Institutional investor company social responsibility report and company performance

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Abstract

In the Chinese stock market, the rate of institutional holder and the company social responsibility report level are comparatively lower than those in the Western market. Historical research studies showed that there exist some connections between these two factors and company performance. This article uses the method of empirical analysis based on data during 3 years to try to find out the result.

Keywords: institutional investor, company performance, social responsibility, company development

1 Introduction

An important feature of China’s stock market has always been that retail investors account for a large proportion, while institutional investors, that is, those who invest with high investment, strong information collection ability and professional knowledge, account for a relatively small proportion. But in Europe’s mature stock markets, institutional investors account for 80–90%. Therefore, A-share market has long been characterised by high volatility, noisy traders and strong speculation. From the perspective of market trading volume, retail investors contributed about 80\% of the historical trading volume and even accounted for about 90\% of the trading volume before the stock market dropped sharply in 2015. Since then, retail trading volumes have declined and the proportion of institutional investors has risen, a sign of the gradual maturity of the A-share market.

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ISSN 2444-8656 doi:10.2478/amns.2021.2.00107
Institutional investors usually hold large positions, hold positions for longer periods and trade less frequently, so they are more conducive to the stability of the stock market and can promote the return of stock prices to their value, rather than being prone to large deviations. Institutional investors are usually more inclined to invest in companies with good fundamentals and better growth, so that the stock price of the company will rise. In this way, the company will have more abundant funds for expansion and reproduction, leading to further increase in corporate performance; such enhancements are usually reflected in the data pertaining to operational and financial aspects of corporate performance. In addition, even as the institutional investors of ascension would be more willing to promote standardisation and rationality of the governance structure of listed companies, regulators also exert their influence to encourage institutional investors participating in corporate governance; to improve listed company governance and management problems characterising the present-day market scenario, institutional investors play a vital role in facilitating relations between shareholders and management, and thus tackle the problem of related party transactions using their supervision to improve business performance.

In the process of enterprise development, environmental pollution, food safety and other social issues have gradually become the focus of attention. In 2008, regulators made it mandatory for certain industries and companies to disclose their corporate social responsibility (CSR) on a regular basis. In recent years, under the supervision of public opinion and media, more and more A-share listed companies have voluntarily disclosed their social responsibility information. However, on the whole, there is still a lack of and imperfect quality of CSR information disclosure in China, and there is a big gap between different enterprises. In China, only the relevant guidelines issued in 2006 stipulate that listed companies regularly assess whether they have effectively implemented their social responsibilities, but the specific disclosure of relevant information depends on the will of the enterprise itself.

From the perspective of enterprises, the fulfilment of social responsibility will indeed directly lead to the increase of operating costs in the short term and put forward higher requirements in pollution treatment, emission control, employee treatment and other aspects, but the internal driving force of social responsibility information disclosure still exists within the company. Companies that actively undertake social responsibilities are usually more favoured by consumers, so that customers and investors can understand the company’s operating culture and cultivate a sense of identity, and so as to enhance brand effect, eventually expand market share and improve corporate performance. In addition, better employee care will attract relevant talents to gather and enhance the sense of belonging and cohesion of employees within the enterprise. In an environment where social supervision is becoming more and more transparent and the requirements for business operations are becoming higher and higher, regular disclosure of CSR information is conducive to reflecting the ability of sustainable development of enterprises and enhancing the confidence of investors. Finally, social responsibility reports often contain information about enterprises’ responsibility for taxation, public welfare activities and green production, which are helpful for enterprises to get support from local governments, and may even get support from policies, taxation and finance.

At present, there have been a lot of studies on the relationship between institutional investors and corporate performance, but there are still few studies on the relationship between CSR information disclosure and corporate performance. Based on the relevant background mentioned above, this paper proposes corresponding assumptions on the data of some A-share listed companies from 2016 to 2018 and empirically analyses the relationship among the shareholding ratio of institutional investors, CSR information disclosure and corporate performance. Possible innovations in this paper include the following aspects: (1) The sample data involved are relatively new, so the conclusions drawn are more timely and (2) the CSR information disclosure is a new factor on enterprise performance and has certain innovation.

2 Research reviewed

Institutional investor ownership, CSR disclosure and corporate performance have always been hot issues in the field of economics. Many scholars have made corresponding explorations in this field and put forward their
Institutional investor company social responsibility

own theories. This part summarises the research process and conclusions of domestic and foreign scholars on the relationship between institutional investors’ shareholding, CSR disclosure and corporate performance, and on this basis, sorts out and concludes.

2.1 Research of institutional investors’ shareholding and corporate performance

Foreign studies on institutional investors’ shareholding, CSR disclosure and corporate performance started earlier and developed faster than those in China. Due to the more perfect development of foreign capital market, the proportion of individual investment in social investment is small, the development of financial institutions, especially investment institutions, is relatively complete and the fund strength of institutional investors is stronger. Due to the professionalism and technology of institutional investors, the investment methods of institutional investors are more diverse. Therefore, the selection of samples in related studies abroad is more extensive than that in the domestic market.

Cornett et al. [1] published an article in the Journal of Banking and Finance and studied the relationship between institutional investor participation and business performance of large companies by constructing a regression model and empirical regression. They found that there is a significant relationship between the operating cash flow returns of an enterprise and the percentage of institutional holdings and the number of institutional shareholders. Seifert et al. [2] believe that institutional investors not only have a positive impact on corporate performance but also on the forms of equity concentration such as major shareholders and insider shares. Santana et al. [3] believe that institutional investors will undoubtedly influence corporate performance, and different types of institutions, such as banks and funds, have different influences on corporate performance. In addition, Tsaia and Gub [4] took a different approach, focusing on casinos. This paper studies the relationship between institutional ownership and corporate performance in the casino industry from 1999 to 2003. Their research shows that institutional investment in casino companies may help casinos reduce performance losses caused by agency problems.

In recent years, domestic research studies on institutional investors’ shareholding, CSR and corporate performance are relatively abundant, and most of their research methods refer to those of foreign researchers. Wang and Dong [5] studied how institutional investors participate in and influence the corporate governance of invest companies and reached the conclusion that institutional shareholding ratio (IHR) is positively correlated with corporate performance. Yang et al. [6] used the two-stage regression method to study the relationship between corporate governance, institutional investors and corporate performance and believed that the participation of institutional investors could help improve corporate performance. Zheng and Lv [7] also use the ordinary least squares method and two-stage least squares method to study the institutional investor shareholding proportion and the interaction relationship between corporate financial performance (FP), think because of the effect of institutional investors have in governance, pressure inhibitory institutional investors in the long run will help to improve enterprise performance. In addition, Zhang [8], Wu and Liu [9], and Zhou and Lu [10] all studied and discussed the relationship between institutional investors’ shareholding and corporate performance and reached similar conclusions.

2.2 Research of company social responsibility report and company performance

Due to the late development of China’s capital market, Shanghai Stock Exchange was founded in November 1990, and Shenzhen Stock Exchange was founded in 1991. After >20 years of tortuous development, the number of listed companies is not huge. Compared with foreign capital markets, there are few domestic companies with profound development history, and the average survival time of enterprises is shorter. As an indicator that needs long-term observation, social responsibility disclosure has insufficient data available for research, and its objectivity is difficult to define. According to the existing research conclusions in this field at home and abroad, due to the different research perspectives at home and abroad, there are roughly two situations: (1) positive relationship and (2) negative relationship.

There are also abundant studies on the relationship between social responsibility disclosure and corporate
performance abroad. Carroll [11] discussed the contents and realisation methods of CSR disclosure and believed that, in the long run, enterprises should consciously undertake social responsibility, which is not only the responsibility of enterprises but also the internal requirement of their long-term development. Ruiz-Mallorquí and Santana-Martin [12] found that there is a positive relationship between the degree of CSR disclosure and its financial data performance in the long term, while there may be a certain degree of deviation in the short term. Mahoney and Roberts [13] examined the relationship between corporate social performance (CSP), FP and institutional ownership. They selected a sample of Canadian listed companies and conducted an empirical analysis.

There are more abundant research studies on the relationship between social responsibility disclosure and corporate performance. Huang et al. [14] took A-share listed companies as samples and believed that when the degree of market liberalisation in A region was high, enterprises’ disclosure of social responsibility to the state was significantly positively correlated with their performance, such as financial indicators. In contrast, in areas where markets are not free, there is a negative correlation. With the improvement of marketisation in China, the importance of social responsibility is gradually increasing. In order to analyse the relationship between the two, Li and Mu [15] introduced the time variable as one of the explanatory variables and drew the conclusion that social responsibility disclosure is positively correlated with corporate performance in the long run. Lu [16] constructed a set of enterprise performance evaluation systems and believed that enterprises should aim at maximising the enterprise value. In order to maximise the enterprise value, the importance of social responsibility cannot be ignored. Wang and Song [17] through the construction of social responsibility indicator system, respectively, found that employees’ social responsibility was negatively correlated with corporate performance, while CSR had a positive impact on corporate performance. In addition, Wang and Wang [18] used the method of game theory to draw the conclusion that social responsibility and corporate performance have the same trend.

2.3 Literature evaluation

The above abundant literature research results show that there are abundant domestic and foreign research studies on institutional investment shareholding and corporate performance or CSR disclosure and corporate performance. The researchers used regression analysis, ordinary least square method, case analysis method, sampling survey method, game theory method and so on to study their interaction relationship from many angles. Some domestic and foreign researchers have established index systems, and some have obtained relevant indicators to evaluate institutional investors’ shareholding, CSR and corporate performance by referring to previous model theories. And using these index systems, we get different conclusions of different emphases. In general, the research on the shareholding of institutional investors or CSR disclosure and corporate performance has been relatively perfect, but there are still some problems that need to be further explored and enriched.

First of all, the current analysis of corporate performance by scholars is mostly from one perspective, and this could be either the shareholding of institutional investors or the disclosure of CSR. Few scholars have combined the two to discuss the impact of institutional investors’ shareholding and social responsibility disclosure on corporate performance, let alone the impact of institutional investors’ participation on the deepening of the correlation between social responsibility and corporate performance. This paper gives a more detailed explanation of this problem. In addition, in the selection of samples, domestic scholars mostly choose the financial data of one- or two-hundred listed companies, which has a certain degree of bias in sample selection. In this paper, the data of 774 A-share companies are selected. The overall sample size is larger, and the company duration, enterprise size and other factors are considered comprehensively, which makes the sample more representative. Finally, this paper is more representative in the choice of index parameters. The return on capital cannot reflect the performance of the company when measuring blue chip stocks and small and medium cap stocks. In this paper, return on equity (ROE) is chosen as the parameter of corporate performance, and return on capital is not used as the index of corporate performance.
3 Theoretical analysis and research hypothesis

Corporate performance is affected by many factors. In order to explore how institutional investors’ shareholding factors and CSR information disclosure factors affect corporate performance, based on reference to existing literature at home and abroad, this paper will make a simple analysis of the relationship between the three factors and put forward the corresponding hypothesis.

3.1 Institutional investor shareholding and corporate performance

Institutional investor shareholding refers to the shareholding held by institutional investors in the company. Generally speaking, compared with individual investors, institutional investors have higher risk identification ability, investment decision-making ability and capital scale. Therefore, it is commonly understood that the larger the proportion of institutional investors holding shares, the more favourable the prospect of the company or enterprise. In other words, the number and size of institutional investors is an expression and driver of a company’s profitability and future growth potential. The research of Zhang [19] shows that institutional investors can help improve the ownership structure of companies and reduce agency costs, and this effect is particularly obvious for pressure-sensitive enterprises. Based on the above analysis, this paper proposes the following hypotheses:

Hypothesis 1: The shareholding ratio of institutional investors is positively correlated with corporate performance.

3.2 CSR information disclosure and corporate performance

CSR refers to the responsibility that a company should undertake to consumers, communities, environmental protection, public welfare projects etc., meeting its own profit targets and fulfilling its responsibilities to employees. CSR has attracted much attention in recent years. CSR directly affects corporate image and indirectly affects corporate performance. In addition, from the point of view of signal transmission theory, companies tend to be more eager to convey good information to the outside world and enhance their corporate image and value by participating in social services, public welfare undertakings and other activities. According to the life cycle theory of enterprises, the development of enterprises usually goes through four stages: development, growth, maturity and decline, and the enterprises that pay attention to CSR are usually from the climbing stage, and their enterprise value will gradually increase along with their investment in social responsibility. Tian [20] conducted an empirical study on enterprises in the communications industry, showing that CSR is significantly positively correlated with enterprise competitiveness and profit. Therefore, based on the above analysis, this paper proposes the following hypotheses:

Hypothesis 2: The company’s social responsibility information disclosure is positively correlated with the company’s operating performance.

3.3 Shareholding by institutional investors, CSR information disclosure and corporate performance

Enterprises with institutional investors are generally in the rising stage, and the profitability, debt paying ability, operation and management ability and risk resistance ability of the enterprise are better. At this time, enterprises have a great need to establish a good social image and have the financial strength and affordability to devote themselves to social work, so as to enable the company to undertake more social responsibilities. On the contrary, if the value of the enterprise is in the downward stage, the prospect of the enterprise is not optimistic, and institutional investors withdraw one after another, the shareholding proportion of institutional investors will drop sharply, the enterprise will lose financial support and the value of the enterprise will decline. At this point, even if the enterprise is concerned with the society, it is also unable to do anything. Its urgent task is to concentrate on developing production, occupying the market and improving its enterprise performance again. Therefore, when institutional investors hold more shares, the influx of funds will make enterprises use...
more funds to invest in the work of CSR. Correspondingly, due to the needs of growth, social responsibility can improve the corporate image and corporate performance. When institutional investors hold fewer shares and withdraw their capital, the social responsibility of enterprises will be reduced, and the company’s performance will also decline. In view of this, this paper proposes the following hypotheses:

Hypothesis 3: The shareholding ratio of institutional investors has a positive impact on the relationship between social responsibility information disclosure and corporate operating performance.

4 Research design

4.1 Samples and data sources

In order to ensure that the results have more timeliness, this article selects the 2016–2018 A-share listed companies as samples, and since part of the A-share listed companies did not according to the data require disclosure of CSR, under the condition of considering the data availability, we refer to other related research,

| Year | Number | Percentage (%) |
|------|--------|----------------|
| 2016 | 608    | 30.43          |
| 2017 | 660    | 33.03          |
| 2018 | 730    | 36.54          |
| Total| 1998   | 100.00         |

**Table 1** Sample survey.

| Industry                                      | Number | Percentage (%) |
|----------------------------------------------|--------|----------------|
| Machinery, equipment and instrument manufacturing | 320    | 16.02          |
| Information technology                       | 210    | 10.51          |
| Metal and non-metal manufacturing            | 179    | 8.96           |
| Petroleum, chemistry, plastics and plastics   | 151    | 7.56           |
| The real estate                              | 126    | 6.31           |
| Transportation, warehousing                  | 114    | 5.71           |
| The production and supply of electricity, gas and water | 112    | 5.61           |
| Wholesale and retail                         | 108    | 5.41           |
| Medicine, biological products                | 104    | 5.21           |
| Food and beverage                            | 92     | 4.60           |
| Mining                                       | 86     | 4.30           |
| Building                                     | 74     | 3.70           |
| Communication and culture                    | 62     | 3.10           |
| Electronic                                   | 62     | 3.10           |
| Social services                              | 58     | 2.90           |
| Textile, clothing and fur manufacturing       | 42     | 2.10           |
| Paper making and printing                    | 39     | 1.95           |
| Farming, forestry, animal husbandry and fishery | 29   | 1.45           |
| Comprehensive                                | 23     | 1.15           |
| Other manufacturing industries               | 5      | 0.25           |
| Wood and furniture manufacturing             | 2      | 0.10           |
| Total                                       | 1998   | 100.00         |

**Table 2** Industry sample profile.
selecting wetting spirit universal database and spirit universal social responsibility (CSR) rating as a quantitative index of CSR information disclosure of data. In addition, this article also makes screening as follows: (1) to sample in a way that ensures the sustainability of the enterprise’s financial data and business assumptions, this paper uses the data reported by the company to the securities regulatory commission (CSRC) on ST and *ST eliminated risk warning of listed companies; (2) owing to the social responsibility rating standard that applies to the industries forming part of the financial (particularly insurance) sector and other industries, it was possible to the listed CSRC classification for the financial insurance class; and (3) we have eliminated the other lacunae of sample data during the preparation of data reports. Except for corporate CSR, other data in this paper are from Wind Financial Terminal Database, and IBM SPSS 25 is used to conduct statistics and analysis on the selected sample data.

After screening, the total number of samples selected in this paper is 1,998, including 774 listed companies. From 2016 to 2018, the distribution of sample size was relatively average and showed an increasing trend year by year. The detailed data are shown in Table 1.

In addition, according to the industry classification of CSRC, the industry distribution of the 1,998 samples is shown in Table 2.

### 4.2 Model setting and variable definition

According to the relevant assumptions made above and with reference to other relevant studies, multiple linear regression analyses will be used to analyse the shareholding ratio of institutional investors, CSR information disclosure and corporate performance of listed companies.

The multiple linear regression model is as follows:

**Model 1:**

\[
ROE = \alpha_0 + \alpha_1 \times IHR + \alpha_2 \times CSR + \alpha_3 \times DER + \alpha_4 \times ROP + \alpha_5 \times GPM + \alpha_6 \times IT + \varepsilon
\]

In model 1, \(\alpha_0\) is the constant term, \(\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5\) and \(\alpha_6\) are the regression coefficients and \(\varepsilon\) is the random error term.

**Model 2:**

\[
ROE = \alpha_0 + \alpha_1 \times IHR + \alpha_2 \times CSR + \alpha_3 \times IHR \times CSR + \alpha_4 \times DER + \alpha_5 \times ROP + \alpha_6 \times GPM + \alpha_7 \times IT + \varepsilon
\]

In model 2, \(\alpha_0\) is the constant term, \(\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \) and \(\alpha_7\) are the regression coefficients and \(\varepsilon\) is the random error term.

### Table 3 Definition of investigate variables.

| Variable types | Variable name | Variable to explain | Data source |
|----------------|---------------|---------------------|-------------|
| Explained variable | ROE | Net profit/stockholders’ equity × 100% | Wind |
| Explanatory variables | IHR | Total institutional holdings/ A shares in circulation × 100% | Wind |
| | CSR | Runling Global CSR report rating score | Runling Global Database |
| Control variables | DER | Enterprise liabilities/enterprise assets × 100% | Wind |
| | ROP | EBITDA/total compensation × 100% | Wind |
| | GPM | Operating costs/[(beginning inventory + ending inventory)/2] | Wind |
| | IT | Operating costs/[(beginning inventory + ending inventory)/2] | Wind |
CSR, corporate social responsibility; DER, debt-to-equity ratio; GPM, gross processing margin; IHR, institutional shareholding ratio; IT, inventory turnover; ROE, rate of return on common stockholders’ equity; ROP, return on personnel expense.

5 Empirical analysis

5.1 Descriptive statistics

In order to conduct a preliminary analysis of the sample data, Table 4 shows the descriptive statistical results of the sample population.

| Variables | N    | Minimum | Maximum | Mean  | Standard deviation | Median |
|-----------|------|---------|---------|-------|--------------------|--------|
| ROE       | 1998 | −333.82 | 67.53   | 7.39  | 17.97              | 7.86   |
| IHR       | 1998 | 0.00    | 112.66  | 51.42 | 22.34              | 54.13  |
| CSR       | 1998 | 15.65   | 89.00   | 42.08 | 12.00              | 39.52  |
| DER       | 1998 | 3.70    | 141.25  | 47.87 | 19.43              | 48.64  |
| ROP       | 1998 | −1553.24| 2792.27 | 174.42| 256.36             | 99.54  |
| GPM       | 1998 | −48.18  | 93.12   | 27.89 | 16.88              | 24.87  |
| IT        | 1998 | 0.00    | 3528.96 | 20.88 | 154.52             | 4.06   |

As can be seen from Table 4, the minimum value of ROE is −333.82%, the maximum value is 67.53% and the mean value is 7.39%. It can be seen that the ROE of most of the sample companies is positive, but the operating conditions and operating efficiency of a few companies are low. The minimum and maximum IHR of institutional investors is 0 and 112.66%, respectively, and the mean and median are both >50%. It can be seen that the proportion of institutional investors in the sample companies is relatively high, the standard deviation is 22 and the volatility is relatively stable. The CSR score range of Runling Global is 0–100, so the minimum CSR value is 15.65, the maximum is 89 and the mean value is 42.08. Data show that in nearly 2,000 samples, there is an obvious gap between the best and worst companies in social information disclosure, but its standard deviation is 12.0, which proves that the gap between most companies is small. In DER, ROP, GPM and IT variables, the difference between DER and gross profit margin on sales of different companies is relatively small, and its standard deviation is 19.43 and 16.88, respectively. However, due to the different characteristics of different industries, the rate of return on human input and IT are greatly different. The communication industry and information technology industry are significantly higher than traditional manufacturing enterprises: the range is 4345.51% and 3528.96% and the standard deviations are 256.36 and 154.52, respectively.

5.2 Correlation analysis

In order to study the hypothesis proposed above and conduct a preliminary exploration on the relative variation relationship between each explanatory variable and the explained variable, we conducted a correlation analysis of these variables, and the results are shown in Table 5.

According to the data provided by the Table 5, it can be seen that institutional investors holding (IHR) and
Table 5 Correlation analysis.

| Variables | ROE   | IHR   | CSR   | DER   | ROP   | GPM   | IT   |
|-----------|-------|-------|-------|-------|-------|-------|------|
| ROE       | 1.000 |       |       |       |       |       |      |
| IHR       | 0.119*** | 1.000 |       |       |       |       |      |
| CSR       | 0.074*** | 0.301*** | 1.000 |       |       |       |      |
| DER       | -0.148*** | 0.181*** | 0.199*** | 1.000 |       |       |      |
| ROP       | 0.291*** | 0.127*** | -0.008 | 0.020 | 1.000 |       |      |
| GPM       | 0.268*** | -0.03* | -0.076*** | -0.414*** | 0.302*** | 1.000 |      |
| IT        | 0.033* | 0.016 | -0.03* | 0.017 | 0.047** | 0.055*** | 1.000 |

Note: ***, ** and * represent the significance level of 1%, 5% and 10%, respectively.

CSR and corporate information disclosure ROE show a positive correlation; the values of correlation coefficient of 0.119 and 0.074, respectively, are maintained all through the test of 1% significance level; you can preliminary stake that institutional investors and CSR information disclosure and the corporate performance have a simple relationship among them. The correlation coefficient is 0.301 for institutional investor shareholding and CSR information disclosure, and with 1% significance level, we can see that the higher the institutional investor shareholding, CSR to the full and timely disclosure of information, the more the willingness of companies to undertake corresponding social responsibility; thus, Hypothesis 3 is set up.

Among the four control variables, except DER, return on human input, gross profit margin on sales and IT are all positively correlated with ROE, which is consistent with our experience. And CSR information disclosure negatively correlated with sales gross profit margin and IT with significance at 1% and 10%, respectively, and this can serve as an indicator to companies of their performance, social responsibilities and operating profit level and operating efficiency, which may have a negative impact but in the end will have a positive effect on corporate performance.

In addition, we also can observe this from the tabular information disclosure of the negative relationship between CSR and the return on human investment, but as this is not significant, it can react to some extent to the company’s talent and pay policy, although at the price of increasing the cost of the company’s negative impact on human return on investment; however, on part of the company, there is no significant difference – among the possible reasons is that companies, in creating ascension of pay and benefits at the same time, also can attract more people to create more value to offset this part of the labour costs’ rise, and thus it is necessary to particularise based on case-by-case analyses. In addition, IT is also significantly positively correlated with gross profit margin on sales, which is also in line with our common sense.

5.3 Multiple regression analysis

Simple regression analysis after joining other variables and influencing factors may lead to differences in results; in order to determine more accurate research on institutional investor shareholding, CSR information disclosure and the relationship between the corporate performance, we will make our model according to the hypothesis, using the multivariate linear regression model for further analysis, and the results are shown in Table 6.

As can be seen from the Table 6, the $R^2$ of the model is 0.146, and the adjusted $R^2$ is 0.143. There is not much difference between the two, and the change of F value is 56.72. The significance of the model is relatively good. From the perspective of variables, the coefficient of influence of IHR on the dependent variable ROE is 0.073, and its significance is 0.000, which passes the test of 1% significance level, indicating that the higher the proportion of institutional investors’ shares, the better the enterprise performance. The two are significantly positively correlated, which is in line with Hypothesis 1. The impact coefficient of CSR on the dependent variable ROE is 0.128, and the significance level is 0.000 < 1%, indicating that CSR information disclosure and corporate performance are significantly positively correlated. The more complete CSR information disclosure
is, the better corporate performance will be, which is in line with Hypothesis 2. In terms of control variables, except IT, all the other variables are significantly correlated with ROE, which proves that most of the control variables can effectively explain the changes in the ROE of the company. However, IT varies greatly according to different industry types of the company, so its relationship with corporate performance is not significant.

Table 6 Analysis of the impact of institutional investors’ shareholding ratio and CSR information disclosure on corporate performance.

| Variables  | Unnormalised coefficient | Normalised coefficient | t      | Significance |
|------------|--------------------------|------------------------|--------|--------------|
|            | B                        | Standard error         | Beta   |              |
| (constant) | −3.799                   | 1.902                  | −      | −1.997       | 0.046        |
| IHR        | 0.073                    | 0.018                  | 0.090  | 4.082        | 0.000        |
| CSR        | 0.128                    | 0.033                  | 0.085  | 3.872        | 0.000        |
| DER        | −0.114                   | 0.022                  | −0.123 | −5.188       | 0.000        |
| ROP        | 0.017                    | 0.002                  | 0.236  | 10.604       | 0.000        |
| GPM        | 0.165                    | 0.026                  | 0.155  | 6.382        | 0.000        |
| IT         | 0.002                    | 0.002                  | 0.016  | 0.782        | 0.435        |

CSR, corporate social responsibility; DER, debt-to-equity ratio; GPM, gross processing margin; IHR, institutional shareholding ratio; IT, inventory turnover; ROP, return on personnel expense.

For Hypothesis 3, in order to study the impact of the shareholding ratio of institutional investors on the relationship between CSR information disclosure and corporate performance, we add the cross product of the shareholding ratio of institutional investors and CSR information disclosure and make a regression. The results are shown in Table 7.

Table 7 Analysis of the impact of institutional investors’ shareholding ratio on the relationship between CSR information disclosure and corporate performance.

| Variables  | Unnormalised coefficient | Normalised coefficient | t      | Significance |
|------------|--------------------------|------------------------|--------|--------------|
|            | B                        | Standard error         | Beta   |              |
| (constant) | −5.253                   | 3.647                  | −      | −1.440       | 0.150        |
| IHR        | 0.099                    | 0.059                  | 0.123  | 1.687        | 0.092        |
| CSR        | 0.165                    | 0.085                  | 0.110  | 1.928        | 0.054        |
| DER        | −0.001                   | 0.001                  | −0.047 | −0.468       | 0.640        |
| ROP        | −0.114                   | 0.022                  | −0.123 | −5.199       | 0.000        |
| GPM        | 0.016                    | 0.002                  | 0.235  | 10.584       | 0.000        |
| IT         | 0.164                    | 0.026                  | 0.155  | 6.374        | 0.000        |

CSR, corporate social responsibility; DER, debt-to-equity ratio; GPM, gross processing margin; IHR, institutional shareholding ratio; IT, inventory turnover; ROP, return on personnel expense.

As can be seen from Table 7, the $R^2$ of this model is 0.146, the adjusted $R^2$ is 0.143 and the F value is 48.65. The shareholding ratio of institutional investors (IHR) and CSR information disclosure still have a positive impact on ROE at the significance level of 10% after adding the cross item, further verifying Hypotheses 1 and 2.
However, the cross item $IHR \times CRS$ has no significant impact on ROE. Therefore, it can be concluded that the shareholding ratio of institutional investors has no significant impact on the relationship between CSR information disclosure and corporate performance. Hypothesis 3 is rejected. A possible reason is that the ascension of institutional investors holding for CSR disclosure and corporate performance have positive correlation, but its influence on the latter two sizes will vary according to their own other features; thus, the ascension of institutional investors holding to strengthen CSR information disclosure has positive influence on corporate performance.

### 5.4 Robustness test

In order to verify the robustness of the model mentioned above, we standardised the data of existing variables, eliminated the samples with the absolute value of Z-score $>3$ and then conducted regression again. The results are shown in Tables 8 and 9.

**Table 8** Analysis of the impact of shareholding ratio of institutional investors and CSR information disclosure on corporate performance (Z-score).

| Variables | Unnormalised coefficient | Normalised coefficient | t     | Significance |
|-----------|--------------------------|------------------------|-------|--------------|
|           | B                        | Standard error         | Beta  |              |
| (constant)| 0.077                    | 0.012                  | 6.657 | 0.000        |
| IHR       | 0.070                    | 0.011                  | 6.108 | 0.000        |
| CSR       | 0.051                    | 0.012                  | 4.216 | 0.000        |
| DER       | $-0.019$                 | 0.013                  | $-0.036$ | $-1.548$ | 0.122 |
| ROP       | 0.267                    | 0.017                  | 15.311 | 0.000        |
| GPM       | 0.091                    | 0.014                  | 6.697 | 0.000        |
| IT        | 0.007                    | 0.059                  | 0.110 | 0.912        |

$R^2$     | 0.212                    | 0.210                  |       |              |

The F value | 84.285 | 84.285 |

CSR, corporate social responsibility; DER, debt-to-equity ratio; GPM, gross processing margin; IHR, institutional shareholding ratio; IT, inventory turnover; ROP, return on personnel expense.

**Table 9** Analysis of the impact of shareholding ratio of institutional investors on the relationship between CSR information disclosure and corporate performance (Z-score).

| Variables | Unnormalised coefficient | Normalised coefficient | t     | Significance |
|-----------|--------------------------|------------------------|-------|--------------|
|           | B                        | Standard error         | Beta  |              |
| (constant)| 0.076                    | 0.012                  | 6.619 | 0.000        |
| IHR       | 0.084                    | 0.042                  | 2.032 | 0.042        |
| CSR       | 0.061                    | 0.031                  | 1.965 | 0.050        |
| DER       | $-0.019$                 | 0.013                  | $-0.036$ | $-1.548$ | 0.122 |
| ROP       | 0.266                    | 0.017                  | 15.278 | 0.000        |
| GPM       | 0.090                    | 0.014                  | 6.681 | 0.000        |
| IT        | 0.007                    | 0.059                  | 0.119 | 0.906        |
| ZIHR*CRS  | $-0.021$                 | 0.059                  | $-0.037$ | $-0.358$ | 0.721 |

$R^2$     | 0.212                    | 0.209                  |       |              |

The F value | 72.229 | 72.229 |
It can be concluded from Table 8 that, after removing some extreme values, the $R^2$ of the model is 0.212, indicating a slight increase in the fitting degree. However, the shareholding ratio of institutional investors and CSR information disclosure still has a significant positive impact on ROE. The 1% significance level test proves that Model 1 is robust to a certain extent, and the results are still in line with Hypotheses 1 and 2.

As can be seen from Table 9, $R^2$ of the standardised model has also been improved. The shareholding ratio of institutional investors and the disclosure of CSR information have a positive effect on ROE at the significance level of 5% and 10%, respectively, and their significance has been improved compared with before. However, the significance of the cross term decreased further, to 0.721. Therefore, it can be considered that Model 2 is also robust to some extent. Hypothesis 3 is still rejected.

6 Conclusion

In recent years, the research on the influencing factors of enterprise performance has always been a hot topic. There are many research studies on the shareholding of institutional investors, CSR information disclosure and corporate performance. Institutional investors are characterised by a large amount of capital and strong professionalism, so they prefer to invest in companies with good growth and stability. Correspondingly, after the company receives investment from institutional investors, on the one hand, it gets rich financial support, which makes the business situation of the company improve steadily; on the other hand, it also conveys to the market the good operation of the enterprise and the good expectation in the future, thus attracting more investors to pour in and promoting the further improvement of the value of the company. In addition, due to the large and concentrated amount of institutional investors' capital, they are often able to participate in the business activities of the enterprises, which is conducive to improving the standardisation and rationality of the governance structure of the listed companies, reducing the friction between the management, the board of directors and minority shareholders, reducing some agency problems and promoting the further development of the enterprise operation. Therefore, this paper holds that ownership by institutional investors has a positive impact on corporate performance.

From the perspective of CSR information disclosure, in a short period of time, especially for startup companies, the positive external benefits brought by social responsibility input cannot be realised in a short period of time due to the input of upfront costs. ‘Companies’ investment in social responsibility often leads to negative economic growth. However, in the long run, the undertaking of CSR has a positive impact on corporate performance. Taking social responsibility helps to create a good corporate image, build brand reputation and help to increase revenue in the long run. In addition, taking the corresponding social responsibility also involves responding to the call of the government, which has a positive impact on tax reduction and corporate strategy. The above are the relevant conclusions of this paper.

However, due to the lack of experience and other reasons, there are also many limitations in this study. For example, when processing data samples, some companies can only select sample data from available data because the data of some companies cannot be obtained. Although the sample size has been expanded as much as possible, there may still be selectivity bias. In addition, in the selection of CSR indicators, due to the existing statistical data being small, the workload of re-statistics, this paper only selected one index for measurement, which may not be representative. In addition, there are still problems to be discussed in this paper. For example, this paper has strictly redefined not only the performance of the company but also selected representative indicators. The performance evaluation system of the company itself is a complex problem, so this paper directly quoted the predecessors of most of the practices. For the purpose of this study, this is not covered.

Acknowledgements.

This work was support by the National Social Science Foundation of China (19BZX004).
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