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The Impact of the Supervisory Board Supervision on Firm Performance: Evidence from Chinese Listed Firms[1]

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Abstract: The various types of fraud events occurring in listed firms have led to the continuous questioning of the governance role of the board of supervisors. An ultimate controller who adopts the owner-management mode for a private firm is likely to motivate the board of supervisors to simply act as a "rubber stamp". Based on the background of the current capital market, this study investigates the impact of the owners of private firms on the independence of the board of supervisors. Using data of Chinese listed firms, the empirical results illustrate that there is a significant negative relation between the number of meetings of the board of supervisors and firm performance, indicating that the supervisors of listed firms in China are not only ineffective but also lack independence. Further, when the ultimate controllers' equity concentration is relatively centralised or the ultimate controller adopts the owner-management mode, the negative relation between the number of meetings of the board of supervisors and firm performance becomes more significant. The results demonstrate that the board of supervisors not only pretends to assume the role of supervision but also may collude with the ultimate controller. Compared with a context with more decentralised equity, when the ultimate controller holds more concentrated equity, it seriously damages supervisory board independence and weakens supervision. This weakening is eventually reflected in differences in firm performance. Because the ultimate controller either acts as chairman or another important management position in the listed firm to assume owner management or holds a more concentrated equity, (s)he strengthens control over the whole firm. In this situation, the ultimate controller tends to manipulate the supervisory board to pursue personal interest.

Keywords: Owner management; Ownership concentration; Supervisory board; Independence
JEL Classifications: G30, K20, M14

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1. Introduction

The supervisory board provides procedural supervision, while the independent directors offer decision supervision (Dahya *et al*., 2002; Liu & Du, 2003; Xiao *et al*., 2004; Chen, 2007; Song, 2015). The board of directors is the core of the corporate governance structure. The supervisory board operates in parallel with the board of directors. The remuneration and funds of the supervisors mainly come from the listed firm, which results in supervisors with greater supervision incentives. Independent directors can only obtain travel expenses from the listed firm and are highly restricted by the need to maintain independence. This study aims to investigate the governance role of the board of supervisors in listed firms.

The core management positions of many private listed firms in China are held by the founders or family members, and thus they most often follow the owner-management model. Due to underdeveloped managers' markets and intergenerational inheritance, many firms are reluctant to hire professional managers from the outside (Liu & Du, 2003; Song, 2015). The lack of professional managers means that family ownership and management highly overlap and form the "owner in place" phenomenon. The supervisory board mainly represents the firm by supervising management, resulting in a conflict between the ultimate controller's options and management (Li & Hao, 2006). One issue that requires serious investigation is whether a change in this contradictory relation can lead the ultimate controller to influence the supervisory board's decisions and thus affect its independence; this issue is investigated in this study.

The relation between the ultimate controller and management, apart from supervision, may also encompass collusion (Braendle *et al*., 2005; Lin, 2014). The different behaviour choices by the supervisory board experience different impacts from the ultimate controller in terms of supervisory board independence, and the governance effect of the supervisory board is likely to be affected by the ultimate controller (Li *et al*., 2006; Tang & Li, 2009). The ultimate controller is able to affect the relation between shareholder meetings, the board of directors and the board of supervisors. Therefore, the impact of the ultimate controller and management on supervisory board independence can be clarified by combining the characteristics of ultimate controller ownership and ownership concentration (Liu & Du, 2003; Chen, 2007; Song, 2015). This study examines the relation between the supervision provided by the supervisory board and firm performance and identifies the impact of the ultimate controller on supervisory board independence by examining the characteristics of the ultimate controller in terms of owner management and ownership concentration.

This study finds that there is a significant negative relation between the supervisory board and firm performance, indicating that the independence of supervisory boards for private listed firms in China has been impaired. This study demonstrates that when the ultimate controller is an owner--manager and the ownership concentration is higher, the negative relation between supervisory board supervision and firm performance becomes more significant, indicating that the ultimate controller has an adverse impact on supervisory board independence.

2. Literature Review and Institutional Background

2.1 Literature review

The "one-dollar system" of corporate governance is represented in the United Kingdom, but the United States government does not establish supervisory boards. The corporate governance structures of Germany and Japan adopt a "dual model," but there are still large differences from the

Chinese supervisory board system. Therefore, the international literature addressing supervisory boards offers very limited reference. Most Chinese research is based on a legal and systematic analysis of supervisory board system defects and improvement, or it compares supervisory board systems to independent director systems and explores whether supervisory boards should be abolished. Those studies commonly fail to examine the economic consequences created by the supervisory board in its role as an internal supervisory and governance mechanism.

Regarding the role of the supervisory board, the existing research mainly examines supervisory board effectiveness in terms of accounting information quality, agency cost, internal control, debt restraint, market share reaction and firm performance. According to the criteria of independence and competence, Xiao, *et al*. (2004) find that most supervisory boards play the roles of VIP, friend, advocate, and supervisor. There is only a very small number of corporate supervisory boards that serve as independent supervisors, indicating that the board of supervisors is generally ineffective. Xiao, *et al*. (2004) also investigate the impact of the power arrangement between the board of directors, the board of supervisors and the ownership structure on the role of the board of supervisors. Ownership structure is the logical origin of corporate governance and the main factor affecting the corporate governance structure. The impact of ownership structure must be considered when analysing supervisory board governance.

Hu, *et al*. (2010) document the negative impact of the supervisory board on firm performance due to the influence of ownership concentration. Further, most of the members of the supervisory board are shareholder representatives, and current major shareholders thus affect the role of the board of supervisors. Therefore, this study investigates the governance role of the supervisory board and the impact of the largest shareholders on the board of supervisors.

2.2 Institutional background

On 29 December 1993, company law was enacted, formally establishing the legal status of the supervisory board for firms. The shareholders' meeting, the board of directors and the board of supervisors together form the internal oversight and balance mechanism of listed firms. In 2001, the CSRC enacted the Guiding Opinions on Establishing an Independent Director System in Listed Firms. The guidelines clearly stipulate that at least one-third of the director board members of listed firms should be independent directors, and they formally established the independent director system. The supervisory board and the independent director system together constitute the dual supervision mechanism of listed firms in China. In 2005, a new company law required listed firms to strengthen the supervisory board's responsibilities. Due to the imperfect investor protection system in the Chinese capital market and the relative ownership concentration of listed firms, the interests of minority shareholders are likely to be negatively impacted by the largest shareholders.

The issue of whether the supervisory board system as a supervisory mechanism experiences the same problems is worth discussing. In fact, the supervisory board system is often criticised for acting as a "rubber stamp" on behalf of the largest shareholders and managers. The Chinese market system has recently been established, and its legal system is not perfect. The supervision department has not restrained the supervisory board at the legal level. In many corporate fraud cases, the law only delegates responsibility to the audit committee, executives, the board of directors and accountants, while the supervisory board is often exempt from accountability. The supervisory board is not punished by the corresponding system, and thus it tends towards corruption in the absence of legal restriction. Not is the supervisory board potentially not honest or diligent, but it may even become the servant of specific shareholders. The supervisory board system, similar to the independent director system, experiences poor implementation, and the internal governance mechanism of listed firms is out of balance.

3. Research Hypothesis

3.1 The independence of the supervisory board

The supervisory board of listed firms should provide supervision over business operations to maximise control of operating risks and firm value. However, in China, the members of the supervisory board of many listed firms are actually mainly shareholder supervisors and employee supervisors. Most of the supervisory board members who are not employee supervisors are appointed by the ultimate controller. Supervisors' remuneration and expenses are most often determined by shareholder meetings, boards of directors and managers.

The independence of supervisory boards can easily be influenced by the ultimate controller or manager. In addition, most staff supervisors focus on their own interests and not on company or shareholder interests. When decisions made by the board of directors are beneficial to the supervisory board, the rational choice of employee supervisors may be relinquished, the rights and interests of minority shareholders ignored, or the interests of all shareholders damaged through collusion, so that the supervisory board weakens the supervision of the board of directors and senior management (Li *et al*, 2006; Wang, 2011). Shareholder supervisors also often collude with supervisors in the pursuit of self-interest (Wang & Zhou, 2006).

However, when the board of supervisors obtains sufficient internal information, it inevitably results in the loss of independence, and the supervisory board becomes a complicit participant. Li (2004) demonstrates that the supervisory foundation of the board of supervisors is to understand the actual situation of the firm and to master information obtained first-hand. Considering the form of supervision and the design of incentive mechanisms, supervisory boards in China at present mainly review the formal aspects of the management of listed firms[2] and lack sufficient incentives. Thus, the supervisory ability of supervisors is inherently weak, and they can rarely actually identify firm problems. Supervision becomes a mere formality. Therefore, manipulating the member selection of the supervisory board is a common phenomenon.

The supervisory board, which is often manipulated, may support collusion to dominate or deceive investors such as simply holding more meetings to demonstrate that supervision is in place. Yao and Lu (2010) illustrate that when supervisory board independence is harmed, the supervisory board not only fails to play the proper supervisory role but also becomes a participant in collusion. The supervisory board worsens firm performance. Accordingly, this study proposes the first hypothesis as follows:

Hypothesis 1: The supervision by supervisory board is negatively related to firm performance.

3.2 The impact of the ultimate controller on the governance role of the supervisory board

Compared with external shareholders, the internal ultimate controller has an absolute information advantage. The information asymmetry between controlling and non-controlling shareholders makes it convenient for the ultimate controller to dominate interests. As an owner with

2. Unlike the Chinese setting, the board of supervisors within the corporate governance structure in Germany can not only conduct content and form reviews but also act as the mechanism leading the board of directors. The board of supervisors is required to have a high level of professional skills. Similar to the setting of Chinese supervisory board, the supervisory board of listed firms in Japan can only conduct formal inspections. Japan's government has failed to establish employee supervisors. Members of the supervisory board generally have a higher level of business experience and a higher formal verification ability.

management power or relatively centralised equity, the ultimate controller not only has the ability but also has sufficient motivation to dominate interests. When the relation between the ultimate controller and management becomes an identity or interest alliance, the ultimate controller may neglect the supervisory role of management governance. Due to enhanced control, information asymmetry, and the loss of a governance role resulting from aligning with managers' interests, the controller has both the strong ability and motivation to engage in the pursuit of interests.

To achieve value encroachment, the ultimate controller must avoid regulatory risk by manipulating corporate information. The ultimate controller can also obstruct the supervision of the supervisory board through information manipulation and providing misleading information. The board of supervisors is seriously impaired and eventually becomes the domination tool of the ultimate controller. The board of supervisors makes misleading decisions or issues biased reports, which confuses investors and hides the ultimate controller's predatory behaviour from outside shareholders and regulators.

The board of supervisors cannot maintain independence under this type of interest relation. Their supervision not only fails to reduce agency costs but also increases the cost of the ultimate controller's agency conflict by covering up the ultimate controller's encroachment. Eventually, firm performance will decrease. This study proposes the following hypotheses:

Hypothesis 2: The ownership management model strengthens the negative relation between supervisory board governance and firm performance.

Hypothesis 3: A centralised ownership structure strengthens the negative relation between supervisory board governance and firm performance.

4. Research Design

4.1 Sample selection

This study only selects natural person- or family-held firms and does not include state-owned firms in the sample. This study selects the relevant annual reports from 2007 to 2015 for nine consecutive years as the sample to achieve comparable annual financial data. The relevant data for the supervisory board, the ultimate controller position and control proportion come from the CSMAR database. All other data come from the WIND database.

4.2 Variable definitions

4.2.1 Dependent variable

This study utilises firm performance as the dependent variable. ROA is an important index for measuring the profitability of total assets. ROA reflects the comprehensive utilisation of assets and reflects the profitability of the funds invested by creditors and shareholders. When firms offer initial public offerings, issue new shares or delist, ROE may become the object of corporate manipulation. After all, the CSRC makes a provision for the performance conditions under which listed firms should use ROE as the main evaluation index, as ROE does not necessarily reflect real firm profitability. Compared with other indicators, ROE is generally a very comprehensive performance indicator that reflects the return on capital invested by shareholders and corporate profitability. In conclusion, this study uses both ROA and ROE to measure firm financial performance.

4.2.2 Independent variable

This study utilises supervisory board supervision as the independent variable. The supervisory board meeting is an important context in which the supervisory board performs its supervisory functions. The meeting of the supervisory board is also its main behavioural activity. Further, the meeting of the supervisory board can facilitate the exchange of information between internal and

external supervisors. Through the meeting, the members of the supervisory board are able to discuss the process of supervising management and identify problems and solutions. The independent directors mainly rely on professional knowledge and industry experience to supervise the operations of the firm. The supervisory board mainly bases its formal supervision on the composition of its members and the division of responsibility with independent directors. Considering the above, this study utilises the annual meetings held by the supervisory board to capture the supervisory board's supervisory intensity.

The two characteristics of the ultimate controller, owner management and equity concentration, are the adjusted variables in this study. Owner management refers to whether the ultimate controller holds the position of chairman, vice chairman or general manager in the listed firm. The existing research generally adopts the proportion of shares held by the largest shareholder of a listed firm to measure ownership concentration. The ultimate controller's preferences can be reflected by the largest shareholder of the listed firms. This study mainly examines the impact of the ultimate controller's characteristics on the relation between the supervisory board and firm performance. The ultimate controller can manipulate the supervisory board as the largest shareholder of the listed firm and impact the role of the supervisory board.

4.2.3 Control variable

This study selects variables such as ownership concentration, financial leverage, firm size, ratio of tangible assets and growth as the control variables (Wang & Zhou, 2006; Song, 2015; Li & Li, 2006; Song, 2015; Xiang & Feng, 2008). Table 1 lists the variable definitions for the model used in this study.

Table 1. Variable definition

Variables	Name	Abbreviation	Definition
Dependent variable	Firm Performance	PERF	Method 1：ROA, Net Profit / Total Assets*100%
			Method 2：ROE, Net Profit / Net Assets*100%
Independent Variable	Supervisory Board Supervision	SUP	Number of annual meetings of the supervisory board
Adjusted Variables	Owner Management	OWNER	1 if the ultimate controller in the listed firm is the chairman or general manager, 0 otherwise
	Ownership Concentration	CONC	The shareholding ratio of the largest shareholder * 100%
Control Variables	Ratio of Liabilities to Assets	LEV	Total Liabilities / Total Assets*100%
	Ratio of Tangible Assets	TANG	Fixed Assets / Total Assets*100%
	Ownership Concentration	CONC	The proportion of the first largest shareholder *100%
	Firm Size	SIZE	The natural log of total assets
	Growth	GROW	Year-over-year profit growth of listed firms*100%
	Industry	INDU	Dummy variable, the new CSRC industry classification is utilised for a total of 16 industry sectors excluding the financial industry
	Year	YEAR	Dummy variable, total 9 years

The model employed in this study is as follows:

$$PERF_{it} = \beta_0 + \beta_1 SUP_{it} + \beta_2 OWNER * SUP_{it} + \sum_i \beta_i CONTROL_{it} + \xi_{it} \quad (1)$$

$PERF_{it}$ represents firm performance, which is measured by the two indexes of ROA_{it} and ROE_{it}. ξ_{it} represents the error term, i stands for the company, t stands for the period. The definitions of the other variables are shown in Table 1 above.

5. Empirical Results

5.1 Descriptive statistical analysis

Table 2 presents the descriptive statistical results for the main variables. The average meeting frequency of the board of supervisors is 5.342, which is higher than the minimum supervisory board meeting frequency stipulated by company law. To measure ownership concentration, the share ratio of the ultimate controller averages 34.604% with a standard deviation of 14.320. The mean value of the ultimate controller owner management index is 0.758, indicating that most of the largest shareholders of the private listed firms are directly involved in management and play core management roles. The majority of private firms are family firms. The statistical results show that most family firms are not reluctant to hire external professional managers.

Table 2. Descriptive statistics

Variables	Observations	Mean	Median	S.D.	Minimum	Maximum
ROA	4267	8.390	7.770	8.435	-102.200	123.260
ROE	4267	10.382	10.130	13.729	-83.500	53.310
SUP	4267	5.342	5.000	2.050	1.000	18.000
OWNER	4267	0.750	1.000	0.428	0.000	1.000
CONC	4267	34.604	32.070	14.321	10.000	95.950
LEV	4267	38.443	37.520	21.416	3.110	91.730
GROW	4267	18.907	15.640	91.153	-204.690	237.450
TANG	4267	52.948	52.980	23.429	-2.450	94.590
SIZE	4267	12.001	11.882	1.049	6.974	16.303

Notes: The natural logarithm of SIZE, ROA, FIRST and SIZE are pre-winsorised. The reminding variables are post-winsorised. All variables are as previously defined.

5.2 Multiple regression analysis

This study utilises the OLS regression method to avoid multicollinearity between multiple terms and multiple variables. This study draws lessons from the prior literature. Multiple items and multiple variables are entered into the regression. Then, the model residuals are created, and this study uses the residuals instead of the items. The results of this method are basically the same as the results from centralising the items.

5.2.1 The impact of supervisory board independence and owner management on supervisory board independence

After controlling for the factors influencing firm performance, the regression coefficient for the number of meetings of the supervisory board is still significantly negative at the 1% level, indicating that the board of supervisors has a significant negative impact on the financial performance of listed firms. After adding the interaction between the ultimate controller and the

supervisory board, the regression coefficient t-value is also significantly negative. The regression results in Table 3 support both hypotheses 1 and 2. The conclusions are consistent with Liu and Du (2003) and Chen (2007). The results show that supervisory board independence is harmed, and the board may serve as a tool to mask the ultimate controller or manager acting to obtain private interests. Reducing agency costs ultimately has a negative impact on firm financial performance. The results appear to preliminarily prove that the board of supervisors not only fails to play its supervisory role but also becomes the subordinate of the ultimate controller and a tool used for concealment that harms the firm interests.

Table 3. The impact of supervisory board independence and owner management on supervisory board independence

Variables	ROA		ROE	
	Model 1	**Model 2**	**Model 3**	**Model 4**
SUP	-0.332***	-0.338***	-0.438***	-0.451***
	(-6.98)	(-7.15)	(-4.69)	(-4.85)
CONC		1.093***		2.275***
		(4.69)		(4.37)
OWNER*SUP		-0.279**		-0.542*
		(-2.40)		(-1.89)
CONC	0.080***	0.078***	0.171***	0.166**
	(11.49)	(11.22)	(12.91)	(12.73)
GROW	0.031***	0.031***	0.0647***	0.0645***
	(24.55)	(24.53)	(20.80)	(20.83)
TANG	0.014	0.009	0.0560**	0.0445*
	(1.06)	(0.64)	(2.25)	(1.77)
LEV	-0.082***	-0.084***	-0.0361	-0.0411
	(-5.47)	(-5.58)	(-1.15)	(-1.30)
SIZE	1.030***	1.007***	2.149***	2.103***
	(8.19)	(8.00)	(6.83)	(6.69)
CONS	-4.002*	-4.170**	-23.610***	-23.990***
	(-1.95)	(-2.01)	(-5.38)	(-5.43)
YEAR	Control	Control	Control	Control
IND	Control	Control	Control	Control
F	51.18	50.45	26.34	25.14
Adj-R^2	0.314	0.319	0.275	0.280
N	4267	4267	4267	4267
MEAN VIF	2.13	2.07	2.13	2.07

Note: *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

The cross-multiple item coefficient between the owner-management indicator for the ultimate controller and the number of meetings of the board of supervisors is -0.279, with up to a 5% level of significance. The results seem to suggest that when the ultimate controllers assumes the core management role in a listed firm, the negative relation between the supervisory board and firm performance becomes more significant. The regression results verify hypothesis 1. The owner-management index is a categorical variable used to further examine the impact of the ultimate controller's role on the relation between ownership structure and firm performance. The sample is further divided into an owner management group and a non-owner management group, and a regression analysis is conducted. Table 4 shows the group regression results.

Table 4. The impact of owner management on supervisory board independence (group regression)

Variables	ROA		ROE	
	Model 1	**Model 2**	**Model 3**	**Model 4**
	OWNER=1	OWNER=0	OWNER=1	OWNER=0
SUP	-0.348***	-0.217*	-0.446***	-0.279
	(-6.74)	(-1.94)	(-4.76)	(-1.00)
CONC	0.071***	0.0908***	0.154***	0.185***
	(9.28)	(5.45)	(11.26)	(5.03)
GROW	0.032***	0.0281***	0.0606***	0.0710***
	(21.40)	(12.85)	(17.74)	(11.83)
TANG	0.043***	-0.0680**	0.0998***	-0.0651
	(2.93)	(-2.29)	(3.98)	(-1.06)
LEV	-0.053***	-0.152***	0.0328	-0.198***
	(-3.25)	(-4.79)	(0.97)	(-2.83)
SIZE	0.901***	1.194***	1.736***	2.967***
	(6.14)	(4.60)	(5.16)	(4.00)
CONS	-4.508*	-0.989	-22.320***	-23.820**
	(-1.92)	(-0.22)	(-4.83)	(-2.27)
YEAR	Control	Control	Control	Control
IND	Control	Control	Control	Control
F	41.38	18.55	23.09	12.86
Adj-R^2	0.311	0.312	0.274	0.284
N	3236	1031	3236	1031
MEAN VIF	2.15	2.43	2.15	2.43

Note: *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

For the owner management group sample, the regression coefficient of the number of supervisory board meetings is -0.348, which is significant at the 1% level. However, for the non-owner management group sample, the regression coefficient of the number of supervisory board meetings is -0.217, and this result is only at a 10% significance level. The absolute value and significance level of the independent variables for the owner management group are significantly higher than those for the non-owner management group. The results seem to suggest that an ultimate controller engaged in owner management in listed firms can strengthen the negative relation between the supervisory board and firm performance. The results verify hypothesis 2.

An ultimate controller engaged in owner management in listed firms has an absolute information advantage compared with external shareholders. At the same time, the combination of ownership and management strengthens the ultimate controller's control over the firm. Eventually, the ultimate controller tends to dominate the other shareholders' interests. Within such a context, the largest shareholders control shareholder meetings, the board of directors and the board of supervisors for listed firms. The loss of supervisory board independence means that the board evolves to become a tool to conceal the ultimate controller's encroaching behaviour. Ultimately, the negative impact of supervisory board supervision on firm performance becomes more serious. An ultimate controller engaged in owner management for listed firms can strengthen the negative relation between supervisory board supervision and firm performance.

5.2.2 The impact of supervisory board independence and ownership concentration on supervisory board independence

Table 5 shows that the regression coefficient of the cross-multiple items between the shareholding percentage of the largest shareholder and the number of supervisory board meetings is

-0.020 and significant at the 1% level. The result seems to suggest that compared with decentralised ownership, centralised ownership by the largest shareholders can strengthen the negative relation between supervisory board supervision and firm performance. Hypothesis 3 is supported. When equity is dispersed, there are checks and balances for firm equity, and the main agency problem exists between shareholders and management. To reduce agency costs, the ultimate controller chooses to supervise managers. Principal-agent theory is the cornerstone of the supervisory board system.

Table 5. The impact of supervisory board independence and the impact of ownership concentration on supervisory board independence

Variables	ROA		ROE	
	Model 1	Model 2		Model 1
SUP	-0.332***	-0.328***	-0.438***	-0.431***
	(-6.98)	(-6.84)	(-4.69)	(-4.55)
CONC	0.080***	0.080***	0.171***	0.172***
	(11.49)	(11.81)	(12.91)	(13.40)
CONC* SUP		-0.020***		-0.0466***
		(-5.37)		(-6.63)
GROW	0.031***	0.031***	0.0647***	0.0645***
	(24.55)	(24.59)	(20.80)	(20.86)
TANG	0.014	0.015	0.0560**	0.0564**
	(1.06)	(1.08)	(2.25)	(2.27)
LEV	-0.082***	-0.083***	-0.0361	-0.0390
	(-5.47)	(-5.58)	(-1.15)	(-1.24)
SIZE	1.030***	1.051***	2.149***	2.197***
	(8.19)	(8.43)	(6.83)	(7.00)
CONS	-4.002*	-4.404**	-23.610***	-24.540***
	(-1.95)	(-2.16)	(-5.38)	(-5.61)
YEAR	Control	Control	Control	Control
IND	Control	Control	Control	Control
F	51.18	51.77	26.34	26.61
Adj-R^2	0.314	0.321	0.275	0.285
N	4267	4267	4267	4267
MEAN VIF	2.13	2.10	2.13	2.10

Note: *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

The supervisory board supervises managers on behalf of shareholders. Under the influence of the ultimate controller, the board of supervisors can play a role in weakening the negative relation between supervisory board supervision and firm performance. With an increase of the shareholding ratio, the agency problem between shareholders and management gradually evolves to become the agency problem of shareholders. The ownership concentration strengthens the motivation of the ultimate controller to dominate interests. A supervisory board controlled by the ultimate controller cannot effectively perform its supervisory role. The ownership concentration strengthens the negative relation between supervision by the supervisory board and firm performance.

5.3 Robustness test

To ensure the robustness of the results, this study uses the ratio of control held by the ultimate controller to measure the ownership concentration and verify hypothesis 2. Based on the various regression results, the conclusions of this study are not substantially affected by the existence of substitution variables, indicating that they are robust.

6. Conclusions

For the operating mechanism of the supervisory board, funding sources and information sources, the ultimate controller and manager are most likely to weaken effectiveness when the ultimate controller holds owner-management status and a high equity concentration. The ultimate controller and managers are both supervisors and the supervised and conspire to encroach upon other shareholders' interests. The relation depends mainly on the ultimate controller. From the perspective of the ultimate controller, this study investigates supervisory board independence to clarify the ultimate controller's and management intervention in the supervisory board. This study takes supervisory board independence as the research aim and uses data for private listed firms in Shenzhen and Shanghai from 2007 to 2015. Given a background of frequent fraud, this study examines the impact of the two characteristics, the ultimate controller's position and ownership concentration, on the relation between the supervisory board and firm performance.

The empirical results indicate that (1) The lack of supervisory board independence is reflected in the significant negative relation between the number of supervisory board meetings for private listed firms and firm performance. The results suggest that the supervisory boards of private listed firms fail to maintain independence and engage in supervision. The ultimate controller and managers easily interfere in the personnel arrangements, fund sources and information supervision of the supervisory board.

(2) An ultimate controller who is an owner-manager in the listed firm has a significant impact on the supervision of the supervisory board and firm performance. When the ultimate controller engages in owner management of the listed firm, the negative relation between the number of supervisory board meetings and firm performance is stronger. The ownership concentration significantly affects the relation between the supervisory board and firm performance. When the ultimate controller holds a higher proportion of shares, the negative relation between the number of supervisory board meetings and firm performance is stronger. The results suggest that unlike non-owner managed firms, the ultimate controller engages in owner management in the listed firm, which can seriously weaken the supervisory board's independence and supervision. This weakened relation is ultimately reflected in differences in firm performance.

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