Study on the Influence of Board Characteristics on Financial Performance of Listed Logistics Companies Based on Panel Data

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Abstract

In order to study the impact of board characteristics on financial performance of listed companies, take listed companies in logistics as research samples, establish panel model and use Eviews 8.0 software to empirically study the impact of board characteristics on financial performance of listed companies in logistics from 2007 to 2016. The research results show that the proportion of independent directors in the board of directors is significantly and positively correlated with the financial performance of listed logistics companies. The proportion of female directors and the concurrent position of the chairman of the board as the general manager are negatively related to the financial performance of listed logistics companies. The size of the board of directors, the number of meetings of the board of directors, the age of the board of directors and the establishment of the four major committees have no significant relationship with the financial performance of the listed logistics companies. Therefore, logistics listed companies should strengthen the leadership of the board of directors to improve their financial performance.

Keywords

Board characteristics; Logistics listed companies; Financial performance; Panel model.

1. Introduction

In the modern corporate governance structure,the board of directors is the core of corporate governance,and its operating efficiency and related functions play a direct impact on the financial performance of enterprises and the interests of the majority of shareholders. The financial performance reflects to a certain extent the level of profitability of the enterprise and the perfection of the corporate governance structure. And all stakeholders can understand the stability and sustainability of the development of the enterprise according to the financial performance. The results of theoretical and empirical research show that the board of directors plays an inestimable role in corporate governance,and its characteristic structure has a great influence on the improvement of corporate financial performance. However, the structure of the board of directors of most listed companies in China is not perfect due to the late start of corporate governance,and the board of directors has many problems such as unreasonable staffing and low efficiency,which cannot give full play to its due role. Therefore,the important premise to improve the company's financial performance is to continuously improve the structure of the company's board of directors.

In the existing research,scholars have studied the relationship between the characteristics of the board of directors and the financial performance of listed companies from different angles and different indicators. The research results have certain reference significance. But different samples, different research methods and indicators will lead to differences in research conclusions. At present,few scholars at home and abroad take logistics listed companies as samples for research,the selection of independent variables in the existing research is not comprehensive,and the panel model has not been used to analyze the relationship between the two. Therefore,this paper collects relevant data of listed companies in China's logistics industry from 2007 to 2016,establishes a panel model to research the influence of board characteristics on financial performance of listed logistics companies.And finally achieve the goal of improving the governance of the board of directors of listed logistics companies and improve their financial performance.

2. Theoretical Analysis and Research Assumptions

The research conclusions of scholars have their own merits. Yelm ask (1996) pointed out that the larger the board of directors of listed companies, the lower their Tobin Q. Liu Yang and Zhao Wei (2013) measured the board size by the number of board members, measured the company's financial performance by earnings per share studied the relationship between the board size of listed companies and the company's performance by regression analysis. The results showed that the board size did not affect the company's earnings per share. Based on the above logic, when the board of directors is large in size, the efficiency of information communication among its members is low, the cost is high, the effect is poor, and the coordination among its members is difficult. Therefore, hypothesis 1 is proposed:

H1: The size of the board of directors has a negative impact on the company's financial performance.

Bah agate and black (1999) found that the proportion of independent directors on the board had no influence on the financial performance of the company. After studying the relationship between the two, Chinese scholars Qu Liang (2014) also believed that the proportion of independent directors has no significant impact on the long-term financial performance of the enterprise. However, Wang zhengwei and Lu Jibe (2013) pointed out that independent directors play an important role in improving the company's financial performance. This article believes that as directors who do not hold positions in the company, independent directors do not have important contact with various leaders and shareholders. They can maintain an independent attitude and provide accurate guidance and suggestions when judging the company's affairs. Therefore, hypothesis 2 is proposed:

H2: The proportion of independent directors has a positive correlation with the company's performance.

Zheng Shania, Jiang Hongqiao and Wang Jian Jun (2010) analyzed the influence of the number of board meetings on the financial performance of manufacturing enterprises and believed that the board meetings had obvious positive influence on the company's performance. However, Shen Qin (2016) pointed out that the number of board meetings of aviation manufacturing enterprises was negatively related to the early stage of the company's performance and positively related to the latter stage. According to the theory of corporate governance, directors perform their duties by participating in the board of directors and provide scientific and reasonable suggestions to the company. Therefore, whether board members actively participate in corporate governance and perform corresponding duties can be measured by the number of board meetings they attend. Therefore, hypothesis 3 is proposed:

H3: The number of board meetings has a positive impact on the company's financial performance.

Zhang Kun and Yang Dan (2013) believed that the economic decision-making of female directors of listed companies can have a positive impact on the company's financial performance. According to behavioral economics theory, people are not rational in making economic decisions especially women, most of them adopt relatively conservative and stable strategies. Although they reduce the potential risks in the business process, they will also miss many development opportunities and thus affect the improvement of financial performance. At the same time, women are easily interfered by emotional factors, which leads to their subjectivity and poor accuracy in analyzing problems. Therefore, hypothesis 4 is proposed

H4: Among the directors, the more women directors, the worse the company's performance.

Younger directors are more adventurous and more willing to try innovation and change. However, the older directors are more willing to stick to the rules even though they have more abundant ability to deal with sudden emergencies in the company. As a rising industry, logistics needs continuous breakthroughs and innovations, and urgently needs to inject young strength in order to improve the financial performance of enterprises. Therefore, hypothesis 5 is proposed:

H5: The age of directors is negatively related to the company's financial performance.

Goal and park (2002) pointed out that the board of directors concurrently serves as CEO resulting in weak supervision of the CEO and poor financial performance of the company. Based on this, when a director is concurrently the CEO, it will weaken the monitoring of the board of directors, reducing the scientificalness of the company's decision-making and affect the improvement of financial performance. Here, hypothesis 6 is proposed:

H6: General Manager as chairman of the board of directors can reduce the company's financial performance.

The four committees set up by the board of directors can better cooperate with the company's top management, improve the company's governance structure and financial performance. Therefore, hypothesis 7 is proposed:

H7: Setting up four committees can improve the company's financial performance.

3. Research and Design

3.1 Sample Selection and Data Source

The logistics industry belongs to the “transportation,warehousing and postal industries”. In order to make the research results more accurate, ST and PT listed companies,missing data and abnormal listed companies are excluded, and companies with negative net profit and short time to market are excluded. Finally, 64 logistics service companies are selected as research samples. The relevant data of the study samples are all from Guotai junan database (www.gta rsc.com) and Juchao information network (www.cn info.com.cn).

3.2 Model Construction and Variable Definition

This paper uses the ratio of independent directors, the ratio of chairman to general manager, the size of the board of directors,the number of board meetings, the ratio of female directors, the age of directors, and the establishment of the four major committees as explanatory variables, uses the asset size, asset-liability ratiom and equity concentration as control variables, the rate of return on net assets as explanatory variables to empirically analyze the extent to the characteristics of the board of directors affect the financial performance of listed companies in the logistics industry. Therefore, the following model was established:

$$\begin{aligned} ROE_{it} = {} & \beta_{0it} + \beta_{1it}BI_{it} + \beta_{2it}BC_{it} + \beta_{3it}BS_{it} + \beta_{4it}BM_{it} + \beta_{5it}BF_{it} \\ & + \beta_{6it}BA_{it} + \beta_{7it}CO_{it} + \beta_{8it}AS_{it} + \beta_{9it}Leo_{it} + \beta_{10it}CR_{it} + \varepsilon_t \end{aligned} \tag{1}$$

In formula (1), β_{1it}, β_{2it}, β_{3it}, β_{4it}, β_{5it}, β_{6it}, β_{7it}, β_{8it}, β_{9it} and β_{10it} are all non-random variables, that is,under the condition that other variables remain unchanged,the proportion of independent directors,the situation where the chairman concurrently holds the position of general manager,the size of the board of directors, the number of board meetings,the proportion of female directors,the age of directors,the establishment of the four major committees,the scale of assets,the asset-liability ratio,and the concentration ratio of equity will change by one unit respectively, which will cause the coefficient of financial performance changes of listed logistics companies. T is the serial number of the period,t = 1, 2, ..., 10; β_0 is intercept terms, β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, β_9 and β_{10} are all parameters to be estimated; ε_t is the error term.

Table 1. Description of variable definition

Variable type	Variable	Calculation method
Interpreted variable	Net assets yield (ROE)	Ratio of profit after tax to net assets
Explanatory variable	Proportion of independent directors (BI)	Ratio of independent directors to total number of directors
	Situation where the chairman concurrently holds the post of general manager (BC)	When the chairman of the board of directors and the general manager are the same person, the value is 1; otherwise, it is 2
	Board size (BS)	Number of board members
	Number of board meetings (BM)	Number of board meetings held within one year
	Proportion of female directors (BF)	Ratio of female directors to directors
	Age of directors (BA)	Average age of directors
	Establishment of four major committees (CO)	The value of setting up the four major committees is 1, otherwise, it is 0
Control variable	Asset size (AS)	Natural logarithm of total assets at the end of year
	Asset-liability ratio (Lev)	Ratio of total year-end debt to total year-end assets
	Equity concentration ratio (CR)	The largest shareholder shareholding ratio

4. Empirical Analysis

4.1 Descriptive Statistics

Descriptive statistical results of variables are shown in table 3. According to table 3, we can see that the average return on net assets of listed companies in China's logistics industry is only 0.05, which shows that their overall profitability is relatively low and the possibility of operating through debt is relatively high thus their asset-liability ratio is relatively high. There may be a phenomenon that the largest shareholder holds more than 50 % of the shares which indicates that the stock rights of listed companies in logistics are relatively concentrated and there is a phenomenon that the largest shareholder infringes on the interests of small shareholders. As for the size of the board of directors the average number of the board of directors of the company is 9, and the proportion of independent directors has reached more than one third, which basically conforms to the principles of corporate governance in our country. The average number of meetings of the board of directors was 8.71, which basically reached the general intensity. The proportion of female directors in listed companies in the logistics industry is generally very low, with an average of only 0.2, this shows that the company lacks sufficient understanding of female directors' participation in corporate governance.

4.2 Stability Test

Before carrying out regression analysis, in order to test the stability of the data, the unit root test should be carried out on the data. According to table 2, the sequence passed the confidence level of 0.1, which was a second-order stationary sequence, indicating that the data was stable.

Table 2. Unit root test

	Statistic	Prob
Levin,Lin & Chu t*	-334.208	0.0000
Im,Pesaran and Shin W-stat	-37.4604	0.0000
ADF-Fisher Chi-square	1665.96	0.0000
PP-Fisher Chi-square	1836.19	0.0000

Table 3. Descriptive statistics

Index	Observed value	Maximum value	Minimum value	Average value	Standard deviation
Net assets yield	640	8.5	-6.4	0.05	0.37
Asset size	640	224128604000	47125915.55	20178899338.57	23361021057.57
Asset-liability ratio	640	9.317112314	0.04	0.47	0.41
Equity concentration ratio	640	79.47	3.64	43.10	11.56
Board size	640	15	5	9	1.58
Number of board meetings	640	57	0	8.71	3.18
Proportion of female directors	640	0.4	0	0.2	0.11
Age of directors	640	91	24	48.86	7.85
Proportion of independent directors	640	0.57	0.13	0.36	0.04
Situation where the chairman concurrently holds the post of general manager	640	2	1	1.89	0.29
Establishment of four major committees	640	4	0	3.46	0.65

4.3 Regression Analysis

Enter the data into Reviews 8.0 software. After analysis, the following results (as shown in table 4) and related conclusions can be obtained.

Table 4 Regression results

Variable	Coefficient	Std.Error	t-Statistic	Prob.
β_0	1.210775	0.545875	2.218042**	0.0270
β_1	1.763674	0.566833	3.111452***	0.0020
β_2	-0.397905	0.094420	-4.214200***	0.0000
β_3	-0.010099	0.016063	-0.628686	0.5298
β_4	-0.000261	0.005670	-0.046077	0.9633
β_5	-0.897329	0.366621	-2.447563***	0.0147
β_6	0.003895	0.003535	1.101857	0.2710
β_7	0.026407	0.039453	0.669329	0.5036
β_8	-0.023545	0.022919	-1.027319	0.3047
β_9	-0.404188	0.038391	-10.52817***	0.0000
β_{10}	-0.007604	0.002353	-3.232395***	0.0013

Effects Specification			
Cross-section fixed(dummy variables)			
R-squared	0.299996	Mean dependent var	0.066564
Adjusted R-squared	0.208802	S.D. dependent var	0.584991
S.E.of regression	0.520345	Schwarz critertion	1.640655
Sum squared resid	147.5637	Akaike info criterion	2.157009
Log likelihood	-434.1421	Hannan-Quinn criter	1.841409
F-statistic	3.289669	Durbin-Watson stat	1.386085
Prob(F-statistic)	0.000000		

Note: * indicates significant at 10 % level; ** indicates significant at 5 % level; *** indicates significant at 1 % level.

According to the data in table 4,

(1) β_1 = 1.763674.The implication is that when the proportion of independent directors increases by 1%,the financial performance of listed logistics companies will increase by 1.763674 %. The main

reason is that independent directors have not only prevented the CEO from abusing his power to infringe upon the interests of shareholders,but also inhibited the major shareholders from damaging the interests of small and medium shareholders. Therefore,the proportion of independent directors is obviously positively related to the financial performance of listed logistics companies.

(2) β_2 = - 0.397905, β_5 = - 0.897329. This means that when the chairman of the board of directors and the general manager are the same person,the financial performance of listed logistics companies will decrease by 0.397905 % for every 1% increase in their proportion. When the proportion of female directors increases by 1%, the financial performance of listed logistics companies will decrease by 0.897329 %. This is consistent with the original assumption.

(3) β_3 = - 0.010099, β_4 = - 0.000261, β_6 = 0.003895, β_7 = 0.026407. None of them passed the significance test,which shows that there is no obvious correlation between the size of the board of directors, the number of board meetings,the age of directors, the establishment of the four major committees and the financial performance of the listed logistics companies. Firstly, there are large scale differences among logistics listed companies in different industries. Secondly, most listed companies hold the board of directors because of the company's poor financial performance and take remedial measures. Thirdly,when entered the information age,the logistics industry need to connect with the internet. Although the senior directors have rich experience, they use less modern communication equipment and fail to grasp the diversified information needs of the market in time. Therefore, the age of directors has nothing to do with the company's financial performance. Fourthly, although most logistics listed companies already have four committees, the four committees do not perform their duties well, which leads to their insignificant impact on the financial performance of logistics listed companies.

(4) β_8 = - 0.023545, β_9 = - 0.404188, β_{10} = - 0.007604. The control variable asset-liability ratio and the largest shareholder shareholding ratio both passed the significance test,but the asset scale did not pass the test. This means that for every 1% increase in the ratio of asset-liability ratio, the financial performance of listed logistics companies will decrease by 0.007604%; The financial performance of the listed logistics companies will decrease by 0.404188% for every 1% increase in the shareholding ratio of the largest shareholder. Because firstlee, the increase in asset-liability ratio leads to an increase in financial risk, thus affecting financial performance. Secondlee, the higher the proportion of the largest shareholder,the more obvious the phenomenon that the company has large shareholders controlling small shareholders,and the damage to the interests of the group will also lead to poor financial performance. Thirdly, the company's financial performance is also affected by the operating efficiency. If the efficiency is low, the company's size will also affect the performance improvement. Therefore, there is no obvious correlation between the company's size and the financial performance.

5. Conclusions and Recommendations

Through empirical research on the relationship between the characteristics of the board of directors of listed logistics companies and the financial performance of the companies, mainly draws the following conclusions: Firstlee, the proportion of independent directors is significantly and positively correlated with the financial performance of the companies; Secondly, the proportion of the board chairman who concurrently holds the post of general manager and female director is negatively related to the company's financial performance. Thirdly,there is no obvious correlation between the size of the board of directors,the number of board meetings, the age of directors and the establishment of the four major committees and the financial performance of the company.

In order to improve the governance of the board of directors and to promote the improvement of financial performance, logistics listed companies should take the following measures: Firstoy, choose the board of directors scale appropriate to the company,actively hold the board of directors meeting to solve the problems arising from corporate governance in a timely manner. Secondlee, continuously improve relevant laws and regulations to ensure the independence of independent directors so that they can actively provide guiding policies and suggestions for the listed logistics companies; change the working style of female independent directors,attach importance to the main problems in the development of the company,try our best to overcome the interference of emotional factors,objectively analyze the problems and provide scientific suggestions for the logistics listed companies. Thirdly, employ experts who are young and promising,sharp-minded and of high professional and technical level as independent directors so as to realize the rejuvenation of board members. Fourthly, give full play to the supervision and management functions of the chairman of the board of directors and try our best to realize the separation of the two positions of chairman of the board of directors and general manager. Fifthly, we will continue to improve the establishment of the four major committees and continue to improve the relevant systems so that the four major committees can conscientiously perform their duties.

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