“Impact of an independent director system on a board of directors and the system's relation to corporate performance. Case study of listed companies in Taiwan”

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Impact of an independent director system on a board of directors and the system's relation to corporate performance. Case study of listed companies in Taiwan

Abstract

Corporate governance was a rather hot managerial topic in the 20th century. If corporate governance is perfectly implemented, it will contribute very well to both the companies and countries. Due to the constant financial crises in recent years, the issue of corporate governance has raised the public attention around the globe again.

The direction of the reform of Taiwanese corporate governance should be in the enhancement the intensity of the supervision of the board of directors. The professional ability of the board of the directors should be relied on to lead to a breakthrough in the corporate performance. By this means the independent director system is able to take its real effect and makes the level of corporate governance in Taiwan to be aligned with that in the world.

This research is mainly focused on exploring the relationship between the independent director system of Taiwanese listed companies and the corporate operation performance.

This research is mainly sampled from Taiwanese listed companies with a research period of 2011-2012. It's mainly restricted in exploring those companies with built-in independent director systems and reach the conclusion based on the empirical results: (1) the board of directors is positively correlated with the corporate operating performance; (2) the magnitude of director's share holdings is positively correlated with the corporate operating performance; (3) the ratio of the independent directors is positively correlated with the corporate operating performance; (4) the company size is positively correlated with the corporate operating performance.

The findings that the independent director system is actually effective and is instrumental to the corporate operating performance. The authors hope that the empirical result of this research can be a useful reference for those Taiwanese listed companies who wish to establish an independent director system.

Keywords: independent director, corporate governance, operation performance.
JEL Classification: G01, G17, G21, G32.

Introduction

A substantial series of corporate scandals in the United States have occurred in the recent years. These scandals involved accounting fraud caused by operational misconduct and mismanagement by the board of directors and resulted in a loss of investor confidence. Because a company's board of directors is the supreme authority for any important decision, a wrong decision will have a substantial impact on the company. The independence and professionalism of this supreme authority are highly regarded within the company. Additionally, the structure of a board of directors is a key component of corporate management. If a board of directors can function effectively, it will improve a company's performance and make the best decisions with respect to the company's vision. Following global trends in corporate governance, in recent years, the Taiwanese government has encouraged domestic enterprises to strengthen their corporate governance and enhance their global competitiveness. In addition, the government has promoted the reform of the corporate governance system and established an ad-hoc group dedicated to corporate governance reform. The group not only aims at improving the corporate governance as a priority but also emphasizes the importance of corporate governance. Moreover, this group encourages the establishment of an independent director system within a board of directors in the domestic enterprises to strengthen the independence and consolidate the role of the board of directors.

This study's objective is to evaluate corporate performance in relation to the establishment of an independent director system in corporate governance. In addition, this study investigates the interactions of different variables, including company size, the shareholding ratio of independent directors, the shareholding ratio of directors, and board size in relation to corporate performance and the problems of individual agency.

1. Shareholding ratio of directors and corporate performance are correlated.
2. Company size and corporate performance are correlated.
3. Proportion of independent directors to other directors on the board and corporate performance are correlated.
4. Board size and corporate performance are correlated.

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1. Literature review and research hypotheses

1.1. Corporate governance. To understand what corporate governance is, the first step is to understand the meaning of governance. In short, corporate governance refers to a controlling behavior or a procedure. Governance has existed since the beginning of civilization. The term corporate governance has received attention among scholars in the United States since the beginning of the 1930s. In recent years, after the Asian financial crisis, the issue of corporate governance has again attracted attention. A series of financial crises triggered by the 2001 Enron scandal further demonstrated the importance of corporate governance.

Another definition of corporate governance, by Bhagat, Sanjay, and Bernard Black (2002), suggests that corporate governance is the rights and the responsibilities of the decision maker related to enterprise operation. From operational perspective, corporate governance is based on corporate performance to distinguish the overall responsibility of managers and directors. From the financial perspective, corporate governance minimizes the agency problem between shareholders and managers.

The ultimate goal of corporate governance is the pursuit of the enterprise's long-term interests and sustainable development to maximize the profit of the company and its shareholders. In this way, the interests of all of the stakeholders are indirectly protected. Thus, the establishment of an effective governance system is important for the growth of an enterprise (Beasley, 1996).

The proper organization of a board of directors has a significant impact on a company's future prospects. Therefore, the board of directors is one of the most crucial factors of corporate governance (Reeb and Zhao, 2010).

1.2. Agency theory. Jensen (1993) defined agency as a principal (or several principals) who hires and authorizes the agents to perform certain tasks on behalf of the principal(s). There is a contractual relationship between these entities.

Once the operation rights and ownership are separated, the agent problem occurs. Jensen and Fama (1983) demonstrated that the evolving agency problem becomes complicated in proportion to the changes in the overall business environment. In addition, the management may deviate from the traditional path of vendor management best practices to pursue profit. Thus, the development of the agency problem may affect the achievement of the overall business strategy and operational efficiency.

Barnhart and Rosenstein (1998) believed that the agency problem is caused by the misuse of corporate resources and the disregard for shareholder benefits, e.g., using and allocating company resources based on personal interests or sharing operational results with foreign shareholders because of equity sharing, but at the same time not being subject to the total loss caused by business failure.

Barnea, Haugen and Senbet (1985) suggested that when a company faces asymmetric information and the shareholders lack the knowledge required to judge information correctly, managers have an opportunity to exploit shareholder profit. This behavior results in poor corporate performance.

Because the core internal system of corporate governance relies on the board of directors, the board structure can substantially affect corporate governance. Son A. Lea, Mark J. Krollb, Bruce A. Walters (2012) suggested that if the board of directors is too large, dissension could occur easily, which affects the board's decision-making and operational efficiency. An empirical study by Beasley (1996) demonstrated that the higher the proportion of outside directors on the board is, the lower the chance of financial statement fraud. Therefore, perfect corporate governance a priori requires a well-structured board of directors.

1.3. Qualification of independent directors. We will discuss the criteria for the election qualification of independent directors in the following contents of this study (Article 9 of Taiwan Stock Exchange Corporation Rules Governing Review of Securities Listings, Article 17 of Supplementary Provisions to the Taiwan Stock Exchange Corporation Rules for Review of Securities Listings, and Article 10 of GreTai Securities Market Rules Governing the Review of Securities for Trading on the GTSM).

Independent directors or independent supervisors should not violate any one of the independences listed as following in the last year.

1. Employees of the applicant company or the directors, supervisors, or employees of the affiliates.
2. Directly or indirectly owning more than 1% of the issued shareholding of the applicant company or the natural people who are the shareholders that are within the top 10 of shareholding ownership.
3. Spouses and linear relatives within second-degree kinship of the people listed in the 2 items above.
4. Directors, supervisors, or employees of the corporate shareholders who directly or indirectly own more than 5% of the shares issued by the

applicant company or directors, supervisors, and employees of the corporate shareholders whose shares ranks within the top 5.
5. Specific companies that have financial business dealings with applicant company, or director, supervisors, managers of organizations, or shareholders that own more than 5% of the shares.
6. Professionals, sole proprietorships, partnerships, and companies who provide financial, business, legal services, and etc. to applicant company or business owners, partners, directors, supervisors, managers, and their spouses of any institutional bodies.
7. Assuming the offices of directors or supervisors in more than 5 other companies.

The problems faced by Taiwan's current system are the scarcity of talented people and where to find the talented people. In view of this, Securities and Futures Bureau, Financial Supervisory Commission, Executive Yuan, R.O.C. especially establish "Independent directors / Independent supervisors Registry." Domestic professionals and scholars suggest that Taiwan can follow the precedent applied by developed nations such as Japan and the United States which selects professional directors as the alternative choice. Generally, "professional directors" refers to those who qualified as having specialized knowledge and highly understanding as well as being familiar with the industry. These talented people may be retired senior managers, CEO, or professional scholars who have abundant practical experiences to help the company to improve the business strategy and supervision system. According to the past experiences of Taiwan, it is not uncommon to find that boards of directors are dominated by the major shareholders and the strategies as well as the decision-making processes thus being controlled. Foreign scholars reckon that the existence of independent directors indeed can effectively prevent similar circumstances from happening repeatedly. The main reason is that inside directors are limited by the managers. However, independent directors are not limited by any parties. So independent directors can reach better independence and provide independent and professional thinking and judgment without the interference of managers.

When discussing the independence of independent directors, chairman of Taiwan Semi-conductor Manufacturing Company, Morris Chang, thought that independent directors must need to totally independent to the major shareholders and operating teams. In addition, the shareholding ratio of independent directors should be restricted. So it is required that independent directors must own less than 5% of company's share and cannot be adjunct consultant or employee. Also, within 5 years, the independent directors cannot serve in the same company once retiring from current position. Finally, the enterprise should accomplish the following few things:

1. The number of independent directors should be more than 1/3 of the board of directors and it would be better to maintain more than 1/2.
2. The independent directors should spend more than 5% of all the operating time in the company.
3. The rewards for the independent directors should be counted daily just like chief executive officer (CEO), which includes salary and bonus share. Nevertheless, the salary given to the independent directors should be higher than current directors.

Elaborations on the researches of the authority of independent directors are listed below. It is not essential for independent directors to provide professional knowledge for compensate the insufficiency of the manager parties. Another important role that independent directors should play is to supervise the management authorities. When management hierarchy violates the company's philosophy, the independent directors should enforce to replace the authorities and simultaneously help inside directors to supervise the management hierarchy as well as formulate the strategy direction of the company, which would let management hierarchy to pay attention to the interests of shareholders and play their appropriate role in the enterprise. The main responsibilities of the board of the directors are listed below:

1. Formulate the vision and strategy directions of the company.
2. Set the values of the company to allow the whole company to realize the responsibilities of corporate citizens.
3. Authorize the planning for the strategy of the company.
4. Clarify the contents that board of the directors authorized to the management hierarchy.
5. Confirm the establishment of risk management system in the company.
6. Confirm the report system. Especially, the management hierarchy must sincerely explain the current situations to the board of the directors.
7. Supervise the criteria for finance and morality that operated by auditing committee and governance committee.
8. Confirm the integrity of the auditing system that operated by the auditing committee.

9. Cautiously assess whether the chief executive officer (CEO) is competent at his or her job, which should be operated by nomination committee.
10. Plan for the inheritance of CEO, which is operated by the nomination committee.
11. Board of directors should possess at least auditing committee, governance committee, nomination committee, and remuneration committee.

Securities and Futures Bureau, Financial Supervisory Commission, Executive Yuan, R.O.C. specified very clearly that while operating the company's businesses, including interior control system, loan of the capital and endorsement, acquisition and processing of the assets, the opinions of each independent director should be fully considered. And all the opinions and reasons proposed by the independent directors should be included in the records of the board of directors.

Furthermore, it is required that the share held by the independent directors should be lower than 5%. Also, the independent directors can neither be adjunct consultants or employees nor serve in the same company as independent directors once retiring from current position within 5 years.

The independence here refers to:

1. Not the employees of the company or the directors, supervisors, or employees of the affiliates.
2. Not the natural people who serve as the shareholders that directly or indirectly own more than 1% of the share issued by the company or rank within top 10 among all shareholders who are natural people.
3. Not the spouses and linear relatives within second-degree kinship of the people listed in the 2 items above.
4. Not the directors, supervisors, or employees of the corporate shareholders who directly or indirectly own more than 5% of the shares issued by the company or directors, supervisors, and employees of the corporate shareholders whose shares ranks within the top 5.
5. Not the specific companies that have financial business dealings with the company, or director, supervisors, managers of organizations, or shareholders that own more than 5% of the shares.
6. Not the professionals, sole proprietorships, partnerships, and companies who provide financial, business, legal services, and etc. to applicant company or business owners, partners, directors, supervisors, managers, and their spouses of any institutional bodies.

Forker (1992) deemed that it is essential for independent directors to get independence, autonomy, and sufficient professional competence. Although not holding any position in the company, it is independent director's responsibility to help the enterprise to reach comprehensive development and reach the goal while formulating the strategy as well as to exercise the effects of operation and supervision. Serving as the independent directors in the enterprise is accompanied with owing the reputations of professions, which would notify the independent directors to pay attentions to their own fames. Thus the independent directors would do careful management and avoid their reputations from being damaged. The more important one point is that independent directors are not bound by any interests or benefits, which can fairly fight the existing rights and interests for the minor shareholders. The independent directors could also objectively evaluate the overall policy decision and propose suggestion for the company, which would help the sustainable development. When comparing with inside directors, independent directors are less likely to perform self-interest behaviors and behaviors that adverse to the enterprise.

In the interior and exterior control mechanism part, Fama and Jensen (1983) pointed out that outside directors can perform better supervision effects than inside directors. It is because that most outside directors are important decision-makers in other organizations and are familiar with other professional knowledge. Meanwhile, outside directors would care about their own reputations and thus can play a better role while serving as a decision-maker to give fair and objective opinions than inside directors.

In Taiwan, Securities and Futures Bureau, Financial Supervisory Commission, Executive Yuan, R.O.C. have implemented independent director system in 2 phases since February 22, 2002. The 1st phase aimed the companies applying for listed company and listed company in OTC as implementation objects, which asked the applicant companies to disclose whether their directors and supervisors live up to their independence criteria and some important resolutions proposed by the independent directors in board of directors. The 2nd phase is to implement to all listed company and listed company in OTC and asked them to apply the same system through advocacy approach. Also, the shareholding percentage of other non-independent directors was lowered to 80%.

1.4. Correlation between independent directors and corporate performance. Ashbaugh-Skaife, Collins and LaFond (2006) suggested that the seat proportion of the board of directors exhibited a trend of gradual increase in the proportion of independent directors but a decrease in the proportion of internal director seats.

The increased seat numbers of independent directors in the listed companies can enhance the objectivity and the credibility of the decisions made by the board of directors. In addition, the establishment of an independent director system can improve the transparency of a company's financial statements and value (Chau and Gray, 2010).

Most independent directors are professionals with specific competencies who can assist management by compensating for insufficiencies, offer diversified insights to the board of directors in decision making, objectively measure the comprehensive development of enterprise and provide oversight and management to the board. Therefore, independent directors facilitate the overall efficient operation of the board of directors. Therefore, the supervision and its controlling function performed by the board are executed perfectly. Thus, not only is the overall environment improved internally but also the performance of the management authority is supported (Perry and Shivdasani, 2005).

Fame and Jensen (1983) believed that the board of directors could protect shareholder equity if an enterprise's ownership and operating authority are separated. The supervision and management authority of the board provides appropriate advice and a program for decision-making. The board of directors is responsible to the investors and all of the shareholders.

1.5. Correlation between the board system and corporate performance. As previously noted, Mohamed Belkhir (2009) believed that the board of directors can protect shareholder equity if an enterprise's ownership and operating authority are separated. The supervision and management authority of the board provides appropriate advice and a program for decision-making.

The board of directors is responsible to the investors and all of the shareholders. According to the Taiwan Companies Act (Section 202), "*Business operations of a company shall be executed pursuant to the resolutions to be adopted by the board of directors, except for the matters the execution of which shall be effected pursuant the resolutions of the shareholders' meeting as required by this Act or the Articles of Incorporation of the company* (Agrawal and Knoeber, 1996).

Yonca Ertimura, Fabrizio Ferrib, Stephen R. Stubbenc (2010) demonstrated that the primary function of the board of directors and its objective is to oversee the decision-making with respect to major policies and the resolution of major events. To minimize the agency problem, a management system based on checks and balances should be formulated. This system is the board of directors.

If the board of directors in a company is only consists of large shareholders, the large shareholders can completely control any major decisions by the company. The degree of supervision of the board is relatively small. Any misconduct by the large shareholders will result in a major crisis for this company. However, the high shareholding ratio of the management authority will secure the company's reputation and improve the corporate performance through the attentive care provided by the large shareholders (Vafeas, 2005).

Based on a review of the literature on corporate governance, agency theory and the correlation between the presence of independent directors and corporate performance, this study finds an inconsistent correlation between a company's hiring of independent directors and shareholders profit and corporate performance. From an academic viewpoint, a correlation is expected between company's hiring of independent directors and shareholders profit and corporate performance. However, empirical results have failed to demonstrate a significant relationship between these factors. Nevertheless, other scholars have found a positive correlation. The empirical data regarding company size, the ratio of independent directors on the board, board size and the shareholding ratio of the board of directors vary between studies. This study attempts to use the relevant variables for an empirical data analysis of the establishment of an independent director system using listed Taiwanese companies as an example to obtain more precise empirical results.

The larger the scales of board of directors are, the more talented people with professions would be included. These professionals could provide professional knowledge in finance or non-finance aspect. For example, the more directors and independent who own financial and legal professions, the more professional opinions could be proposed while the decision-making of the company, which could help to improve the performance of the company (Bacon, 1973). The larger scale the board of directors is, the effects on the operating performance of the company would be larger.

Some foreign literatures held opposite dissertation that the bigger the scale of board of directors is, the lower the supervision effects would be and on the contrary, would cause the decline of the performance of the company. Some scholars also proposed that larger scale of board of directors would make the opinions from each director to different from each other more dramatically and would cause the inefficiency in board of directors instead. This will further affect the timeliness of various decision-making. So scholars regarded that the scale of board of directors is negatively correlated with the operation performance of the company (Reeb and Zhao, 2010).

According to article 192 of Company Act in Taiwan, board of directors should contain at least 3 directors as members. It remains unclear for the most appropriate number of people in board of directors to allow the board of directors to exercise in the best condition. This research establishes hypothesis 1 according to the literatures described above.

Hypothesis 1: The scale of board of directors and the management performance of the company are positively correlated.

When talk about the shareholding ratio of directors, the research results derived from scholars revealed that when the more share held by the directors or management authorities, self-interest factors would urge them to be dedicated to elevate the operation efficiency of company and it would be less likely for them to do any behavior that adverse to company and shareholders. Thus their goal would tend to converge with shareholders'. Ashbaugh-Skaife, Collins and LaFond (2006). Some scholars also chose listed company as research objects and research results revealed that the shareholding ratio and the operation performance of enterprise are obviously positively related. And the higher the shareholding ratio of directors and supervisors is, the more improvement and accomplishment in performance aspect should be made. In the other aspect about decreasing the crises of enterprise, since board of directors holds more share and the operation conditions are highly related to their own wealth, their goals would converge with shareholders' goal: to maximize their wealth. This would also help to elevate the performance of finance and reach the financial goals. The shareholding ratio of directors and the operation performance of company have significant positive correlation. Thus this research assumes that the ratio of directors and supervisors and the operation performance of company are positively correlated.

Hypothesis 2: The shareholding ratio of directors and operation performance of company are positively correlated.

Independent directors supervise the management hierarchy with the identities of 3rd party. To the public who invests, the value of the company would elevate if independent directors are employed. Investors will think that the financial and non-financial aspects of the company are better. If the ratio of independent directors in board of directors of the company is higher, the performance aspects of the company would be better. From another point of view, company with independent directors would yield better performance than company without independent directors (Yonca Ertimura, Fabrizio Ferrib, Stephen R. Stubbenc, 2010).

Foreign scholars deemed that it is because independent directors don't actually operate the company's own business, independent directors would perform better independence. Independent directors are able to supervise the operation of the internal of company through the implementation of supervision authority. Thus the performance of company with independent directors would be better than company without independent directors (Chau and Gray, 2010). According McKinsey & Company's research reports, independent directors (outside directors) can truly supervise the management authorities. It is also proved that the companies with higher ratio of independent directors would perform better. So this research predicts that companies with higher ratio of independent directors would perform better efficacy in supervision aspect and elevate the quality as well as effects of the policy decision made by board of directors. Thus the performance of the company could be elevated. So this research establishes hypothesis 3 according to the literatures described above.

Hypothesis 3: Ratio of independent director number in board of directors and operation performance of company are positively correlated.

2. Research data and analysis

Figure 1 shows the framework of this study (ROA means the return on assets, ROE represents the return on equity.)

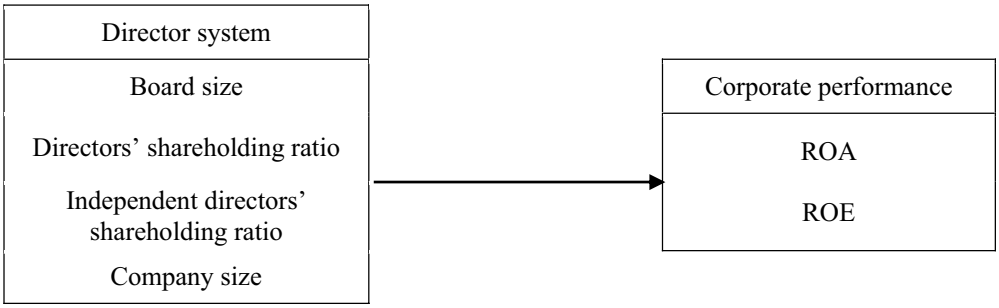

Fig. 1. Research framework

Based on the hypotheses of this study, the study variables were divided into two categories: independent variables and dependent variables.

1. Independent variables:

Ratio of independent directors to the total members of the board = Number of independent directors / Total members of the board of directors.

Company size = Total assets at the end of the year.

Board size = Number of members in the board of directors.

Directors' shareholding ratio = Directors' number of shares at the end of the year / Number of year-end common outstanding shares.

2. Dependent variables:

The indices used in this study concern the completeness and correctness of the obtained data. Thus, the ROA and ROE financial indices were applied. The adopted indices are described as follows:

Return on total assets (*ROA*) *= Net income / Average total assets.*

Return on equity (*ROE*) *= Net income / Average shareholder's equity.*

The following hypotheses were defined based on the research objective and the relevant empirical data to focus on the possible factors that affect corporate performance and to verify the impact of the establishment of independent director system on corporate performance.

Hypothesis 1: The scale of board of directors and the management performance of the company are positively correlated.

Hypothesis 2: The shareholding ratio of directors and operation performance of company are positively correlated.

Hypothesis 3: Ratio of independent director number in board of directors and operation performance of company are positively correlated.

Hypothesis 4: The scale of the company and the management performance of the company are positively correlated.

2.1. Research samples. This study investigated the listed Taiwanese companies as its research objects, and the samples were selected from the period 2011 to December 2012. Companies with incomplete information and companies that operate with a specific category of shares (e.g., full delivery shares as well as bank and insurance shares) were excluded. The numbers of companies with completed information are listed as follows: 236 companies in 2011 and 242 companies in 2012.

The data collection was based on the disclosed information of the currently listed companies. The source of information is described as follows.

Database of the Taiwan Economic Journal (TEJ): Because the information on the independent and dependent variables refers to partial financial information, it was necessary to collect complete and precise information. This study obtained the relevant variable information related to the independent directors from 2011 to 2012. The sources of the relevant details are as follows:

1. The ratio of independent directors to the total members of the board: the information is from the listed shareholdings circumstances of directors and supervisors. Directors' shareholding ratio: the information is from the listed shareholdings condition of the directors and supervisors. Company size: financial cumulative number of listed companies. Board size: the demographics of the listed board of directors.
2. The prospectus: to identify the family ties between the directors and supervisors and to use relevant information to confirm if the directors and supervisors are members of the staff of the company. The prospectus is based on the obtained register of directors and supervisors at the end of 2012 and the 2008-2012 reference prospectus that disclosed the information on the boards of directors.

The data analyses used two approaches: (1) the analysis of the Pearson correlation coefficient and (2) the verification and analysis of the hypotheses. Descriptive statistics were used for the analyses. The verification of the hypotheses was analyzed using the correlation coefficient and the regression methods. The data analysis methods were adopted based on the research objectives and hypotheses as described below:

1. Statistical data analysis.

First, the descriptive statistics were conducted using the Pearson correlation coefficient analysis. Additionally, a preliminary statistical analysis was performed based on the collected information of the listed companies to understand the distribution of industries among various listed companies, the industrial characteristics and the brief analyses of descriptive statistics (e.g., the mean, the standard deviation and the largest and smallest values).

2. Verification of research hypotheses.

An appropriate regression was developed based on all of the variables. Before the regression analysis, a confirmation of collinearity between the independent variables was determined. To determine the impact of the director and supervisor system in relation to the

enterprise's operating performance, this study established the following model based on the previously described hypotheses:

Corporate performance = α + β1 Board size + β2 Directors' shareholding ratio + β3 Company size + + β4 Ratio of independent directors to the total members of the board.

Correlation coefficient is a statistics indicator that reflects the level of close relationship between variables. Correlation coefficient is calculated through product-moment method. With the basis of the deviations between the two variables and their averages, the relevance of the two variables could be reflected through multiplying the two deviations. This is single correlation coefficient that emphasizes on the researches about linear relations.

Correlation relation is a non-deterministic relation. Correlation coefficient is an amount applied to research on the linear correlation level between variables. The value of correlation coefficient ranges between -1 and 1, which means "$-1 \leq r \leq +1$". The characteristics of the correlation coefficients are described below:

When $r > 0$, this means the two variables are positively correlated; when $r < 0$, the two variables are negatively correlated.

When $|r| = 1$, this means the two variables are totally linearly correlated, which implies the function relation.

When $r = 0$, this means there is no linear correlated relation between the two variables.

When $0 < |r| < 1$, this means there is certain level of linear correlation between the two variables. As $|r|$ approaching 1, the linear correlation between the 2 variables becomes closer; as $|r|$ approaching 0, the linear correlation between the 2 variables becomes weaker.

Generally, three categories are divided according to the correlation levels. $|r| < 0.4$ implies modestly linear correlation. $0.4 \leq |r| < 0.7$ implies moderately linear correlation. $0.7 \leq |r| < 1$ implies highly linear correlation.

2.2. Empirical result and analysis. As its research sample, this study investigated listed companies in all industries (excluding the financial industry) that established an independent director system during 2011-2012. The number of companies included in this study was 236 for 2011 and 242 for 2012, which indicates an annually increasing number of companies that established an independent director system. Additionally, these statistics demonstrate the increased importance of independent directors. An alternative explanation of the annual increase in the number of companies with independent director systems during 2011-2012 may be that since February 22, 2002, the Securities and Futures Commission (SFC) has required listed companies to establish such systems.

No previous study has analyzed a sample that spans longer than three years. In addition, the research does not present a detailed discussion on the variables that relate to independent directors per year or a comparison between different years. Therefore, the present study analyzes the independent variables and contingencies for each year in more detail to understand the impact of the independent director system in relation to corporate performance.

2.3. Verification of hypotheses and analyses. The following tables compare each variable and their relevance from 2011 to 2012.

Table 1 shows that according to the data on the establishment of independent director systems in different industries in 2011, the independent director system was not as common in the traditional industries as in the high-tech industries. The implementation of independent director systems in the high-tech industries was more widespread than in the general industries because the high-tech industries were at high financial risk, which is an aspect that requires considerable attention. The independence and professionalism of the independent directors are a positive factor in the high-tech industries, which therefore rely more on independent directors than the general industries.

As shown in Table 1, the 2011 statistics reveal a significant increase compared with the previous three years. This increase demonstrates that the independent director system received increasing attention at the listed companies and thus had a more positive impact on the listed companies than in the past.

Table 1. Distribution of industries among the listed companies (companies with established independent directors) in 2011

Industrial category of listed company	Number of companies	Sample size distribution percentage
Food industry	12	5.10%
Iron and steel industry	15	6.50%
Plastics industry	17	7.40%
Electrical and machinery industry	21	9.10%
Electric appliance and electric cable industry	23	9.70%
Chemical industry	24	10.40%
Electronics industry	87	37.00%
Industry of construction materials	22	9.30%
Transportation industry	15	6.00%
Total sample size	236	100%

Table 2. Descriptive statistical analysis of independent variables for 2011

Variable	Board size	Ratio of independent directors to the total members of the board	Directors' shareholding ratio	Company size
Largest value	15	0.600	0.884	13.158
Smallest value	4	0.071	0.039	10.112
Mean	7.034	0.272	0.217	11.141
Standard deviation	1.828	0.097	0.139	0.611

Verification of hypothesis 1: Whether the scale of board of directors and the management performance of the company are positively correlated.

The empirical results are shown in Table 3. The scale of board of directors and the management performance of the company are positively correlated, which is consistent with the research hypothesis. This is explainable for the value of R^2 but it is not so obviously. When comparing with previous researches, it is also possible that numerous members in board of directors would cause the diverse of opinions and cause the poor efficiency in operation performance of the enterprise.

Table 3. The correlation between the scale of board of directors and the operation performance of company (2011)

An independent variable: The scale of board of directors	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.061	0.048
R^2	0.004	0.002
Expected sign	+	+
Reality	+	+

Source: This research.

As shown in Table 4, the ratio of shareholding of directors is positively correlated with ROA and ROE. But there is no causality. So this result is also consistent with the hypothesis of this research. Nevertheless, it belongs to highly correlated. And also consistent with the convergence-of-interest hypothesis, which mentioned that under the urge of self-interest motivation, the higher ratio of share held by the directors and supervisors, the more attentions directors in board of directors would pay since it is their own interests. So the interests of directors would converge with the goal of the company. Directors would contribute more effort to the company and thus the operation performance would be better.

Verification of hypothesis 2: Whether the shareholding ratio of directors and operation performance of company are positively correlated.

Table 4. The correlation between the shareholding ratio of directors and operation performance of company (2011)

An independent variable: The shareholding ratio of directors	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.094	0.109
R^2	0.012	0.022
Expected sign	+	+
Reality	+	+

Verification of hypothesis 3: Whether the ratio of independent director number in board of directors and operation performance of company are positively correlated.

As shown in Table 5, the regression results of samples in 2011 reveals that independent directors are positively correlated to ROA and ROE. From the table, it could be realized that the correlation level between ratios of independent directors in board of directors and operation performance of the enterprises are higher than the correlation level between scales of board of directors and operation performance of the enterprises. So the importance of independent directors could be verified through this result. In other words, the more independent directors, the better the operation performance would be. This is consistent with the hypothesis of this research.

Table 5. The correlation between the ratio of independent director number in board of directors and operation performance of company (2011)

An independent variable: The ratio of independent director number in board of directors	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.056	0.077
R^2	0.024	0.0422
Expected sign	+	+
Reality	+	+

As shown in Table 6, empirical results reveal that the scale of the company is positively correlated to the performance of the company. Although it is of low significance, the value of R^2 is explainable. This empirical result is consistent with the hypothesis of this research. The larger the scale of the company is, the better the company can enjoy the economics of scale. Of course, it is inevitable that there would be numerous members in board of directors in large-scale companies. In this condition, the more independent directors in board of directors would make the operation performance of the company be better.

Table 6. The correlation between the scale of the company and operation performance of the company (2011)

An independent variable: the scale of the company	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.216	0.298

Table 6 (cont.). The correlation between the scale of the company and operation performance of the company (2011)

An independent variable: the scale of the company	Dependent variable	
	ROA	ROE
R^2	0.027	0.011
Expected sign	+	+
Reality	+	+

Table 7. Pearson correlation coefficient among independent variables

An independent variable	The scale of the board of directors	The share-holding ratio of directors	The scale of the company	Ratio of seats of independent directors
The scale of the board of directors	1.000			
The shareholding ratio of directors	0.073	1.000		
The scale of the company	- 0.049	- 0.242	1.000	
Ratio of seats of Independent directors	0.074	0.198	- 0.070	1.000

Notes: * Indicates the "0.05" level of significance, ** indicates the "0.01" level of significance.

Table 7 shows that the correlation coefficients between every factor are below 0.35. The VIF of independent variables are all below 10. The fact that most of the values fall between 1 and 2 indicates a weak correlation between independent variables. There shouldn't be an issue of collinearity thus using Multiple Regression Analysis is appropriate. The result of Multiple Regression Analysis and equations are listed as following:

$$Operation\ Performance\ of\ Company = \alpha + \beta_1\ The\ scale\ of\ the\ board\ of\ directors + \\ + \beta_2\ The\ shareholding\ ratio\ of\ directors + \beta_3\ The\ scale\ of\ the\ company + \\ + \beta_4\ Ratio\ of\ seats\ of\ independent\ directors. \quad (1)$$

Table 8. Multiple regression beta coefficients ROA − arrangement

	Out of mechanism of independent director	Under mechanism of independent director
The scale of board of directors	-0.123	-0.119
The scale of company	-0.073	-0.093
Ratio of seat of independent directors		0.148
Shareholding ratio of independent directors		0.007
R^2	0.041	0.061

Table 9. Multiple regression beta coefficients ROE − arrangement

	Out of mechanism of independent director	Under mechanism of independent director
The scale of board of directors	-0.143	-0.134
The scale of company	0.052	0.016
Ratio of seat of independent directors		0.223
Shareholding ratio of independent directors		0.018
R^2	0.029	0.073

As shown in Table 10, the number of companies with established independent director systems is the highest in 2012 compared with the preceding four years. There was a gradual increase in the number of such systems during these four years, and its advantages were affirmed. Over the last years of the study, the independent director system became the norm at the listed companies. All of the boards of the listed companies established seats for independent directors. (Because of the provisions of the 2002 legislation, all listed companies were required to establish an independent director system).

Table 10. Distribution of industries among the listed companies (companies with established independent directors) in 2012

Industrial category of listed company	Number of companies	Sample size distribution percentage
Food industry	13	5.35%
Iron and steel industry	16	6.66%
Plastics industry	16	6.66%
Electrical and machinery industry	21	8.68%
Electric appliance and electric cable industry	19	7.83%
Chemical industry	24	9.91%
Electronics industry	93	38.41%
Industry of construction materials	25	10.32%
Transportation industry	15	6.19%
Total sample size	242	100%

Table 11. Descriptive statistical analysis of independent variables for 2012

Variable	Board size	Ratio of independent directors to the total members of the board	Directors' shareholding ratio	Company size
Largest value	15	0.600	0.878	14.348
Smallest value	4	0.071	0.039	11.632
Mean	6.99	0.281	0.205	12.101
Standard deviation	1.939	0.990	0.133	0.692

As shown in Table 13, the correlation coefficients for ROA and ROE are 0.062 and 0.035 respectively in 2012, which yields the same results with the empirical analysis results in 2011. The scale of board of directors is positively correlated with the performance of the company but with no significance. In the aspect of R^2 explanatory power, it is less explainable than 2011 but still has explanatory power.

Table 13. The correlation between the scale of board of directors and the performance of the company (2012)

An independent variable: The scale of board of directors	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.062	0.035
R^2	0.021	0.013
Expected sign	+	+
Reality	+	+

As shown in Table 13, the results of Pearson correlation coefficient reveal the consistence between the positive correlation of shareholding ratio of the directors and the operation performance of the company and the predicted results. And also, there is significance and positive correlation. In the R^2 explanatory power aspect, it is still explainable.

Table 13. The correlation between the shareholding ratio of directors and the operation performance of company

An independent variable: the scale of board of directors	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.166	0.139
R^2	0.025	0.023
Expected sign	+	+
Reality	+	+

As shown in Table 14, in 2012, the independent directors and the operation performance of the company are proved to be positively correlated by the statistics results described above, though not significant. This result is consistent with the hypothesis of this research and R^2 has explanatory power. The statistics analysis of 2011 and 2012 reveals that the correlation between numbers of independent directors and performance of the company is higher and higher, which implies that the company gradually pay attention to the ratio of independent directors in board of directors.

Table 14. The correlation between the seat of independent directors and the operation performance of company (2012)

An independent variable: The scale of board of directors	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.015	0.025
R^2	0.027	0.019
Expected sign	+	+
Reality	+	+

As shown in Table 15, in 2012, the scale of the company and the operation performance of the company are positively correlated. Meanwhile, it is also explainable but not significant. This result is consistent with the prediction of our hypothesis. From this, it could be realized that as the scale of the company becomes larger, the exogenous variables would become more complex. So the company wants to employ independent directors to supervise the company's financial performance and every important policy decision in order to protect the rights and interests of the shareholders and investors.

Table 15. The correlation between the scale of company and the operation performance of the company (2012)

An independent variable: The scale of board of directors	Dependent variable	
	ROA	ROE
Pearson correlation coefficient	0.314	0.412
R^2	0.032	0.037
Expected sign	+	+
Reality	+	+

Table 16. Pearson correlation coefficient among independent variables

An independent variable	The scale of the board of directors	The shareholding ratio of directors	The scale of the company	Ratio of seats of independent directors
The scale of the board of directors	1.000			
The shareholding ratio of directors	0.056	1.000		
The scale of the company	-0.122	- 0.131	1.000	
Ratio of seat of independent directors	0.089	0.233	- 0.056	1.000

Notes: * Indicates the "0.05" level of significance, * indicates the "0.01" level of significance.

Table 16 shows that the correlation coefficients between every factor are below 0.35. The VIF of independent variables are all below 10. The fact that most of the values fall between 1 and 2 indicates a weak correlation between independent variables. There shouldn't be an issue of collinearity thus using Multiple Regression Analysis is appropriate. The result of Multiple Regression Analysis and equations are listed as following:

$$Operation\ performance\ of\ company = \alpha + \beta_1\ The\ scale\ of\ the\ board\ of\ directors + \\ + \beta_2\ The\ shareholding\ ratio\ of\ directors + \beta_3\ The\ scale\ of\ the\ company + \\ + \beta_4\ Ratio\ of\ seats\ of\ independent\ directors. \quad (2)$$

Table 17. Multiple regression beta coefficients
ROA − arrangement

	Out of mechanism of independent director	Under mechanism of independent director
The scale of board of directors	-0.123	-0.119
The scale of company	-0.073	-0.093
Ratio of seat of independent directors		0.148
Shareholding ratio of independent directors		0.007
R^2	0.041	0.061

Table 18. Multiple regression beta coefficients
ROE − arrangement

	Out of mechanism of independent director	Under mechanism of independent director
The scale of board of directors	-0.143	-0.134
The scale of company	0.052	0.016
Ratio of seat of independent directors		0.223
Shareholding ratio of independent directors		0.018
R^2	0.029	0.073

From the study of above Tables 16, 17 and 18, we can see that it shows positive correlation between applying for advisory system on supervising the board of directors and the operation performance of company. Although this positive correlation is not very obvious, it improves the operation performance of company and conforms to our assumption.

First, the empirical findings demonstrate that larger boards have more directors, which has a positive effect on corporate performance because the directors have different industrial backgrounds. Their different perspectives can contribute to collective decision-making and the avoidance of blind spots when making business decisions. There is a positive correlation between directors' shareholding ratio and corporate performance, which suggests that a director with shareholdings will pay more attention to a company's business performance. Second, because the directors' compensation depends on corporate performance, they have an increased incentive to focus on and improve corporate performance. Third, the empirical results suggest that the higher ratio of independent directors to the total members of the board enhances the independence of the board to exercise its supervisory role. Studies have been demonstrated that when the ratio of independent directors to the total members of the board is over 50%, the directors will replace a poorly performing CEO. The more objective external oversight of independent directors has a positive effect on the corporate performance. Therefore, the empirical findings of this study demonstrate that the establishment of an independent director system has a positive impact on a company.

Conclusions

The primary purpose of corporate governance is to enable a company to accomplish its strategic target, to lower the agency cost, to increase profit and to maximize the profit margin. Companies with good corporate governance are more capable to predict corporate performance in detail and relatively completely. They can also effectively supervise decision-making. Thus, the establishment of an independent director system is a highly important aspect of corporate governance.

This study primarily focuses on the degree of correlation between the establishment of an independent director system and corporate performance. The empirical findings suggest that corporate governance is a highly important topic. The present study focuses on the independent director system, which has gained popularity recently, to provide a reference that will promote the system's use in the future. It is expected that enterprises will separate management authority and ownership to strengthen the function of the board of directors.

Empirical findings of the present study are the following:

1. There is a positive correlation between board size and corporate performance.
2. There is a positive correlation between directors' shareholding ratio and corporate performance.
3. There is a positive correlation between the ratio of independent directors to the members of the board and corporate performance.
4. There is a positive correlation between company size and corporate performance.

Through the introduction of an independent director system, corporate performance is expected to benefit. In addition, the positive correlation between company size and corporate performance suggests that it is necessary to promote the independent directors system to monitor and supervise a company, to monitor the improvement of corporate performance, to minimize the financial crisis and to enhance the efficiency of corporate governance.

From another perspective, the introduction of an independent director system can enable the independent directors to encourage management to follow various regulations, to fulfill its responsibility and to monitor the improvement of corporate performance. However, since February 2, 2002, the SFC has required the mandatory establishment of an independent director system

from all applicants for company listing and public companies that trade stock over the counter (OTC). Companies that do not comply with this requirement are excluded from public listing and from offering traded stocks. Moreover, the independent board of directors cannot be established retroactively. This mandatory regulation of the Taiwanese government is designed to protect the interests of shareholders and investors. Because of the many financial scandals in recent years, many investors suffered significant losses, which pose a threat to the national economy. This study proposes to those companies that are required to establish independent director systems to hire two or more independent directors and at least one independent supervisor to strengthen the independence of the entire board of directors, to affirm the system of corporate governance and to consolidate the internal monitoring of the board. Thus, the companies will be able to minimize risk in the face of frequent financial crises and improve market mechanisms.

The correlation coefficient and coefficient of determination-R^2 are lower, which may resulted from the following factors:

1. The research to mechanism of independent director and supervisor was too short, financial insurance industry eliminated and some of company data were insufficient. Due to the lack of sampling, it will affect the statistical result in research since adopting 236 companies from 2011 to 242 companies in 2012.
2. Each entrepreneur operation performance is influenced by various factor such as mangers' capability, the element of market and quantification difficulty, so it can't be explored in research and the coefficient of determination may be at low tendency after finishing analysis.
3. The assessment standards of independent directors and supervisors in the current study referred to the "Independent Director and Supervisor" (Independent assessment regulations) from Rules and Review Procedures for Director and Supervisor Share Ownership Ratios at Public Companies, Regulations Governing Establishment of Internal Control Systems by Public Companies, Regulations Governing the Acquisition and Disposal of Assets by Public Companies Chinese, and Regulations Governing Loaning of Funds and Making of Endorsements/Guarantees by Public Companies. Compared with previous researchers that judged by themselves based on financial reports, the current study adopted a more cautious standard.

Proposal. Based on the empirical results and analyses, the current study proposed some perspectives and suggestions as guidance for future researchers, industries, and governments to give impetus to independent director and supervisor mechanism, which are shown as following.

1. Future researchers:

- The sampling data quantity is in low volume tier considering some reasons such as shorter studying period since independent director supervisor mechanism established, as well as deduction of companies with incomplete data. The follow-up researcher should extend testing years, enlarge sample quantity, continue to track the relating degree between seats changing in Board of Directors and operating performance, or how is supervision's effectiveness.
- The study is designed to examine the relating feature between independent director mechanism and operation performance of company, yet still lacking adequate researching evidences. It is suggested that the follow-up researcher should supplement researching features and criteria, while to aspect of mechanism of Board of Directors, it is suggested to add variables such as director's background and experience as factor, as well as add features to corporate performance such as corporate image or non-financial performance, so as to proceed further research in depth.

2. Industries.

In order to avoid the suggested ideas of all board of directors for improving business entity are ignored, and leads to the authorities of Board of Directors fall in few members, business should consider the all aspects of business entity and whole member's background.

3. Governments.

Under the current regulations of the Taiwan Stock Exchange and the Gre Tai Securities Market, effectively from February 20, 2002, company applying for listing and over-the-counter (OTC) must meet the requirement for the numbers of Independent Directors and Supervisors. According to the samples of listed companies in 2011 and 2012, the study discovered that currently there are still not many of the companies which have employed Independent Directors and Supervisors. Hence, it suggests whether the authorities should consider implementing the mandatory requirements that all stock exchange and OTC listed companies must follow, in order to strengthening the independence the board of directors as well as the formation of the Independent Directors and Supervisors. There should be an explicit standardi-zation and detailed observation if the regulation would actually be implemented, rather than just a mere formality of the operations.

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