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The Impact of Independent Directors' Performance on Corporate Performance

—Based on the Regulatory Role of Human Capital

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Abstract

Based on the sample of A-share listed companies from 2011 to 2018, this paper analyzes the relationship between the performance of independent directors and corporate performance, and the moderating effect of independent directors' human capital on the above relationship from three perspectives: Meeting attendance, dissenting behavior and resignation behavior. The results show that: 1) Meeting attendance is not related to the company's performance, and the independent director's dissenting behavior and resignation behavior improve the company's performance; 2) The independent director's human capital enhances the relationship between the attendance at the meeting and the company's performance, which turns the two into a significant positive correlation; strengthens the positive correlation between the dissenting behavior and the company's performance; strengthens the positive correlation between the resignation behavior and the company's performance correlation. The study of this paper is conducive to comprehensively and reasonably evaluate the performance of independent directors and play the role of independent directors.

Keywords

Independent Director, Performance Behavior, Human Capital, Corporate Performance

1. Introduction

In order to improve the governance of listed companies, China implemented an independent director system in 2001. In listed companies, the responsibilities of independent directors are mainly reflected in two aspects: one is the supervision function; the other is the decision-making function. So, can independent directors perform their duties effectively? In this regard, there are still controversies in academia. For example, Li & Xu (2014) believe that independent directors have been able to play some positive roles in supervising management, providing consulting and decision-making functions. Other scholars have pointed out that the performance of independent directors in listed companies is quite worrying. For example, Zhang, Chen and Huang (2018) believe that independent directors have the word "independence", but whether they are "independent" is worth exploring. "Signature directors", "Vase directors", and "Relationship directors" exist in large numbers in the company. Qu, Zhang and Hao (2014) pointed out that due to information asymmetry, it is difficult for independent directors to be diligent and conscientious, and they didn't play their due role. Therefore, in-depth research is needed on the performance of independent directors. To this end, this article examines the impact of independent directors' performance of duties on company performance.

When the outside world can't observe the details of the performance of independent directors, the effectiveness of corporate governance can be understood through the performance of independent directors Yang & Huang (2015). Existing literature studies on independent directors' performance of their duties mainly focus on the number of independent directors' attendance at the board of directors (Quan & Guo, 2017), voting results (Xu & Chen, 2018), opinion text (Fan, Wang and Zhang, 2017), resignation (Lei, Luo and Chen, 2017) etc., using the number of independent directors' meeting attendance, relevant issues whether to raise objections and the types of opinions to measure the due diligence of independent directors, and to study the performance of independent directors through resignation behavior, these are all about the performance of independent directors' performance. However, both supervisory and decision-making functions are highly complex and strategic, requiring independent directors to have corresponding capabilities (Zhou, Luo and Zhang, 2016), and human capital is an important basis for measuring capabilities. Therefore, to examine the impact of independent directors' performance of duties on company performance, human capital is also a very critical factor. Based on this, this paper adds independent directors' human capital to the research, and examines the moderating effect of human capital on the relationship between duty performance and company performance.

2. Innovation Points of This Paper

Different from previous studies, the possible research contributions of this article are as follows: First, previous studies on independent directors' performance of duties mainly focused on independent directors' supervision or consulting responsibilities, and relatively few studies on independent directors' performance of duties were conducted separately. This article has enriched the literature on independent directors' performance of their duties; secondly, most existing studies focus on independent directors' social capital, and rarely examine the human capital of independent directors. This article introduces independent directors' human capital as a moderating variable to expand independence. The research perspective of directors' performance of duties is of great significance for in-depth study of independent directors' performance of duties, and to give full play to the role of independent directors on company performance. Finally, at a realistic level, the research in this article is conducive to a better understanding of independent directors' performance of duties. Putting forward relevant suggestions based on the research conclusions also has certain practical guiding significance.

3. Literature Review

For the functions of independent directors, the academic circles mainly focus on two functions. However, whether the functions are effectively performed is quite controversial. Liu, Li and Sun (2015) pointed out that the two major functions of independent directors are supervision and consultation. One is the supervisory function. The original intention of introducing independent directors is to supervise the management. Regarding the performance of independent directors' supervisory functions, Li & Xu (2014) proceed from independent directors to restrain the general manager's presumptions, and believe that independent directors can effectively perform their supervisory role. Other scholars said that independent directors can't effectively play a supervisory role under the influence of my country's traditional "Golden Mean" thought (Ye, Zhu, Lu and Zhang, 2011). The second is consulting suggestions. Some scholars study the network relationship of independent directors, indicating that independent directors can provide consulting and suggestion services (Wan & Hu, 2014). On the other hand, Yang, Xue, & Yurtoglu (2011) from the perspective of salary contract found that there is no effective evidence that independent directors provide advisory advice.

A lot of research has been done in academia on the influence of the performance of independent directors of listed companies on company performance. These studies are mainly carried out from two aspects of performance behavior and human capital. Some scholars analyzed the relationship between independent directors' performance of their duties and company performance, mainly from three aspects: meeting attendance, dissent and resigning. One is to use independent directors to participate in board meetings every year to measure the performance of independent directors. They believe that meeting attendance is an important channel for them to participate in corporate governance. The higher the frequency of attendance, the more beneficial the company's benefits (Quan & Guo, 2017; Adams & Ferreira, 2012). The second is that the performance of independent directors is reflected in their dissent. Independent directors' public dissent and voting are important channels for their functions. Reasonable opinions based on the proposal can improve corporate governance and increase company information transparency (Xu & Chen, 2018; Ye, Zhu, Lu and Zhang, 2011). The third is to study the performance of independent directors through resignation. It is believed that the resignation of independent directors is due to problems in internal governance, and their resignation can send signals to the market and affect company performance (Lei, Luo and Chen, 2017; Zhang & Zeng, 2010).

Other scholars have studied the relationship between independent directors' human capital and company performance, mainly including professional experience, educational level, and term of office. Ying et al. (2015) proposed that the professional experience of independent directors is the accumulation of their professional capabilities and an important basis for their choice of behavior, which directly affects the performance of their functions and thus affects company performance. Hao, Gan and Lin (2017) proposed that the educational background of independent directors is the performance of their learning ability, the higher the study, the more knowledge reserves they have, and the stronger the ability to identify information, the more conducive to the improvement of corporate performance. It is also suggested that the entry threshold of independent directors should be established. From the perspective of "learning effect", Chen & Xiang (2017) believe that a longer tenure means higher competence and greater contribution to the company, and its effectiveness in performing duties continues to increase in a diminishing manner. Kim et al. (2014) proposed that the longer the term of the independent directors, the more they understand the company's interior, the more obvious the information advantage, the more conducive to the performance of supervision and advice functions.

In summary, the academic circles have richer researches on independent directors' performance of duties, but there are not many specific performance behaviors, and the introduction of independent directors' human capital in the investigation is even rarer. By summarizing the relevant literature, it is concluded that the human capital of independent directors will affect the performance of the performance of their duties. Based on the above research status, the text intends to study the impact of performance of duties on company performance from the perspective of the role of independent directors in adjusting human capital.

4. Theoretical Analysis and Research Hypothesis

Independent directors to perform their duties behavior, can be examined from the following three aspects: One is meeting attendance. Meeting attendance can measure the degree of diligence of independent directors in performing their duties (Quan & Chen, 2016), and it is an important measure of independent directors' performance of their duties. The second is to express objections to the proposals of the board of directors. Independent directors devote time and energy to discover problems and raise objections. To a certain extent, questioning the bill is a performance of duty (Chen, Wang and Duan, 2015). The third is to resign. Generally speaking, "obedient" independent directors are the best choice for management. When independent directors learn about the company's hidden information, there is a choice, either to stay, but there is a risk of reputation damage; or to resign, the more important the hidden information, the higher the cost of reputation damage, and the more independent directors tend to resign in order to minimize losses (Zhang & Zeng, 2010). However, in order to obtain hidden information, energy and time are indispensable conditions. Therefore, resignation is also an important manifestation of independent directors' performance of their duties.

The performance of duties of independent directors is the external performance of the performance of their duties, which can be used to examine the effect of independent directors. Independent directors participate in corporate governance by attending meetings, voting to influence company decisions, and weighing whether to resign, and sending signals, all of which can have an impact on company performance.

First, the Independent Directors of the premise is to obtain inside information. Shi (2020) pointed out that the main channel for independent directors to obtain internal company information is to attend meetings and discuss board meetings. The number of independent directors attending board meetings is a sign of independent directors' enthusiasm for performing their duties. The main channel for independent directors to obtain internal company information is to attend board meetings and discuss board meetings. Generally speaking, the enthusiasm of independent directors to perform their duties is reflected in the number of independent directors attending board meetings. Correspondingly, the more independent directors participate in meetings, the greater the amount of information they can understand, and the greater the effect they have on company performance.

Secondly, in the board of directors of listed companies in my country, the proportion of independent directors is maintained at 30% - 40%. Therefore, it is difficult for independent directors to directly change the decision of the board of directors. It is more of a market signal. In the case of asymmetric information, it takes effort and time to raise an objection to a proposal. In many cases, independent directors would rather offend the management to issue different opinions, indicating that there is a greater possibility of problems in the proposal. Jiang, Wan, & Zhao (2016) proposed that independent directors' objection to the board meeting can improve market transparency, deliver positive information to the market, and enhance company value.

Third, according to the cost-benefit analysis, individuals will choose the most beneficial decision-making plan when making economic decisions. When independent directors choose to resign, they will also weigh the costs and benefits of resignation. The factors that weigh the resignation are: direct losses after resignation, the importance of their current position, and the importance of current remuneration. Therefore, whether an independent director resigns is closely related to the state of corporate governance. The independent director's choice not to resign indicates that the company is in a good business condition and is willing to perform its duties in the company (Fan, Wang and Zhang, 2017), otherwise, it indicates that the company may have problems. The choice of independent directors to resign is a kind of information transmission to the outside world. The outside world can use this information to infer the company's difficulties, and then sell the company's stocks, causing the company's market value to shrink (Chen and Liu, 2016), which is not conducive to the improvement of company performance.

Based on the above analysis, this article proposes:

Hypothesis 1a: An increase in the proportion of independent directors attending meetings can effectively improve company performance.

Hypothesis 1b: The dissenting behavior of independent directors can effectively improve company performance.

Hypothesis 1c: The resignation of independent directors has an inhibitory effect on company performance.

Independent directors mainly play governance functions such as supervision, consultation and resource support, which are complicated and strategic and require independent directors to have a certain amount of human capital.

First, independent directors need corresponding human capital to attend the meeting. According to the information transmission theory, the efficiency of information transmission depends not only on the willingness to receive information, but also on the ability to receive information (Huo, Zhang and Li, 2016). Taking the initiative to attend the board meeting represents the independent director's willingness to receive information. The human capital of the independent director is regarded as the ability to receive information. The higher the human capital, the stronger the ability to receive information. Independent directors with high human capital can receive information more effectively and play a supervisory role more strictly. Faster access to information, timely find and report the company's existing problems, provide effective solutions; Better integration of relevant information to provide valuable resources to the company. Therefore, the human capital of independent directors plays a positive role in the performance of the independent directors' attendance at the meeting.

Secondly, a certain amount of human capital is required to raise objections to the board of directors. Independent directors need professional ability to identify and screen out key information when reviewing proposals. Independent directors who don't have the corresponding human capital may have deviations in information processing, thereby misjudging board meetings and sending wrong market signals. Therefore, independent directors' human capital can positively improve the deviation of their dissenting behaviors, send a good signal to the market, and help improve company performance.

Third, the resignation of independent directors is based on the consideration of the company's overall risks. Different independent directors have different perceptions of company risks. Independent directors with higher human capital have stronger risk perceptions, and can perceive company trends in a timely manner, and often spend more money. Spend more time and energy to dig out the hidden information of the company, and be able to analyze the information effectively, and the information feedback to the outside world by his resignation behavior is more accurate, which can better explain the authenticity of the company's crisis or performance decline. Therefore, independent directors' human resources play a positive role in regulating the relationship between resignation behavior and company performance.

Based on the above analysis, this article proposes:

Hypothesis 2a: When independent directors have a high level of human capital, independent directors' attendance at meetings can more effectively improve company performance.

Hypothesis 2b: In the case of independent directors with a high level of human capital, independent directors' dissent can more effectively improve company performance.

Hypothesis 2c: In the case of independent directors with a high level of human capital, the resignation of independent directors can more effectively improve company performance.

In this paper, Stata.15 is used for regression analysis, and the coefficients of each variable in the regression model are used to verify the above hypothesis. If the coefficient is significant, the hypothesis is verified; otherwise, the hypothesis is invalid.

5. Research Design

5.1. Sample Selection and Data Sources

This article uses the 2011-2018 A-share listed companies as a sample. After excluding the financial industry, ST or PT, and the sample companies with missing important data, the data of 3036 listed companies are finally determined, and 16, 824 observations are obtained. Among them, the data on the resignation of independent directors comes from the announcements of listed companies, and the data on resignations due to the expiration of six years of tenure is excluded and processed manually. The other data comes from the CSMAR database.

CSMAR database is a widely used database in the research of enterprises in China. It draws on CRSP, Compustat, TAQ, Thomson and other authoritative database professional standards, after 20 years of continuous accumulation and improvement, and combined with China's actual national conditions to develop the economic and financial field of research precision database.

5.2. Model Setting and Variable Description

This paper studies the correlation between the performance of duties of independent directors, human capital and corporate performance, so the regression model is established as follows for analysis. Models (1), (2) and (3) are the basic models, which examine the relationship between the performance of independent directors and corporate performance. Models (4), (5) and (6) include the human capital index of independent directors, aiming to investigate the moderating effect of the human capital of independent directors on the performance of duties and corporate performance.

In order to verify Hypothesis 1, the model constructed in this paper is as follows:

$$\begin{aligned} q_{i,t} &= a_0 + a_1 att_{i,t} + a_2 lev_{i,t} + a_3 sta_{i,t} + a_4 tat_{i,t} + a_5 idr_{i,t} + a_6 size_{i,t} \\ &\quad + a_7 top1_{i,t} + a_8 boa_{i,t} + a_9 dual_{i,t} + a_{10} idd_{i,t} + \varepsilon \end{aligned} \tag{1}$$

$$\begin{aligned} q_{i,t} &= \beta_0 + \beta_1 dlop_{i,t} + \beta_2 lev_{i,t} + \beta_3 sta_{i,t} + \beta_4 tat_{i,t} + \beta_5 idr_{i,t} + \beta_6 size_{i,t} \\ &\quad + \beta_7 top1_{i,t} + \beta_8 boa_{i,t} + \beta_9 dual_{i,t} + \beta_{10} idd_{i,t} + \varepsilon \end{aligned} \tag{2}$$

$$\begin{aligned} q_{i,t} &= \lambda_0 + \lambda_1 res_{i,t} + \lambda_2 lev_{i,t} + \lambda_3 sta_{i,t} + \lambda_4 tat_{i,t} + \lambda_5 idr_{i,t} + \lambda_6 size_{i,t} \\ &\quad + \lambda_7 top1_{i,t} + \lambda_8 boa_{i,t} + \lambda_9 dual_{i,t} + \lambda_{10} idd_{i,t} + \varepsilon \end{aligned} \tag{3}$$

In order to verify Hypothesis 2, the model constructed in this paper is as follows:

$$\begin{aligned} q_{i,t} &= \mu_0 + \mu_1 att_{i,t} + \mu_2 att_{it} * idh_{it} + \mu_3 lev_{i,t} + \mu_4 sta_{i,t} + \mu_5 tat_{i,t} + \mu_6 idr_{i,t} \\ &\quad + \mu_7 size_{i,t} + \mu_8 top1_{i,t} + \mu_9 boa_{i,t} + \mu_{10} dual_{i,t} + \mu_{11} idd_{i,t} + \varepsilon \end{aligned} \tag{4}$$

$$\begin{aligned} q_{i,t} &= \eta_0 + \eta_1 dlop_{i,t} + \eta_2 dlop_{it} * idh_{it} + \eta_3 lev_{i,t} + \eta_4 sta_{i,t} + \eta_5 tat_{i,t} + \eta_6 idr_{i,t} \\ &\quad + \eta_7 size_{i,t} + \eta_8 top1_{i,t} + \eta_9 boa_{i,t} + \eta_{10} dual_{i,t} + \eta_{11} idd_{i,t} + \varepsilon \end{aligned} \tag{5}$$

$$\begin{aligned} q_{i,t} &= \pi_0 + \pi_1 res_{i,t} + \pi_2 res_{it} * idh_{it} + \pi_3 lev_{i,t} + \pi_4 sta_{i,t} + \pi_5 tat_{i,t} + \pi_6 idr_{i,t} \\ &\quad + \pi_7 size_{i,t} + \pi_8 top1_{i,t} + \pi_9 boa_{i,t} + \pi_{10} dual_{i,t} + \pi_{11} idd_{i,t} + \varepsilon \end{aligned} \tag{6}$$

Among them, q is Tobin's Q, *att* is meeting attendance, *dlop* is dissent behavior, *res* is resignation behavior, *idh* is human capital of independent directors, a_0 is intercept term, a_1 - a_{11}, β_1 - β_{11}, λ_1 - λ_{11}, μ_1 - μ_{11}, η_1 - η_{11}, π_1 - π_{11} are regression coefficients of corresponding variables, and ε is random error.

The variables involved in the model are defined as follows:

1) Explained variables

The dependent variable in this paper is corporate performance. Based on the research of Zhou, Wang and Zhang (2018), Tobin's Q is adopted as the measurement index of corporate performance.

2) Explanatory variables

This article mainly measures the performance of duties by independent directors from three aspects. a) Meeting attendance: referring to the research of Quan & Guo (2017), this article uses the attendance of independent directors at board meetings as one of the indicators to measure independent directors' performance of their duties. Among them, attending the meeting is the proportion of attending the meeting in person. The greater the proportion of independent directors attending the meeting, the higher their diligence. b) Dissent behavior: Refer to Li, Jiang and Jiang (2019), this paper selects the dummy variable method, that is, except for agreeing on opinions with a value of 0, all other opinions are assigned with a value of 1. c) Resignation behavior: This paper measures the resignation behavior, using dummy variables, and learning from the research of Tang & Luo (2007), the sample company has independent directors with a resignation value of 1, otherwise it is 0.

3) Regulated variables

The moderator of this article is the human capital of independent directors, which can be measured from the following three aspects: First, the level of education. According to Spence (1973), academic qualifications transmit signals. The academic qualifications of independent directors can be used to measure the ability of independent directors. The higher the academic qualifications, the stronger the human capital. Second, work experience. Only with certain expertise can you ask correct questions and reasonable doubts. Independent directors need to have a certain degree of professionalism, and professional experience can reflect the depth of their involvement in a certain field (Zhou, Luo and Zhang, 2016), so professional experience can reflect the professionalism of independent directors. Third, the tenure time. The basis for independent directors to perform their duties is to grasp the true situation of the company. At this point, independence has caused the independent directors to be unable to obtain sufficient information, and there is a problem of incomplete information. The longer the independent directors serve in the company, the more information they can obtain from the company and the stronger their human capital (Ning & Zhang, 2012).

This article draws on the research of Zhou, Wang and Zhang (2018), and the measurement indicators include: a) Title and working experience. Independent directors with a professor or senior title are assigned a value of 1, otherwise it is 0; those with relevant experience in finance, finance or law are assigned a value of 1, otherwise it is 0. b) Average academic qualifications. Using sample company data, calculate the average academic qualifications of all independent directors. c) Length of office. Process the receipts of the sample companies to obtain the average length of office of independent directors. The above three indicators are standardized and summed to obtain human capital.

4) Control variables

With reference to existing research, this paper selects other variables that affect the empirical results of the model as control variables. The specific definition of each variable is shown in **Table 1**.

5.3. Descriptive Statistics

Table 2 shows the descriptive statistical results. As can be seen from the table: 1) The maximum value of Tobin's Q is 6.593, the minimum value is 0.122, and the coefficient of variation is 0.83, indicating that the Tobin's Q of sample companies are greatly different. 2) The minimum att value is 0, which is 1 under 50% quantile, indicating that the proportion of meeting attendance varies greatly among sample companies, and more than 50% of independent directors attend all meetings in person. 3) dlop is 0 under 75% quantile, indicating that more than 75% of the independent directors of the sample companies have not issued dissenting opinions, with an average of 0.012, indicating that only 1.2% of the independent directors have issued dissenting opinions; 4) The average of res is 0.128, which is 0 in the 75% quantile, indicating that more than 75% of the sample companies have independent directors' resignation, and the proportion of

Table 1. Variable definition.

Variable category	Variable name	Variable symbol	Variable definitions
Explained variables	Tobin's Q	q	Market price of the enterprise/replacement cost of the enterprise
Explanatory variables	Meeting attendance	att	Proportion of attending meetings in person
	Objection	dlop	"Reserved opinion", "Opposing opinion", "No opinion", "Abstention", "Objection" and "Other" opinions are assigned the value of 1, otherwise 0
	Resignation	res	Resignation of independent directors is assigned to 1, otherwise 0
Regulated variables	Independent Director Human Capital	idh	Std (Independent director title or working experience) + std (Average education of independent directors) + std (Average tenure of independent directors)
Control variables	Asset liability ratio	lev	Total liabilities/total assets
	Proportion of state-owned shares	sta	State-owned equity/total equity
	Management capacity	tat	Total asset turnover
	ratio of independent directors	idr	Total number of independent directors/directors
	Company Size	size	The natural log of total assets over 10,000
	ownership concentration	Top1	Equity ratio of the largest shareholder
	Board size	boa	The natural log of the total number of directors
	The joining together of two job	dual	The general manager and the chairman of the board are equal to 0, otherwise 1
	Off-site director	idd	If the board of directors contains remote directors, it is 1, otherwise it is 0

Table 2. Descriptive statistics.

variable	observations	average	standard deviation	minimum	P25	P50	P75	maximum
q	16824	0.666	0.553	0.122	0.263	0.542	0.955	6.593
att	16824	0.977	0.046	0	0.969	1	1	1
dlop	16824	0.012	0.109	0	0	0	0	1
res	16824	0.128	0.334	0	0	0	0	1
Idh	16824	0	1	−3.219	−0.578	0.178	0.712	3.067
lev	16824	0.449	0.302	0.195	0.270	0.438	0.607	13.397
sta	16824	0.037	0.117	0	0	0	0	0.875
tat	16824	0.671	0.588	0	0.347	0.544	0.820	12.373
idr	16824	0.374	0.057	0.182	0.333	0.333	0.429	0.800

Continued

size	16824	12.760	1.258	4.923	11.925	12.623	13.463	19.04
top1	16824	0.347	0.151	0.003	0.228	0.327	0.450	0.900
boa	16824	2.145	0.201	1.099	1.946	2.197	2.197	2.890
dual	16824	0.759	0.428	0	1	1	1	1
idd	16824	0.498	0.500	0	0	0	1	1

independent directors' resignation is 12.8%. 5) The minimum value of IDH is −3.219, and the maximum value is 3.067, which is positive under 50% quantile, indicating that the human capital of independent directors varies greatly among different sample companies.

6. Analysis of Empirical Results

Considering that the performance of independent directors has a lagging effect on the company's performance, this paper adopts a lagging period of explanatory variables for regression. At the same time, for the robustness of the regression results, random effects and fixed effects are used. According to the final regression results, the *P*-value of Hausman's test is 0. In fixed effects and random effects, fixed effects are selected. The following results are the results of fixed effects models.

6.1. Performance Behavior of Independent Directors and Corporate Performance

Table 3 presents the regression results of the performance behavior of independent directors and corporate performance. According to the result of (1) in model (1), the att regression coefficient is 0.065, but not significant. (2) and (3) are also not significant, indicating that meeting attendance is not significantly correlated with corporate performance. Hypothesis 1a has not been verified. This is related to the rigid requirement for independent directors to attend meetings. Independent directors shall not be absent from two meetings in a row or the proportion of absence exceeds one third. Therefore, the attendance of independent directors at meetings may only be to meet the requirements, but it has no significant effect on corporate performance.

The result of (1) in model (2) is that the dlop regression coefficient is 0.61, which is significant at the level of 10%. After adding the control variables, the significance increases to 5%, indicating that independent directors issue different opinions, which can affect the decision-making of the board meeting. Improve the company's transparency, send positive signals to the market, enhance company value, support independent directors' dissent to improve company performance, and verify Hypothesis 1b.

In Model (3) (1), it can be seen that the coefficient of res is 0.13 at the significance level of 5%. In Model (2) and (3), res is significant at the level of 1%, indicating that the resignation of independent directors is significantly positively

Table 3. Performance behavior of independent directors and corporate performance.

variable	model (1)			model (2)			model (3)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
att	0.065	0.044	0.135						
dlop				0.061*	0.073**	0.072**			
res							0.13**	0.129***	0.13***
lev		0.092***	0.103***		0.092***	0.104***		0.096***	0.108***
sta		−0.467***	−0.306***		−0.468***	−0.309***		−0.456***	−0.298***
tat		−0.004	−0.014		−0.002	−0.014		−0.01	−0.005
idr		0.16*	−0.187*		0.162*	−0.185*		0.154*	−0.169
size			0.147***			0.146***			0.15***
top1			−0.859***			−0.859***			−0.832***
boa			−0.254***			−0.255***			−0.237***
dual			−0.01			−0.009			−0.01
idd			−0.019**			−0.019**			−0.021**
constant	0.625***	0.561***	3.338***	0.689***	0.601***	3.461***	0.669***	0.577***	3.427***
Sample size	16824	16824	16824	16824	16824	16824	16824	16824	16824
Adjusted-R^2	0.011	0.034	0.088	0.013	0.058	0.126	0.022	0.085	0.142

Note: *, **, *** mean significant at the level of 10%, 5%, and 1%. The *z* value under the robust standard error of heteroscedasticity is in parentheses.

correlated with corporate performance. Hypothesis 1c has not been verified. There may be the following reasons: 1) From the perspective of managers, the resignation of independent directors will attract the attention of the company's management, adjust the internal structure of the company, improve the internal governance of the company and improve the performance of the company; 2) From the perspective of investors, the resignation announcement of independent directors will cause the change of the stock price of the company, arouse the attention of investors, and then exert pressure on the senior management of the company, forcing the improvement of corporate governance level and promoting the improvement of corporate performance.

6.2. Based on the Moderating Effect of Human Capital of Independent Directors

The regression results in Table 4 are the moderating effects of independent directors' human capital on the relationship between performance behavior and company performance. From the results of column (1) of the model (4), the att regression coefficient is 0.063, which is significant at the 10% level, and the att * idh regression coefficient is 0.032, which is significant at the 1% level. At the same time, in columns (2) and (3), att and att * idh regression coefficients are both significant. Supporting the efficiency of information transmission, independent directors with high human capital participating in board meetings can

Table 4. Moderating effect of human capital of independent directors.

variable	model (4)			model (5)			model (6)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
att	0.063*	0.041**	0.132**						
att * idh	0.032***	0.031***	0.036***						
dlop				0.05	0.063*	0.102**			
dlop * idh				0.112***	0.101***	0.105***			
res							0.13***	0.129***	0.13***
Res * idh							0.001*	0.002**	0.006**
lev		0.092***	0.104***		0.092***	0.103***		0.095***	0.108***
sta		−0.468***	−0.302***		−0.471***	−0.309***		−0.461***	−0.299***
tat		0.001	−0.013		0.001	−0.014		0.01	−0.005
idr		0.159*	−0.183*		0.158*	−0.184*		0.147	−0.173
size			0.15***			0.148***			0.151***
top1			−0.879***			−0.87***			−0.841***
boa			−0.252***			−0.251***			−0.235***
dual			−0.009			−0.009			−0.01
idd			−0.02**			−0.019**			−0.021**
constant	0.629***	0.563***	3.384***	0.689***	0.604***	3.482***	0.67***	0.58***	3.453***
Sample size	16824	16824	16824	16824	16824	16824	16824	16824	16824
Adjusted-R^2	0.021	0.041	0.114	0.033	0.066	0.139	0.035	0.093	0.171

Note: *, **, *** mean significant at the level of 10%, 5%, and 1%. The *z* value under the robust standard error of heteroscedasticity is in parentheses.

effectively receive company information, better perform duties such as supervision and decision-making, and promote the improvement of company performance. Therefore, the human capital of independent directors positively regulates the correlation between meeting attendance and company performance, verifying Hypothesis 2a.

Model (5) column (1) results show that the dlop regression coefficient is 0.05, but it is not significant. In columns (2) and (3), after adding the control variables, the significance is significantly improved, and the significance level of the dlop regression coefficient is 5%. In the model (5), the dlop * idh coefficients are 0.112, 0.101 and 0.105, respectively, and the significance level is 1%. It shows that independent directors with higher human capital can better distinguish the effectiveness of board meeting proposals and express relevant opinions. Therefore, the human capital of independent directors has a positive moderating effect on the relationship between dissent and company performance, verifying Hypothesis 2b.

As can be seen from Model (6), the regression coefficients of res are 0.13, 0.129 and 0.13, respectively, all of which are significant at the level of 1%. With the addition of control variables, the regression coefficient and significance of res * idh are enhanced. In column (3), the regression coefficient of res * idh is

0.006, which is significant at the level of 1%. It shows that the higher human capital of independent directors is, the more attention their resignation will attract from the management and investors, which will promote the company to find and solve problems, improve the internal governance of the company and improve performance. Therefore, the human capital of independent directors positively moderates the relationship between resignation behavior and corporate performance, verifying Hypothesis 2c.

6.3. Robustness Test

6.3.1. The Robustness Test of the Main Variable Measurement Method

This paper mainly studies the performance behavior of independent directors, and the measurement of the main variables may affect the robustness of the empirical results. Referencing the measurement methods of Xiao (2006), Li, Jiang, & Jiang (2019), Zhang & Zeng (2010), etc., this paper re-measures the main explanatory variables. 1) The average number of meetings attended by independent directors of sample companies; 2) Dissenting behavior. Count the number of "reserved opinions", "opposing opinions", "unable to express opinions", "abstaining", "raising objections" and "other" opinions expressed by independent directors; 3) Statistical analysis of the number of resignations of independent directors in the sample companies. According to this, the model regression was re-conducted. The results are shown in **Table 5**. It can be seen that the attendance

Table 5. Robustness test.

variable	meeting attendance		objection		resignation	
att	0.003	0.005***				
att * idh		0.013***				
dlo			0.001*	0.007**		
dlo * idh				0.044***		
res					0.15***	0.15***
res * idh						0.014**
lev	−0.095***	−0.265***	0.103***	0.103***	0.108***	0.107***
sta	−0.323***	−0.36***	−0.309***	−0.309***	−0.297***	−0.298***
tat	−0.027***	−0.018***	−0.014	−0.014	−0.005	−0.005
idr	0.311***	0.297***	−0.185*	−0.185*	−0.167	−0.171
size	0.187***	0.194***	0.146***	0.148***	0.15***	0.152***
top1	−0.226***	−0.198***	−0.861***	−0.869***	−0.833***	−0.842***
boa	−0.045**	−0.028	−0.254***	−0.252***	−0.236***	−0.234***
dual	0.016**	0.001	−0.01	−0.009	−0.009	−0.009
idd	−0.011*	−0.012	−0.019**	−0.019**	−0.02**	−0.02**
Constant	3.132***	3.272***	3.46***	3.484***	3.43***	3.455***
Sample size	16824	16824	16824	16824	16824	16824
Adjusted-R^2	0.242	0.271	0.168	0.193	0.176	0.187

Note: *, **, *** mean significant at the level of 10%, 5%, and 1%. The *z* value under the robust standard error of heteroscedasticity is in parentheses.

of independent directors at meetings has no significant positive correlation with corporate performance, while dissent behavior and resignation behavior have positive correlation with corporate performance. Similarly, the human capital of independent directors has a significant moderating effect on the relationship between meeting attendance, dissent behavior, resignation behavior and corporate performance, which is consistent with the above conclusion, indicating that the research results of this paper are relatively robust.

6.3.2. Endogenous Problems

The research method is also an important factor affecting the regression results. In order to further verify the robustness of the conclusions, learning from the research of Le & Zhang (2018), this paper uses the SYS-GMM estimation method. The regression results are shown in **Table 6**. AR(1) rejects the null hypothesis, AR(2) and Hansen test cannot reject the null hypothesis, so we believe that the SYS-GMM estimation is reliable. At the same time, we can see that there is no substantial change between the regression results of **Table 6** and the above empirical results, so the conclusions of this paper are robust and reliable.

Table 6. GMM regression results.

variable	meeting attendance		objection		resignation	
att	0.176	0.179***				
att * idh		0.039***				
dlo			0.221*	0.299*		
dlo * idh				0.103**		
res					0.169***	0.171***
res * idh						0.603***
lev	0.135**	0.197***	−0.192**	−0.173*	−0.267**	−0.208*
sta	−0.416***	−0.376***	−0.44***	−0.439***	−0.418***	−0.43***
tat	−0.091***	−0.06**	−0.014	−0.013	−0.012	−0.014
idr	0.229	0.307	0.266**	0.267**	0.309**	0.19
size	0.062***	0.054***	0.206***	0.209***	0.187***	0.196***
top1	−0.684***	−0.746***	−0.191***	−0.197***	−0.172***	−0.219***
boa	−0.285***	−0.253***	−0.063*	−0.063*	−0.043	−0.083*
dual	−0.012	0.037	−0.018	−0.02	−0.033**	−0.018
idd	−0.051***	−0.068***	−0.011	−0.012	−0.016	−0.014
Constant	3.783***	3.576***	3.561***	3.592***	3.263***	3.5***
AR(1)	0.000	0.000	0.001	0.002	0.017	0.015
AR(2)	0.294	0.190	0.518	0.492	0.695	0.648
Hansen Test	0.607	0.619	0.110	0.166	0.157	0.170
Number of instrumental variables	23	25	30	31	26	27

Note: *, **, *** mean significant at the level of 10%, 5%, and 1%. The *z* value under the robust standard error of heteroscedasticity is in parentheses.

7. Conclusion and Suggestions

7.1. Research Conclusion

This article uses A-share listed companies from 2011 to 2018 as a sample, and uses independent directors' human capital as a moderator to study the relationship between performance behavior and company performance. Under the premise of controlling the relevant variables, the research conclusions are as follows: 1) The attendance of independent directors at meetings is not significantly related to company performance. Independent directors' dissent and resignation are significantly positively related to company performance; 2) Independent directors' human capital is positive. Xiang adjusted the correlation between attendance at meetings and company performance, making the two become significantly positively correlated; the stronger role of independent directors' resignation of human capital in promoting company performance, the stronger role of resignation in promoting company performance. Make the positive correlation between the two stronger; independent directors' human capital positively regulates the relationship between dissent and company performance.

7.2. Research Recommendations

Based on the above analysis and conclusions, this paper proposes the following countermeasures and suggestions to effectively play the role of independent directors: First, create favorable environmental conditions for independent directors to actively perform their duties. Research shows that the performance of independent directors is manifested in such behaviors as meeting attendance and raising objections to the board's proposals. Therefore, independent directors should be guaranteed the same right to know and vote as other directors, and the working conditions and expenses required for the performance of their duties should be provided. Second, attach importance to and vigorously promote the human capital of independent directors. In the evaluation of corporate performance, the human capital of independent directors is a factor that can't be ignored. Therefore, when evaluating the performance of independent directors, we should not only consider their performance of duties, but also take the human capital of independent directors into consideration. We should attach importance to the recruitment of independent directors and try our best to select independent directors with higher human capital within the scope of the company's cost constraints. In the face of independent directors' dissenting behaviors and resignation demands, the human capital of independent directors should be combined to interpret the signals conveyed by these messages, so as to better improve the internal governance level of the company.

7.3. Research Limitations

This paper has the following deficiencies; first, regarding the resignation data of independent directors, the announcement of the listed company is to clarify the reason for resignation, so only the resignation behavior is considered. The second is the investigation of human capital, this paper can be adopted by the quantitative indicators, but human capital should be many other uncertain factors, at the same time there is a part of self-study ability of independent director, although there is no relevant professional title or experience, but to master relevant knowledge, these aspects may continue to explore in a follow-up study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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