The majority of institutional investors in China are buy-and-sell speculators, not buy-and-hold investors and therefore in extraordinary period, institutional investors turn much more unstable.

From panel C, we could see the impact of pressure-sensitive institutional investors' shareholdings, the impact of COVID-19, and their joint impact on the performance of listed companies. We found IPS has a positive impact on firms' performance, this result indicates that the higher the pressure-sensitive institutional shareholdings, the better the corporate governance and better company performance in normal period. In addition, the joint coefficient of IPS and COVID-19 is 0.0003 and is significant at 5% level, which indicates that pressure-sensitive institutional investors have positive impact on corporate performance, their participation in board of directors and efforts put on corporate governance help with firm performance even when epidemic disaster comes.

In terms of control variables, the coefficient of SIZE is positive and significant at 1% level, this shows that the larger the company, the more it can utilize the scale effect and the better the firm performance. The coefficient of GROWTH is positive and significant at 1% level, this indicates that the better the growth trend of the company, the better the firm performance. The coefficient of LEV is negative and significant at 1% level, which means with higher gearing rate, companies have worse performance. The coefficient of LIQ is positive and significant at 1% level. This indicates the stronger the short-term solvency, the better the company's performance. The coefficient of FCF is positive and significant at 1% level, supporting that the better the free cash flow status, the better firms' performance.

Robustness Tests

Robustness Tests using Tobin's Q

In order to verify whether the impact of institutional investors' shareholding and institutional investors' stability sticks on corporate performance will be affected by different corporate performance measurement methods, it is proposed to choose another method to measure corporate performance to ensure the accuracy of the above results.

I find the data of Tobin's Q from CSMRA database and I exclude the companies with missing Tobin's Q data, so the observations reduce from 13209 to 10388. The Tobin's Q ratio is a market measure of a firm's value that is based on the overall value the market assigns to the company and is essentially independent of asset valuations, present activity, or even prior profitability. This assessment emphasizes the company's predicted future earnings, making it a useful indicator of current strategy and intentions.

Use Tobin's Q to measure corporate performance, the model is as below.

$$\begin{aligned} \text{Tobin's } Q_{i,t} = & \beta_0 + \beta_1 * IO_{i,t} * PERIOD_{i,t} + \beta_2 * IO_{i,t} + \beta_3 * PERIOD_{i,t} + \beta_4 \\ & * SIZE_{i,t} + \beta_5 * LEV_{i,t} + \beta_6 * GROWTH_{i,t} + \beta_7 * LIQ_{i,t} + \beta_8 * FCF_{i,t} \\ & + \beta_9 * INDUSTRY + \beta_{10} * YEAR_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (5)$$

$$\begin{aligned} \text{Tobin's } Q_{i,t} = & \beta_0 + \beta_1 * IS_{i,t} * PERIOD_{i,t} + \beta_2 * IS_{i,t} + \beta_3 * PERIOD_{i,t} + \beta_4 \\ & * SIZE_{i,t} + \beta_5 * LEV_{i,t} + \beta_6 * GROWTH_{i,t} + \beta_7 * LIQ_{i,t} + \beta_8 * FCF_{i,t} \\ & + \beta_9 * INDUSTRY + \beta_{10} * YEAR_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (6)$$

TABLE 6

Robustness test using alternative corporate performance variable for H1 and H2

Variables	<u>Panel D</u> Tobin's Q	<u>Panel E</u> Tobin's Q
PERIOD*IO	1.372*** (0.281)	
PERIOD*IS		-0.0435 (0.141)
PERIOD	-0.394*** (0.146)	-0.362*** (0.128)
IO	0.701*** (0.115)	
IS		0.223*** (0.0503)
SIZE	1.962*** (0.0458)	1.821*** (0.0456)
LIQ	-0.0563*** (0.00671)	-0.0297*** (0.00706)
LEV	-0.335*** (0.122)	-0.615*** (0.129)
GROWTH	0.000242 (0.00655)	0.0125* (0.00690)
FCF	0** (0)	0* (0)
	(0.0807)	(0.0856)
INDY	Yes	Yes
Year	Yes	Yes
Constant	19.96*** (0.443)	18.59*** (0.455)
Observations	10,388	10,388
R-squared	0.282	0.225

In panel D, the interaction term coefficient is 1.3716 and is significant at the 1% level, reflecting that the institutional investors' holdings has a significant positive effect on corporate performance under the pandemic. The coefficient of IO is positive (0.7008), indicating the IO has a positive effect on firm performance and the coefficient of PERIOD is negative (-0.3937), indicating COVID-19 has a negative effect on corporate performance. This analysis proves that the results are robust.

In panel E, the coefficient of joint effect is not significant which is consistent with the result using NROA as dependent variable. The coefficient of IS is positive (0.233), indicating the IS has a positive effect on firm performance in normal period and the coefficient of PERIOD is negative (-0.362), indicating COVID-19 has a negative effect on corporate performance. This analysis proves that the results are robust

Robustness Tests for the impact of IPS on corporate performance

Using companies whose issued shares held by pension funds is more than 3% as sample, Lasfer and Faccio (2000) study the relationship between pension funds and corporate performance and find there is no positive or negative correlation between them. So, to exclude the case that pressure-sensitive institutional investors have different effects on firm performance at different holding levels, I set the above-average IPS to “High_IPS” and then test the relationship between firm performance and IPS for firms with High IPS.

$$NROA_{i,t} = \beta_0 + \beta_1 * High_IPS_{i,t} * PERIOD_{i,t} + \beta_2 * High_IPS_{i,t} + \beta_3 * PERIOD_{i,t} + \beta_4 * SIZE_{i,t} + \beta_5 * LEV_{i,t} + \beta_6 * GROWTH_{i,t} + \beta_7 * LIQ_{i,t} + \beta_8 * FCF_{i,t} + \beta_9 * INDUSTRY + \beta_{10} * YEAR_{i,t} + \varepsilon_{i,t}$$

TABLE 7

Robustness test for H3

Variables	Panel F NROA
High-IPS	0.00174*** (0.000302)
PERIOD	-0.00375*** (0.000485)
Period*High-IPS	0.00324*** (0.000873)
SIZE	0.00364*** (0.000244)
LEV	-0.0201*** (0.000549)
GROWTH	0.000151***

	(4.04e-05)
LIQ	3.38e-05**
	(1.65e-05)
FCF	0**
	(0.00317)
IND	Yes
Year	Yes
Constant	-0.0203***
	(0.00245)
Observations	13,209
R-squared	0.124

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In panel F, we could see the coefficient of Period*High_IPS is 0.00174 and is significant at 1% level, reflecting IPS in high level has a positive impact on corporate performance during COVID-19 period. The sign of coefficient of High_IPS and Period and control variables are also the same as the sign of coefficient of variables in panel C. This analysis proves that the result of panel C is robust.

VI. Conclusion

This study discusses the impact of COVID-19 on corporate performance and the effect of institutional investors on corporate performance during COVID-19 period. I further discuss the institutional investors' impact on corporate performance along three dimensions: the institutional ownership, the stability of institutional investors and the pressure sensitivity.

The result of empirical study shows that the COVID-19 epidemic has a significant negative impact on the performance of Chinese public companies. The COVID-19 has led to the shutdown of enterprises and the reduction of production, manufacturing, real estate and infrastructure investments have basically come to a halt in the short term, while the international spread of the epidemic has impacted exports and hit international trade enterprises and the transportation industry.

I find institutional ownership has a significant positive impact on corporate performance not only in the normal period but also during the COVID-19 outbreak. This result supports hypothesis that institutional shareholdings enable institutional investors have supervisory incentives and information advantages that can successfully improve corporate governance, lower agency costs, and ultimately boost the company's value. The higher the shareholding capacity, the greater the motivation and ability to help the company improve its performance. The positive effect of institutional investor ownership on firm performance is greater when COVID-19 occurs, suggesting that institutional investor ownership is beneficial for listed firms to counteract the negative images of unexpected public events on firm performance. Good corporate governance and management oversight can help companies reorganize production and stabilize operations in the event of a public emergency, minimizing the negative impact of urgent public health event.

As for the stability of institutional investors, it has positive impact on corporate performance in the normal period. This result supports the hypothesis that compared to transactional investors, stable institutional investors are more concerned with the long-term interests of the company rather than the short-term interests of buying and selling, and therefore have a stronger incentive to participate in corporate management. At the same time, because they hold equity of the company for a long time, stable institutional investors also have more time to understand the company's production, operations, sales and competition in the industry, and therefore have a greater ability to improve the company's performance through monitoring. However, the stability of institutional investors could not help listed companies resist the shock from COVID-19. The reason for this is that stable institutional investors become "unstable institutional investors" during covid-19.

In this paper, the stable institutional investors are defined as those whose level of institutional investors fluctuated less than the industry level in the three years before the

epidemic, and these stable institutional investors do help improve firm performance in normal times. However, in the face of the sudden COVID-19 disaster, institutional investors sell a large number of shares to rebalance portfolio and increase their own liquidity (Glossnery, Matos et al, 2020), causing the share price to fall and making people lost confidence in the company, and worse corporate performance. The Chinese stock market, according to Jiang and Kim (2015), is an emerging, turbulent, and unsteady market with institutional investors that typically hold a stock for less than six months. Xiong and Wu's finding (2020) backs with Jiang and Kim's conclusion that buy-and-sell speculators, not buy-and-hold investors, account for the majority of institutional investors in China.

And the test for the last hypothesis reflects that pressure-sensitive institutional investors' holdings has a positive impact on corporate performance in both normal period and extraordinary period. This result demonstrates that pressure-sensitive institutional investors who have business relationship with investee companies can better perform their monitoring role, improve corporate governance and corporate performance. Compared to pressure-resistant institutional investors, they will be less likely to sell their shares and more likely to stabilize the company's operations in the extreme event in order to keep business relationship with these investee companies.

In addition, the result reveals that good financial status has a significantly positive impact on corporate performance both before and after COVID-19. Compared to other companies, company with larger size, better capital structure and cashflow, lower leverage and more promising future growth increase will experience less negative impact of external contingent events.

Compared with the SARS epidemic in early 2003, the pneumonia epidemic caused by the COVID-19 is characterized by rapid spread, high viral infectivity, diverse modes of transmission, invisible transmission through uninfected groups, and great difficulty in

prevention and control. The COVID-19 epidemic basically covered all provinces and cities in China and spread globally. Therefore, the disruption of economic activities and the stagnation of production and business activities caused by the COVID-19 epidemic in China far exceeded those caused by natural disasters and other major public health emergencies, both in terms of absolute losses and relative impact. As the epidemic spreads around the world, COVID-19 has caused indelible trauma to the world's economy, corporate development, medical care, and human mental health. Summarizing the experience of this far-reaching and widespread health event, finding some ways to resist such events has long-term significance for both companies and individuals.

VII. Implication and Limitation

Implication

The empirical results indicate that the introduction of institutional investors helps to strengthen corporate governance, enhance corporate value, improve the financial position of companies, and thus increase the profitability of listed companies. Institutional investor ownership also can help listed companies resist the adverse effects of extreme public events. Therefore, the following countermeasure are proposed on how to strengthen the governance of listed companies and improve the financial performance of listed companies.

Guide listed companies to actively introduce stable and professional institutional investors. Although the participation of institutional investors in Chinese financial market has increased in recent years, the shareholding ratio of institutional investors is still at a low level compared with that of developed countries in the West. Short-sighted, following and speculative retail investors are not conducive to the development of the capital market, the stability of the listed company's capital structure, and thus the improvement of the company's performance. Institutional investors with stable capital investment willing, long-term interest

insight and professional management knowledge and ability enable listed companies to develop in a strategy direction and help listed companies resist extreme external adverse events.

Limitations

Firstly, this paper is based on Chinese A-share listed companies. The Chinese capital market and institutional investors have their own characteristics, such as the capital market is not mature, and the number of institutional investors and the total amount of investment is low compared to the developed Western countries, so the results of this paper may not be applicable to countries and regions where the capital market is mature and institutional investors have dominated. Secondly, the stability of institutional investors in this paper is based on the volatile of institutional investors' shareholding 3years before the outbreak of COVID-19, it is proper to measure the institutional investors' stability in normal period but it seems not a good choice to measure in special times, for example COVID-19 outbreak. Investors who are stable in general periods will become unstable in special periods due to their own liquidity, stock market fluctuations to some extent. If we can obtain daily levels of institutional investor holdings before and after the outbreak of COVID-19 and use them to calculate institutional investor stability, we should be able to study more clearly the impact of institutional investor stability on firm performance during the period of COVID-19. In addition, for the heterogeneity of institutional investors, this paper only studied the impact of stable institutional investors and trading institutional investors and pressure-sensitive and pressure-resistant institutional investors on firm performance, in fact, there are many ways to divide institutional investors and many types of institutional investors, the impact of these subdivided institutional investors on firm performance can be the direction of future research.

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