

The Board Faultlines and Corporate Disclosure Quality: Based on Big Data Samples and Economic Model

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Abstract. This article uses the selected data listed companies in Shenzhen Stock Exchange from 2008 to 2018 as big data samples to empirically study the impact of the board faultlines on corporate disclosure quality. Through statistical analysis and economic model, it transforms qualitative questions into quantitative questions. The results of the study show that the existence of the board faultlines will reduce the quality of information disclosure of listed companies. After a series of robustness tests, the above research findings are still robust.

1 Introduction

Since Fama put forward the hypothesis that capital market information is effective, corporate disclosure quality has been focused on by the academic community. Chinese scholars mainly conduct research from the perspective of corporate governance. It is generally believed that the shortcomings in the governance of listed companies in China are the main source of information distortion, resulting in a worrying situation in the quality of information disclosure of listed companies. At present, scholars mainly study the diversity of board members from different characteristics of board members such as gender, age, education level, and professional background, hoping to improve corporate disclosure quality through the improvement of board characteristics. Although these studies have made certain progress and results, different director characteristics have different effects on the quality of company information disclosure, and the mechanism of action of the same characteristic dimensions is also different. Liang Shangkun (2020) believes that this may be due to ignoring the mutual influence between different characteristic dimensions and its overall effect on the quality of company information disclosure. In 1998 Lau and Murnighan^[1] pioneered the theory of "Team Faultlines". Tuggle et al. (2010)^[2] first applied the theory of "Team Faultlines" to the context of the board of directors. The team faultlines theory can measure the impact of multiple characteristics within the board as a whole. With the diversification of the characteristics of board members, the board will be classified and aggregated according to one or more similar characteristics to form sub-groups. However, different sub-groups will cause conflicts and contradictions within the board of directors, thereby reducing the overall governance effect of the board of directors. Based on this, this article will introduce the theory of "Team Faultlines", according to the logic that the internal structural

characteristics of the board of directors affect its governance effectiveness, and on the basis of comprehensively measuring the multiple characteristics of board members, it will study how the board faultlines affects corporate disclosure quality, thus showing a certain theoretical and practical significance.

The research in this article has the following significance: First, it advances the research on the effectiveness of the board of directors. Throughout the previous literature, most scholars have explored the influence of directors' characteristics on their behavior based on a certain characteristic or at a partial level. However, this article introduces the theory of "Team Faultlines" to explore corporate disclosure quality. At the same time, it provides a certain degree of support for studying the governance effectiveness of board of directors. Second, it has enriched the research content of the board faultlines. Existing literature has explored the impact of the board faultlines on company performance, corporate value, corporate risk level, etc., but few scholars discuss the impact of the board faultlines on corporate disclosure quality. Third, the factors affecting corporate disclosure quality have been expanded. Looking back on the previous literature, most of the researches are about the impact of a certain aspect of the board of directors or a small number of characteristics on corporate disclosure quality, ignoring the interaction and checks and balances between different characteristics, which makes the research results lack of integrity. However, this article is based on the theory of "Team Faultlines" and expanded from the perspective of board diversity.

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2 Materials and Methods

2.1. Theoretical Analysis and Research Hypotheses

Liang Shangkun (2020) believes that if the board faultlines of directors is strong, the board of directors will relax the effectiveness of supervision over the management, which is mainly divided into supervision willingness and supervision ability. On the one hand, from the social identity theory, people usually attribute themselves to a certain subgroup based on demographic characteristics, and positively evaluate the subgroups they belong to, but give negative evaluations to other subgroups. This disagreement in recognition will also accelerate the division of the board, increase relationship conflicts and conflicts, and undermine the unity of the team as a whole. Li and Hambrick (2005)^[3] found that the team faultlines leads to a decrease in directors' willingness to monitor. On the other hand, the existence of faultlines will reduce the communication between members of different subgroups, and the flow and dissemination of private information will be hindered. Lim et al. (2013) believe that fault zones will hinder knowledge sharing and information exchange between groups. When it is difficult to smoothly transmit private information within the company, the quality of the information will be drastically reduced, and the transparency within the company will also be greatly reduced. When the board of directors cannot effectively supervise the management, it will form an information asymmetry between the board of directors and the managers, intensify the agency problems between the owners and managers, and increase the agency cost. When managers have more opportunities and space to create self-interest, they will manipulate information by hiding negative news and so on, thereby reducing the quality of information disclosure of listed companies. Based on the above analysis, this article proposes the following hypotheses:

H: The stronger the board faultlines, the lower corporate disclosure quality.

2.2. Sample Selection

This article selects the Shenzhen Stock Exchange listed companies from 2008 to 2018 as the research object, and screens the sample data as follows: 1) eliminate financial companies; 2) eliminate ST and *ST companies; 3) eliminate companies with missing or abnormal data. In addition, in order to reduce the adverse effects of extreme values on the results of the study, this paper will carry out the tailing treatment of all continuous variables at 1% and 99%. After the above screening and processing, 6421 research samples were finally obtained. The data related to corporate disclosure quality in this article comes from the official websites of the Shenzhen Stock Exchange. The rest of the data is taken from China Stock Market & Accounting Research Database (CSMAR).

2.3. Model Setting and Description of Variables

In order to test the influence of the board faultlines on corporate disclosure quality, this paper constructs the following multiple regression model:

$$CDQ_{it} = \alpha_0 + \alpha_1 IndepVar_{it} + \sum Control_{it} + \sum IND_{it} + \sum YEAR_{it} + \varepsilon_{it}$$

Among them, CDQ is the explained variable; IndepVar is the explanatory variable; Control is a series of control variables. The explanatory variable in this article is board faultlines, and the calculation process is mainly as follows: The first step is to select director characteristics. Drawing on the research methods of Van Peteghem et al. (2018)^[4], the characteristics of the directors selected in this article are as follows: independent directors, internal directors, financial experience, gender, part-time job, whether they are about to retire, tenure, and shareholding. The second step is cluster analysis. First, the optimal number of groups in this paper is obtained by the hierarchical clustering method as 3 groups; then the K-means clustering method is used to iterate repeatedly based on the optimal number of groups until each initial cluster is divided into three specific groups (Mac Queen, 1967)^[5]. The third step is to calculate indicators. The following is the calculation formula:

$$Fstrength_g = \frac{\sum_{j=1}^p \sum_{k=1}^g n_k^g (\bar{x}_{jk} - \bar{x}_j)^2}{\sum_{j=1}^p \sum_{k=1}^g \sum_{i=1}^{n_k^g} (\bar{x}_{ijk} - \bar{x}_j)^2}$$

$g=1, 2, 3, \dots s$

Among them, n_k^g represents the number of members of subgroup k in the g-th classification method, \bar{x}_j represents the average value of all members on feature j, \bar{x}_{jk} represents the average value of all members of subgroup k on feature j, \bar{x}_{ijk} represents the value of the i-th member of subgroup k on feature j. The value range of Fstrength is (0,1). The larger the value, the stronger the team faultlines and the higher the degree of similarity within the sub-team, and vice versa.

$$Fdistance_e = \sqrt{\sum_{j=1}^p (\bar{x}_{j1} - \bar{x}_{j2})^2}$$

Among them, \bar{x}_{j1} represents the average value of members in subgroup 1 on feature j, \bar{x}_{j2} represents the average value of members in subgroup 2 on feature j. The greater the value, the greater the distance between the team faultlines and the greater the difference between different sub-teams.

The specific definitions of the main variables in the model are shown in Table 1.

Table 1. Definitions of variables.

	Variable	Abbreviation	Significance and Explanation	
Explained Variable	Corporate Disclosure Quality of Listed Companies	CDQ	Disclosure quality ratings from Shenzhen Stock Exchange. Number 4, 3, 2, and 1 were used to represent four quality levels of “A”, “B”, “C” and “D”.	
	Explanatory Variable	The Strength of Board Faultlines	Fstrength	The ratio of the sum of squares of variance between different subgroups to the overall sum of squares of variance.
		The Distance of Board Faultlines	Fdistance	Euclidean distance between different subgroups
The Cross-Multiplication Term of Board Faultlines		Fau	The intersection of board faultlines’ strength and distance	
Control Variables	Tobin Q	Tq	The ratio of the company's market value to total assets.	
	Independence of the Board	DIRIND	The ratio of independent Board Members in the Board.	
	Selection of Accounting Firms	BIG4	If it is among the “Big Four” accounting firms, let this variable have the value 1, otherwise 0.	
	Company Size	SIZE	The natural logarithm of the company's market value at the end of year t.	
	Return on Assets	ROA	The net profit divided by the average value of total assets at the beginning and the end of the year t.	
	Financial Leverage	LEV	Debt-to-asset ratio of the company at the end of year t.	
	Shareholding Ratio of the Largest Shareholder	CONSHARE	The number of shares held by the largest shareholder divided by the total number of shares of the company	
	Director shareholding ratio	BS	Number of shares held by directors divided by total number of shares	
	Industry Dummy Variable	IND	The industry classification standard issued by the China Securities Regulatory Commission in 2012.	
	Year Dummy Variable	YEAR	A dummy variable ranging from 2008 to 2018.	

3. Results & Discussion

3.1. Empirical Results and Analysis

The regression results of the relationship between the board faultlines and corporate disclosure quality of listed companies are shown in Table 4. This regression controls the industry effect (IND) and year effect (YEAR), and also reports the t value, thereby improving the robustness of the regression results in this paper. Among them, columns (1), (3), (5) are the regression results before adding the control variables, and columns (2), (4), (6) are the regression results after adding the control variables. According to the regression results of these six columns, no matter whether

the control variable is added or not, Fstrength and Fau are significantly negatively correlated at the 1% level; and Fdistance is a significant negative correlation at the 5% level. This indicates that the stronger the strength of board faultlines of a listed company and the greater the distance of board faultlines, the internal division of the board will occur due to the existence of the faultlines. At the same time, the board’s supervisory ability will be reduced, thereby relaxing the supervision of the management. It creates opportunities and space for opportunistic behavior, which ultimately leads to a decline in the quality of information disclosure of listed companies. This result is consistent with the research hypothesis of this article. The regression results of the control variables are basically consistent with existing studies.

Figure 1. Regression results of the board faultlines and corporate disclosure quality.

Variable	CDQ		CDQ		CDQ	
	(1)	(2)	(3)	(4)	(5)	(6)
Fstrength	-0.705*** (-4.875)	-0.385*** (-2.803)				
Fdistance			-0.172**	-0.157**		

			(-2.056)	(-2.047)		
Fau					-0.491*** (-4.718)	-0.283*** (-2.889)
Control	NO	YES	NO	YES	NO	YES
IND	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES
Constant	2.661***	-0.724***	2.761***	-0.621***	2.646***	-0.734***
Term	(40.679)	(-3.488)	(23.248)	(-2.750)	(40.940)	(-3.548)
adj.R ²	0.038	0.222	0.035	0.221	0.038	0.226
F Value	10.390***	50.750***	9.640***	50.610***	10.340***	50.770***
N	6421	6421	6421	6421	6421	6421

Note: ***, ** and * denote a significant correlation at levels of 1%, 5% and 10% respectively.

3.2. Robustness Test

In order to increase the stability of the regression results, this article divides the disclosure quality ratings from Shenzhen Stock Exchange into two categories, one is excellent and good, with a value of 1, and the other is qualified and unqualified, with a value of 0. The explained variable is renamed as DISQ, and the rest of the variables remain unchanged. Logistic regression model is used, which is as follows:

$$DISQ_{it} = \beta_0 + \beta_1 IndepVar_{it} + \sum Control_{it} + \sum Industry_{it} + \sum Year_{it} + \varepsilon_{it}$$

Figure 2. Regression results of the board faultlines and corporate disclosure quality.

Variable	DISQ		DISQ		DISQ	
	(1)	(2)	(3)	(4)	(5)	(6)
Fstrength	-2.368*** (-4.363)	-1.719*** (-2.671)				
Fdistance			-0.829** (-2.479)	-1.098*** (-2.989)		
Fau					-1.710*** (-4.376)	-1.359*** (-2.983)
Control	NO	YES	NO	YES	NO	YES
IND	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES
Constant	0.639***	-7.153***	1.279***	-6.236***	0.602***	-7.174***
Term	(2.783)	(-6.536)	(2.782)	(-5.324)	(2.656)	(-6.571)
adj.R ²	0.026	0.129	0.024	0.129	0.026	0.129
Chi-Square	156.56***	723.56***	144.44***	725.49***	156.68***	725.26***
N	6355	6355	6355	6355	6355	6355

Note: ***, ** and * denote a significant correlation at levels of 1%, 5% and 10% respectively.

4 Conclusions

This article takes the Shenzhen stock market listed companies from 2008 to 2018 as a sample to empirically test the impact of the board faultlines on corporate disclosure quality. The results of the study show that the existence of the board faultlines will reduce the quality of

information disclosure of listed companies. The research results of this paper deepen the related research in the two areas of the board faultlines and corporate disclosure quality. It has practical significance under the background that corporate disclosure quality is generally low. At the same time, it can improve the governance structure of the board of directors of listed companies to a certain extent.

It provides a certain reference for the company's subsequent recruitment of board members, and also helps companies optimize the construction of the board according to their own characteristics.

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