

Can Independent Directors Improve the Quality of Earnings? Evidence from Taiwan

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Abstract

This study investigated companies publicly listed in Taiwan from 2002 to 2010 to examine whether independent directors improve the quality of earnings and analyzed whether the control rights of a controlling shareholder mitigate the impact of independent directors on earnings quality. Empirical results showed that independent directors can improve the quality of earnings, and those hired because of mandatory appointments had a greater positive effect on earnings quality compared to directors who were voluntarily hired. In addition, we also found that the controlling share held by a controlling shareholder reduces the benefit of independent directors on earnings quality.

JEL classification numbers: G00, G30, G38

Keywords: Independent directors, earnings quality, controlling shareholder

1 Introduction

For users of financial reports, earnings are a critical factor that influences investment decisions. Therefore, managers occasionally manipulate earning figures in financial reports for various reasons, misleading users of financial reports and affecting the decisions of investors or creditors. To prevent enterprises from causing losses to investors by publishing false earning figures, nations worldwide have implemented corporate governance mechanisms to provide effective oversight of managers and reduce the manipulation of earning figures.

Independent directors are an important corporate governance mechanism. The establishment of a system of independent directors should facilitate the hiring of independent directors with relevant expertise and no conflicting interests, thereby

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strengthening the management ability of the board of directors. Independent director systems have long been implemented abroad. Numerous studies have examined the effectiveness of implementing independent directors from several perspectives, although the results have not provided definitive or consistent conclusions.² Scholars that favor independent directors suggest that because independent directors have no interests that conflict with the company goals, they can hold a more objective position when considering the rights and benefits of all shareholders, effectively overseeing company operating decisions and providing expert services (Weisbach, 1988; Lee, Rosenstein, and Wyatt, 1990; Warner, Watts, and Wruck, 1988). Scholars who hold the opposite opinion argue that independent directors lack the time, abilities, and motivation to challenge the decisions of managers (Zahra and Pearce, 1989). Coughlan and Schmidt (1985) found that independent directors cannot fully understand crucial company information; thus, they cannot resolve principal-agent issues.

Ball, Kothari, and Robin (2000) and Leuz, Nanda, and Wyszocky (2003) stated that the quality of earnings expressed in financial reports would be higher if managers intervene less in the reporting of earnings. Once managers interfere with external financial reports through the accounting method, the credibility of the financial report declines. Subsequently, not only can investors suffer losses, but the enterprise may also incur additional costs, lowering the company value.³ Therefore, whether independent directors can improve earnings quality is an important indicator of the effectiveness of independent director systems.

Previously, because Taiwan lacked legal requirements for independent directors, only a few companies voluntarily established independent directors. In 2002, following international trends, Taiwan established independent director systems. However, only companies that were applying to be listed were required to establish independent directors during the transition period; this requirement was not applied to listed companies. Therefore, during this transition period, listed companies without independent directors, listed companies required to appoint independent directors, and listed companies that voluntarily hired independent directors coexisted in Taiwan. Because the current independent directors system has been developed in Taiwan, it has attracted attention from various fields. Therefore, the second purpose of this study is to examine whether different motives for hiring independent directors have differing influences on earnings quality.

Shleifer and Vishny (1997) and La Porta et al. (1999) reported that listed companies in most countries experience ownership concentration and that ownership rights are not separate from operating rights. Claessens, Djankov, and Lang (2000) analyzed listed companies in East Asia and found that two-thirds of companies had an ultimate controller.

² Cotter, Shivdasani, and Zenner (1997) found that the independence of a board of directors facilitates the growth of shareholder wealth. Lee, Rosenstein, and Wyatt (1999) also reported that the independence of a board of directors positively influences company value. Brickley, Coles, and Terry (1994); Prevost, Rao, and Hossain (2002); and Borokhovich, Parrino, and Trapani (1996) all believed that the independence of a board of directors improved operating performance. Counterarguments were presented by other studies, such as Yermack (1996), Bhagat and Black (2002), Weisbach (1991), and Klein (1998), who stated that no significant relationship exists between the number of independent directors on a board and company performance. Agrawal and Knoeber (1996) and Yermack (1996) found that the presence of independent directors was significantly inversely related to company performance.

³ Doidge, Karolyi, and Stulz (2004) found that more reliable accounting information reduced international IPO costs.

Yeh et al. (2001) reported that 76% of listed companies in Taiwan were controlled by families and 66.45% had boards where over half the seats were controlled by family members. Independent directors require the support of controlling shareholders to be elected, meaning that the selection of independent directors can be manipulation by the controlling shareholder. Therefore, independent directors may not be able to perform their professional functions effectively. Additionally, because boards of directors in Taiwan employ a collegiate system, independent directors may be unable to perform their functions when a controlling shareholder controls more seats than the number of independent directors. The final purpose of this study is to examine whether a controlling shareholder has a mitigating effect on the influence of independent directors on earnings quality through control rights and controller forms.

In this study, we used the quality of accruals estimated by the Dechow and Dichev (2002) model as indicators of earnings quality to examine the impact of independent directors on earnings quality. We then compared whether significant differences existed in the effects of various hiring motives before assessing whether the control rights and controller form of a controlling shareholder have a mitigating effect on the impact of independent directors on earnings quality. The results of this study can enhance current knowledge of the impact independent directors have on earnings quality in Taiwan, where the phenomenon of controlling shareholders is widespread. The study results can also be used to assess the effectiveness of independent directors in Taiwan and to provide a reference for future policy reforms.

The empirical results of this study indicate that hiring independent directors positively influences earnings quality. This finding supports the belief that independent director systems can improve earnings quality through effective oversight. Therefore, independent director systems should be further implemented. We also found that mandatory appointments of independent directors had a stronger effect than voluntary appointments of independent directors. Regarding the mitigating effect of shareholders, we found that enterprises that have the option to hire independent directors tend not to in an effort to maintain their controlling interests. Among the enterprises that hired independent directors, those that were required to appoint independent directors experienced a greater mitigating effect from controlling shareholders compared to that experienced by enterprises that voluntarily hired independent directors.

The research framework of this study is as follows: in Section 2, we examine relevant literature; in Section 3, we explain how the research variables were measured; in Section 4, we describe and present the data; in Section 5, we report the empirical findings of this study; and in Section 6, we offer conclusions based on the results.

2 Review of Literature

2.1 Independent Directors and Earnings Quality

Weisbach (1988), Byrd and Hickman (1992), and Brickley et al. (1994) suggested that outside directors can mitigate the agent problem between managers and shareholders or other shareholders. A number of studies focusing on developing countries found that companies with a greater number of outside directors produced superior earnings information quality (Beasley, 1996; Dechow et al., 1996; Peasnell et al., 2000; Klein, 2002; Davidson et al., 2005).

Kao and Chen (2004) argued that because outside directors do not participate in operations and are independent from managers, they can supervise managers more efficiently. Therefore, greater proportions of outside directors provide higher oversight efficiency, and managers are less involved in earnings management. Klein (2002) stated that a higher proportion of outside directors reduces the number of abnormal accruals. Peasnell et al. (2005) also found that when the number of outside directors increased, managers were less prone to manipulate earnings through accounting accruals, thereby increasing the similarity of the reported earnings with the expected earnings. Xie, Davidson, and Dadalt (2003) indicated that when the proportion of independent outside directors and directors with management experience was higher, managers were less likely to manipulate earnings. Reitenga and Tearney (2003) found that retiring CEOs often attempted to manage earnings through discretionary accruals, and that the establishment of independent directors could effectively reduce the occurrence of this issue. Based on SEC findings, Dechow et al. (1995) reported that testing companies that intended to overestimate earnings and contravene GAAP had less seats reserved for outside directors. Beasley (1996) also noted that companies that had never been involved in financial reporting fraud tended to have significantly higher proportions of outside directors compared to that of companies that had engaged in financial reporting fraud. In other words, a higher proportion of outside directors reduced the probability of financial reporting fraud.

Companies with a higher proportion of independent directors are more able to persuade managers to disclose relevant company information, increasing the amount of information disclosed. Disclosing greater amounts of information reduces the earnings management conducted by managers. Lee and Liao (2004) found that board size and independence were inversely related with company earnings management. Jiang (2007) also found that when a higher proportion of directors were associated with the controlling shareholder, the independence of the board declined and the monitoring mechanisms decreased, reducing the earnings quality. Chen, Elder, and Hsieh (2007) stated that hiring independent directors with financial expertise could reduce the possibility of earnings management. Thus, we also contend that if a company establishes independent directors or if the board comprises a higher proportion of independent directors, the earnings quality of the company should increase.

One characteristic of corporate governance in Taiwan is that controlling shareholders control the selection of independent directors, particularly because numerous companies are controlled by controlling shareholders. Therefore, independent directors lose their ability to provide oversight. Investigations into the impact of independent directors on earnings quality must consider the role of controlling shareholders. Therefore, this study must also assess the mediating effect of controlling shareholders.

2.2 The Moderating Effect of Controlling Shareholders on Independent Director Functions

La Porta, Lopez-de-Silanes, and Schleifer (1999) analyzed 27 wealthy countries and found that the shares of listed companies were generally owned by one controlling shareholder. Claessens et al. (2000) reported similar results after analyzing nine Southeast Asian countries. Faccio and Lang (2002) analyzed 13 European countries and found that over 60% of companies had a controlling shareholder. Yeh et al. (2001) investigated listed companies in Taiwan and reported that nearly 70% of companies had a controlling

shareholder. Empirical results from both the West and Asia show that the existence of controlling shareholders is a widespread phenomenon.

Claessens et al. (2000) suggested that when a controlling shareholder can control a company through the proportion of shares held, the agency problem changes from an equity agency problem involving ownership and operating rights into a core agency problem between the controlling shareholder and other shareholders. Claessens et al. (2000) found that if a controlling shareholder can control a company through a pyramidal ownership structure or cross-shareholding, the control rights of the controlling shareholder typically exceed their earnings distribution rights. The deviation of control rights from earnings distribution rights creates a gap between the control rights of the controlling shareholder and the operating risks incurred by the controlling shareholder. When this gap is greater, the controlling shareholder, in pursuit of their personal interests, may damage the interests of smaller shareholders (Haw et al., 2004; Claessens et al., 2002; Mitton, 2002; Johnson et al., 2000).

Francis et al. (2005) and Fan and Wong (2002) indicated that when a greater gap between control rights and earnings distribution rights exists, a controlling shareholder is more motivated to manipulate the accounting policies and disclosed financial report content of the company. When pursuing their own interests, the controlling shareholder may hide information in financial reports and reduce the content of financial reports. Wang (2006) used S&P 500 companies as a sample to examine the connection between family businesses and earnings quality. Empirical results showed that family firms are linked to higher earnings quality. Family firms have lower abnormal accruals, higher earning information, and are more capable of accepting temporary losses.

When the gap between the control rights and earnings distribution rights of a controlling shareholder increases, financial incentives to hide information in financial reports, or to adopt accounting policies that benefit the controlling shareholder increase, which negatively affect the rights and benefits of other shareholders. Therefore, when this phenomenon occurs, the controlling shareholder can determine whether to hire independent directors, which thereby weakens the oversight and guidance ability of independent directors and reduces the quality of earnings. In other words, the existence of a controlling interest may negatively moderate the influence independent directors have on earnings quality.

3 Measurement of Research Variables

3.1 Measurement of Earnings Quality

The traditional linear discretionary accrual model introduced by Jones (1991) is broadly adopted in accounting literature (e.g., Dechow, Sloan, and Sweeney, 1995; DeFond and Jiambalvo, 1994; Francis et al., 2005). The model introduced by Dechow and Dichev (2002) is primarily used to estimate accruals from working capital, and indicates that accruals of working capital are related to cash flows from operating activities. The model first involves a regression method for estimating the relationship between working capital accruals and cash flows from operating activities. Explanatory variables include the current period, the previous period, and cash flows from future operating activities. To exclude firm size and annual effects factors, relevant variables are divided by total assets in the present period to determine the proportion of working capital and operating cash

flow versus total assets, performing regression analysis based on industries categorized by year. The regression model is as follows:

$$\frac{TA_{j,t}}{Asset_{j,t}} = \phi_0 + \phi_1 \frac{CFO_{j,t-1}}{Asset_{j,t}} + \phi_2 \frac{CFO_{j,t}}{Asset_{j,t}} + \phi_3 \frac{CFO_{j,t+1}}{Asset_{j,t}} + v_{j,t} \quad (1)$$

where $TA_{j,t}$ is the total accruals of company j in the t^{th} period; the value of this expression is the change in the liquid assets of company j in the t^{th} period minus the change in liquid debt, minus the change in cash plus the change in long-term debt, and minus depreciation and amortization.

The simple expression is $(\Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t} - Dep_{j,t}) / Asset_{j,t}$ represents the average total assets of company j in the t^{th} period, and $CFO_{j,t}$ represents the operating cash flow of company j in the t^{th} period. The residual of Formula (1) ($v_{j,t}$) indicates that the accruals of working capital cannot be used to calculate the standard deviation of the residuals $\sigma(\hat{v}_{j,t})$ of the five years from $t-4$ to t from the portions explained by the cash flow of the previous period, the current period, and the following period. A greater $\sigma(\hat{v}_{j,t})$ value indicates greater volatility of abnormal accruals and poorer earnings quality. For convenient analysis,^{1/} $\sigma(\hat{v}_{j,t})$ was used as the proxy variable for earnings quality.

3.2 Measurement of Explanatory Variables

3.2.1 Independent Director Variable

To determine the impact of independent directors on earnings quality, we established the following three explanatory variables: a dummy variable for whether independent directors were hired; the proportion of independent directors in boards of directors; and a dummy variable for whether independent directors were voluntarily hired. The proportion of independent directors in boards of directors was calculated by dividing the number of seats occupied by independent directors by the total number of seats on the board. The dummy variable for whether independent directors were voluntarily hired was based on the legal requirements for independent directors in Taiwan.⁴ If independent directors were not hired based on legal requirements, the value of the variable was set to 1; otherwise, the value of the variable was set to 0.

⁴ In 2002, an independent directors system was initially introduced to the Taiwanese Securities Exchange and the Taiwan Trading Center in the Listed Company Governance Application Rules. These standards required listed companies to hire at least two independent directors. Then, on January 11, 2006, the Legislative Yuan added Article 14.2 to the Securities Exchange Act, providing a legal basis for the hiring of independent directors by companies going public. On February 17, 2006, the FSC determined that securities companies, such as holding companies, banks, and insurance companies, with capital assets over \$10billion NTD and other listed companies with capital assets over \$50billion NTD would be the first category of companies required to establish independent directors. These regulations were implemented on January 1, 2007, and were applied when the sitting directors completed their terms.

3.2.2 The Controlling Shareholder Control Rights Variable

The ownership concentration phenomenon is widespread among Taiwanese listed companies. Company operating strategies are largely determined by the controlling shareholders. When a controlling shareholder has greater control rights, they encounter fewer threats and, therefore, their predatory incentives are greater. In this study, we use shareholding control rights and the number of seats controlled on the board of directors as proxy variables for the control rights of controlling shareholders. Shareholding control rights were calculated using the method employed by La Porta et al. (1999). The proportion of shares controlled by a controller was measured by direct or indirect control, through a pyramidal control structure or cross-stockholdings, held by the controlling shareholder. The ratio of seats controlled on boards of directors was measured by the ratio of the board seats directly or indirectly controlled, through a pyramidal control structure or cross-stockholdings, by the controlling shareholder to the total board seats.

3.2.3 Controller Form

Because controlling shareholders often drive the operating decisions of companies characterized by ownership concentration, the management ideas of the controlling shareholder affect company decisions. In this study, we determined controller form using disclosed public brochures or information in annual reports. The controller forms of Taiwanese listed companies can be divided into alliance governance, family control, government control, and professional manager governance.

Because annual reports disclose family members within two degrees of separation and several companies reveal information of marriage relations, family relationships published in annual reports can be used to determine whether shareholders belong to one family.⁵ The Taiwanese government began driving the privatization of national industries in 1989 by releasing shares and asset auctions and sales. As of December 2009, although 38 of 68 national companies have been completely privatized,⁶ with government equity reduced to below 50%, the government remained the largest shareholder, wielding tangible control. Boards of directors and relevant hiring power remained under government control. Professional manager governance is the most common controller form in the Taiwanese electronics industry. In companies of this type, controllers must have professional or technical backgrounds. In addition to acting as directors, they are essential to government operations and hold crucial positions (e.g., president, CEO, and R&D director). Distinct from government-controlled and family-controlled forms, companies characterized by power-sharing typically have more diffuse shareholding structures, with no single entity having total control. Therefore, controllers must seek

⁵ Family-controlled firms are defined as firms where the chairman and the president are representatives of family members; the ratio of seats controlled by the family exceeds 50% (not including friendly seats), while the percentage of friendly directors and outside directors is less than 33%; the ratio of seats controlled by the family exceeds 33%, and at least three individuals from the ultimate controlling family act as directors and managers; and the ratio of shares controlled by the family is greater than the required controlling stake.

⁶ The Council for Economic Planning and Development Report on the Privatization of National Enterprises (December 2, 2009) indicated that 68 national enterprises were undergoing privatization, 38 were fully privatized, 17 had been dissolved, 2 had not yet been privatized, 3 were joint holdings, and 8 were continuing privatization.

support from other shareholders; the boards of directors in such companies are often controlled by two or more entities. To determine the effect various controller forms have on the influence of independent directors on earnings quality, this study established four controller form dummy variables to be included in the regression model for analysis.

3.3 Model Control Variable

To examine the influence of independent directors on earnings quality, we referenced the research of Becker, Defond, Jiambalvo, and Subramanyam (1998); Cheng and Warfield (2005); and Reynolds and Francis (2000) regarding firm size, financial structure, operating characteristics, financial losses, growth opportunities, and institutional investor shareholding proportion as six control variables.

Watts and Zimmerman (1986) stated that larger firm tended to have greater political sensitivity; thus, large companies had greater incentives to manipulate earnings. Dechow and Dichev (2002) found that large companies increased and stabilized accruals; thus, they inferred that firm size was inversely related to earnings quality. Watts and Zimmerman (1986) suggested that a higher debt ratio may lead a company to increase earnings for a specific period by manipulating earnings to avoid violating debt contracts and reducing default risks; therefore, companies with higher debt ratios are expected to have poorer earnings quality.

Dechow and Dichev (2002) suggested that greater earnings volatility tended to produce more errors when estimating accruals. Operating losses indicate that a company is operating poorly or is poorly managed; therefore, managers have the incentive to adjust financial reports, reducing the quality of earnings in financial reports. For companies with high growth potential, managers are concerned with reaching earnings targets, which provides the incentive to manipulate earnings, thereby reducing earnings quality. Regarding corporate governance, institutional investor shareholding proportions represent the strength of oversight over company managers. A greater proportion of shares held by institutional investors is associated with the reduced probability of managers manipulating financial reports; thus, financial reports are expected to be of higher quality.

4. Description and Explanation of Data

4.1 Description of Research Sample

For this study, we selected companies publicly listed in Taiwan from 2002 to 2010 as the research subjects.⁷ The Taiwanese Economic Journal (TEJ) database was used as the data source. Because the financial structures of companies in the financial industry differ from those of companies in other industries, companies in the financial industry were excluded from the research sample. The methods employed in previous studies were referenced to ensure precision when estimating the quality of earnings. Industries with fewer than 6 companies in a given year were not included in the scope of this study. Thus, these industries were excluded from the research subjects. In addition, the data collection

⁷Because earnings quality is measured using the standard deviation of estimated residuals for five years from $t-4$ to t $\sigma(\hat{v}_{j,t})$, and the model by Dechow and Dichev also uses the operating cash flows of $t-1$, $t,0$ and $t+1$, data were selected from 1998 to 2011.

process, 208 observations had incomplete information and were excluded. The remaining research sample comprised 6,187 observations.

4.2 Descriptive Statistics

Table 1 shows the descriptive statistics of the relevant variables in this study. The average value for the dummy variable of whether independent directors were hired was 0.159, indicating that only 15.9% of the research sample had hired independent directors; the hiring of independent directors is evidently not commonplace among Taiwanese listed companies. The average value for whether independent directors were hired voluntarily was 0.07, indicating that 8.9% of the sample was required to appoint independent directors.

Regarding shareholder control, the average controlling shareholding ratio was 0.297; 92.5% of the sample exceeded the shareholding ratio threshold.⁸ The average ratio of seats controlled was 0.691; the proportion of seats controlled was exceeded 50% for 76.4% of the sample. The controlling shareholders of listed Taiwanese companies had an absolute advantage in shareholding control rights and the number of seats controlled on boards. Therefore, controlling shareholders had a decisive influence on company decisions.

Table 1: Descriptive statistics of the research variables

Variable	Mean	SD	Minimum	Median	Maximum	Skew	Kurtosis
Earnings quality	7.931	10.934	0.134	7.044	95.046	9.229	158.449
Whether independent directors were hired	0.159	0.366	0.000	0.000	1.000	1.863	1.471
Ratio of independent directors on board	0.044	0.108	0.000	0.000	0.600	2.389	4.573
Whether independent directors were voluntarily hired	0.070	0.256	0.000	0.000	1.000	3.365	9.325
Holding ratio of controlling shareholder	0.297	0.157	0.007	0.279	0.935	0.638	0.185
Ratio of board seats controlled by controlling shareholder	0.691	0.199	0.000	0.667	1.000	0.032	0.867
Controlled by family (dummy variable)	0.717	0.451	0.000	1.000	1.000	-0.962	-1.075
Ultimate controlling shareholder is government (dummy variable)	0.015	0.119	0.000	0.000	1.000	8.140	64.298
Controlled by professional managers (dummy variable)	0.162	0.368	0.000	0.000	1.000	1.837	1.374
Controlled by alliance governance (dummy variable)	0.105	0.318	0.000	0.000	1.000	2.423	3.871
Firm size	6.694	0.507	5.295	6.633	8.623	0.755	0.753
Financial structure	0.394	0.134	0.070	0.397	0.835	0.191	0.261
Operating characteristics	0.041	0.050	0.000	0.026	0.745	4.286	35.417

⁸The control threshold standard calculation method of Cubbin and Leech (1983) was used here; the

formula is $P^* = Z_\alpha \times \sqrt{\frac{\pi H}{1 + Z_\alpha^2 \pi}}$, where P^* is the control threshold standard, Z_α is the z value

under the significance standard α , α is the probability of the shareholder winning the election (assume = 1, Z -value = 3.32), π is the probability of the shareholder voting (assume = 0.99), and H is the Herfindahl index used to measure concentration.

Losses	1.177	1.422	0.000	1.000	5.000	1.074	0.165
Growth opportunity	0.016	0.033	0.000	0.006	0.891	10.269	208.318
Holding ratio of institutional investors	0.084	0.094	0.000	0.059	0.873	2.025	6.254

The ratio of independent directors on board was calculated by dividing the number of independent directors by the total number of seats on the board. Holding ratio of controlling shareholder was measured by direct or indirect control, through a pyramidal control structure or cross-stockholdings, held by the controlling shareholder. Ratio of board seats controlled by controlling shareholder were measured by dividing the number of seats controlled by the controlling shareholder by the total number of seats. Firm size was measured by averaging the log for total assets from $t-4$ to t ; financial structure was measured using the average debt ratio from $t-4$ to t . Losses were expressed by the number of years, using losses from $t-4$ to t . Growth opportunity was measured by the average of dividing R&D expenditures by sales income. Holding ratio of institutional investor was measured using the sum of the proportion of shares held by institutional investors.

The average value for the dummy variables of controller form show that 71.7% of the sample was controlled by families; 1.5% of the sample was controlled by the government. Leadership by professional managers and alliance governance forms constituted 16.2% and 10.5% of the sample, respectively. Families primarily controlled listed companies in Taiwan. Significantly, besides the companies legally required to hire independent directors after 2003, none of the other six companies controlled by the government hired independent directors.⁹ Thus, while the government actively promoted independent director systems to establish good corporate governance, the listed companies controlled by the government did not provide a good example. Government agencies should be aware of this situation.

5 Empirical Results

The purpose of establishing a system of independent directors is to protect shareholder wealth by providing oversight and professional services from the impartial position of an independent director. The information in financial reports is crucial because it communicates the company's status to external investors. In situations with information asymmetry, when managers have the incentive to act in a predatory fashion toward external shareholders, they provide lower-quality financial reports. An effective system of independent directors is expected to increase earnings quality.

To determine whether the Taiwanese system of independent directors can increase company earnings quality, we used whether independent directors were hired and the proportion of seats held by independent directors as explanatory variables to observe the impact independent directors had on earnings quality. Based on the empirical results in Table 2, the estimated coefficient of the dummy variable of whether independent directors were hired was 2.008 and significant, indicating that the appointment of independent directors can reduce the volatility of abnormal accruals and positively influence earnings quality. This finding supports the notion that independent directors can provide effective

⁹The other six companies guided by the government were China Steel (2901), China Steel Structure (2013), Chung Hung Steel (2014), Shin Shin (2901), and Shin Shin Natural Gas (9918).

oversight and increase earnings quality, reducing information asymmetry. Therefore, to increase earnings quality, promoting a system of independent directors is necessary.

Table 2: The impact of appointing independent directors on earnings quality

	Model 1	Model 2
Constant	-0.229 *** (-8.118)	-0.229 *** (-8.028)
Whether independent directors were hired	2.008 ** (2.507)	
Ratio of independent directors on board		4.026 ** (2.323)
Firm size	-0.005 (-1.245)	-0.005 (-1.024)
Financial structure	-0.086 *** (-7.620)	-0.087 *** (-7.705)
Operating characteristics	2.059 ** (2.491)	2.059 ** (2.516)
Losses	-0.004 *** (-4.698)	-0.004 *** (-4.680)
Growth opportunities	-0.101 ** (-2.502)	-0.097 ** (-2.406)
Holding ratio of institutional investors	-0.026 ** (-2.025)	-0.026 ** (-2.018)
Adj R ²	0.758	0.768
F-statistic	39.183 ***	39.964 ***

To determine whether independent directors facilitate the improvement of earnings quality, the standard deviation of abnormal accruals from the previous five years found using the model by Dechow and Dichev (2002) multiplied by (-1) was used as an dependent variable. The ratio of independent directors on board was calculated by dividing the number of independent directors by the total number of seats on the board. The variables of firm size, debt ratio, operating characteristics, losses, growth opportunities, and the holding ratio of institutional investors were used as control variables to prevent estimation error. The endogenous Hausman test and collinearity testing were applied to determine whether the model was endogenous and if the VIF values were less than 10, indicating that explanatory variables did not have a collinearity problem; a panel data regression fixed effect model was used for analysis. Firm size was measured by taking the average log for total assets from $t-4$ to t ; financial structure was measured using the average debt ratio from $t-4$ to t . Losses were expressed by the number of years with losses from $t-4$ to t . Growth opportunity was measured by the average of dividing R&D expenditures by sales income. Holding ratio of institutional investor was measured using the sum of the proportion of shares held by institutional investors. *, **, and *** indicate significance at a 10%, 5%, and 1% level, respectively.

The empirical results of Model 2 also showed that companies with higher ratios of independent directors had higher earnings quality. Because Taiwan currently requires that companies with independent directors have at least two independent directors, the ratio of seats held by independent directors is relatively low compared to ratios in the U.S. and European countries. Therefore, independent directors are limited in their ability to perform their functions. The empirical results also indicated that companies with higher

ratios of independent directors had higher earnings quality. Therefore, to protect investor wealth, the government should adjust the required minimum number of independent directors and minimum ratio of seats held by independent directors.

Regarding the influence of control variables on earnings quality, firm size did not significantly affect earnings quality. However, higher debt ratios tended to reduce earnings quality, a result that was consistent with the findings of Watts and Zimmerman (1986). Higher debt ratios tend to motivate the manipulation of financial reports to avoid violating debt contracts. The estimated coefficient of losses was significant and negative, indicating that greater losses motivate managers to adjust financial reports that show poor performance, thereby reducing earnings quality. However, a higher ratio of shares held by institutional investors tended to have a negative influence on earnings quality. This may be because institutional investors are more concerned with short-term performance and participate in short-term trading. Therefore, institutional investors do not have an oversight effect on the opportunistic behaviors of managers and may allow managers to manipulate earnings to meet the expectations of short-term performance (Graves, 1998; Matsumoto, 2002).

When the independent directors system was implemented in Taiwan in 2002, only a few companies were required to establish at least two independent directors during the transitional period. Thus, the motives for hiring independent directors can be divided into the two categories of mandatory appointments and voluntary appointments. To determine whether different motives for hiring have a differing impact on earnings quality, we incorporated a dummy variable in the model of whether independent directors were voluntarily hired. Empirical results are shown in Table 3. The results of Model 1 indicate that the estimated coefficient for whether independent directors were hired was 2.025, which is significant and positive. The coefficient for whether independent directors were voluntarily hired was -1.023, indicating that the influence of mandatory independent directors on earnings quality (with a coefficient of 2.025) was significantly greater than that of voluntarily hired independent directors (with a coefficient of 1.002).

Based on the ratio of seats occupied by independent directors, the coefficient of the dummy variable for whether independent directors were voluntarily hired was -1.010 and significant, indicating that the influence of mandatory independent directors on earnings quality (with a coefficient of 2.049) was significantly greater than that of voluntarily hired independent directors (with a coefficient of 1.039). If the interactions between the ratio of seats held by independent directors and whether independent directors were hired voluntarily were considered according to the interaction term, the resulting coefficient was -0.062 and significant, indicating that the ratio of seats held by independent directors at companies that voluntarily hired independent directors had a smaller influence than at companies which were required to hire independent directors.

The results of Models 1 to 3 in Table 3 unanimously support the concept that independent directors increase earnings quality and that mandatory independent directors have a greater influence on earnings quality compared to voluntarily hired independent directors. These findings indicate that when companies can choose whether to hire independent directors or engage in earnings manipulation, they elect not to hire independent directors to avoid reduced control rights that occur under the supervision of independent directors. Companies that voluntarily hire independent directors tend to have superior earnings quality; thus, less monitoring value results from hiring independent directors.

Table 3: Impact of motives for hiring independent directors on earnings quality

	Model 1	Model 2	Model 3
Constant	-0.220 *** (-7.877)	-0.228 *** (-8.174)	-0.224 *** (-8.002)
Whether independent directors were hired	2.025 *** (4.329)		
Ratio of independent directors on board		4.049 *** (3.088)	4.067 *** (3.690)
Whether independent directors were voluntarily hired	-1.023 *** (-3.529)	-2.010 ** (-2.039)	
Ratio of independent directors on board × Whether independent directors were voluntarily hired			-0.062 *** (-2.865)
Firm size	-0.007 (-1.605)	-0.005 (-1.279)	-0.006 (-1.453)
Financial structure	-0.085 *** (-7.521)	-0.087 ** (-7.740)	-0.086 *** (-7.597)
Operating characteristics	2.059 ** (2.507)	2.060 ** (2.554)	2.060 ** (2.558)
Losses	-0.004 *** (-4.664)	-0.004 *** (-4.642)	-0.004 *** (-4.665)
Growth opportunities	-0.113 *** (-2.781)	-0.098 ** (-2.420)	-0.102 *** (-2.523)
Holding ratio of institutional investors	-0.023 * (-1.785)	-0.025 * (-1.911)	-0.024 * (-1.846)
Adj R ²	0.798	0.798	0.798
F-statistic	40.588 ***	39.993 ***	39.554 ***

To determine whether independent directors facilitate the improvement of earnings quality, the standard deviation of abnormal accruals from the previous five years found using the model by Dechow and Dichev (2002) multiplied by (-1) was used as an dependent variable. The ratio of independent directors on board was calculated by dividing the number of independent directors by the total number of seats on the board. The variables of firm size, debt ratio, operating characteristics, losses, growth opportunities, and holding ratio of institutional investors were used as control variables to prevent estimation error. The endogenous Hausman test and collinearity testing were applied to determine whether the model was endogenous and if the VIF values were less than 10, indicating that explanatory variables did not have a collinearity problem; a panel data regression fixed effect model was used for analysis. Firm size was measured by taking the average log for total assets from $t-4$ to t ; financial structure was measured using the average debt ratio from $t-4$ to t . Losses were expressed by the number of years with losses from $t-4$ to t . Growth opportunity was measured by the average of dividing R&D expenditures by sales income. Holding ratio of institutional investor was measured using the sum of the proportion of shares held by institutional investors. *, **, and *** indicate significance at a 10%, 5%, and 1% level, respectively.

Controlling shareholders control the decision to hire independent directors and may not be willing or may only hire independent directors who are willing to comply with the decisions made by the controlling shareholder. The effect of independent directors on earnings quality is also related to the quality of independent directors. Higher-quality independent directors are more capable of performing monitoring functions. Therefore, to examine the impact of independent directors on earnings quality, the influence of control rights exercised by controlling shareholders on earnings quality must be explored. In this study, we refer to this relationship as the moderating effect of controlling shareholders.

To examine the moderating effect of shareholders, we included an interaction term for independent directors and the control rights of controlling shareholders. The ratio of shares controlled by the controlling shareholder and the ratio of seats controlled by the controlling shareholder were used as proxy variables for the control rights of controlling shareholders. Both coefficients of the ratio of shares and seats controlled by the controlling shareholder are negative and significant, indicating that controlling shareholders with greater rights tended to reduce earnings quality. The empirical results of Models 1 and 2 shown in Table 4 indicate that the interaction between the ratio of shares controlled by the controlling shareholder and whether independent directors were hired, and between the ratio of shares controlled by the controlling shareholder and the ratio of seats held by independent directors were both negative and significant. Additionally, the interaction between the ratio of shares controlled by the controlling shareholder and whether independent directors who were voluntarily hired was positive and significant. These findings suggest that independent directors can increase earnings quality and that the positive influence of mandatory independent directors was significantly greater than the positive influence of voluntarily hired independent directors. In addition, a higher ratio of shares controlled by a controlling shareholder tended to reduce the positive impact of independent directors on earnings quality; in other words, the ratio of shares held by a controlling shareholder has a negatively moderating effect on earnings quality. However, for companies that voluntarily hired independent directors, the moderating effect of a controlling shareholder reduced the positive impact independent directors had on earnings quality less than that of companies that had mandatory independent directors. This indicates that the negative moderating effects of the ratio of shares held by a controlling shareholder are stronger for companies that had mandatory independent directors compared to those that voluntarily hire independent directors. Models 3 and 4, in which the ratio of seats held by independent directors is used as a proxy variable for independent directors, lead to the same conclusions.

Table 4: The moderating effect of controlling shareholders on the influence of independent directors on earnings quality

	Model 1	Model 2	Model 3	Model 4
Constant	-0.211 *** (-7.486)	-0.219 *** (-7.775)	-0.212 *** (-7.573)	-0.223 *** (-7.939)
Whether independent directors were hired	2.054 *** (5.157)		2.035 * (1.847)	
Ratio of independent directors on board		4.128 *** (4.441)		4.022 *** (4.471)
Whether independent directors were voluntarily hired	-1.054 *** (-4.563)	-1.029 *** (-3.293)	-1.034 *** (-2.453)	-1.004 ** (-2.201)
Holding ratio of controlling shareholder	-1.012 *** (-6.512)	-1.013 *** (-5.105)		

Ratio of board seats controlled by controlling shareholder			-1.375 ***	-3.068 ***
			(-2.868)	(-4.056)
Whether independent directors were hired ×Holding ratio of controlling shareholder	-0.096 ***			
	(-3.323)			
Ratio of independent directors on board ×Holding ratio of controlling shareholder		-0.249 ***		
		(-3.326)		
Whether independent directors were voluntarily hired × Ratio of shares controlled by controlling shareholder	0.107 ***	0.062 **		
	(3.127)	(2.473)		
Whether independent directors were hired ×Ratio of board seats controlled by controlling shareholder			-0.116 ***	
			(-3.320)	
Ratio of independent directors on board×Ratio of board seats controlled by controlling shareholder				0.144
				(1.414)
Whether independent directors were voluntarily hired ×Ratio of board seats controlled by controlling shareholder			0.110 ***	0.015 ***
			(2.617)	(2.454)
Firm size	-0.008 *	-0.007	-0.008 *	-0.006
	(-1.957)	(-1.621)	(-1.885)	(-1.432)
Financial structure	-0.083 ***	-0.085 ***	-0.084 ***	-0.088 ***
	(-7.335)	(-7.537)	(-7.501)	(-7.768)
Operating characteristics	2.058 **	2.062 ***	2.059 **	2.059 **
	(2.469)	(2.641)	(2.496)	(2.483)
Losses	-0.004 ***	-0.004 ***	-0.004 ***	-0.004 ***
	(-4.744)	(-4.770)	(-4.666)	(-4.668)
Growth opportunities	-0.107 ***	-0.095 **	-0.120 ***	-0.099 **
	(-2.646)	(-2.353)	(-2.953)	(-2.438)
Holding ratio of institutional investors	-0.024 *	-0.025 *	-0.023 *	-0.025 *
	(-1.832)	(-1.930)	(-1.775)	(-1.882)
Adj R ²	0.808	0.808	0.812	0.835
F-statistic	40.967 ***	39.058 ***	40.498 ***	39.181 ***

To determine whether independent directors facilitate the improvement of earnings quality, the standard deviation of abnormal accruals from the previous five years found using the model by Dechow and Dichev (2002) multiplied by (-1) was used as an dependent variable. The ratio of independent directors on board was calculated by dividing the number of independent directors by the total number of seats on the board. Holding ration of controlling shareholder was measured by direct or indirect control, through a pyramidal control structure or cross-stockholdings, held by the controlling shareholder. The variables of firm size, debt ratio, operating characteristics, losses, growth opportunities, and holding ratio of institutional investors were used as control variables to prevent estimation error. The endogenous Hausman test and collinearity testing were applied to determine whether the model was endogenous and if the VIF values were less than 10, indicating that explanatory variables did not have a collinearity problem; a panel data regression fixed effect model was used for analysis. Firm size was measured by taking the average log for total assets from $t-4$ to t ; financial structure was measured using

the average debt ratio from $t-4$ to t . Losses were expressed by the number of years with losses from $t-4$ to t . Growth opportunity was measured by the average of dividing R&D expenditures by sales income. Holding ratio of institutional investor was measured using the sum of the proportion of shares held by institutional investors. *, **, and *** indicate significance at a 10%, 5%, and 1% level, respectively.

Models 3 and 4 shown in Table 4 assess the moderating effect of controlling shareholders using the ratio of seats controlled by the controlling shareholder as a proxy variable for the control rights of the controlling shareholder. The coefficient of the interaction between whether independent directors were hired and the ratio of seats controlled was significant and negative, whereas the coefficient of the interaction between whether interdependent directors were hired voluntarily and the ratio of seats controlled was positive and significant. These results support the notion that the ratio of seats controlled reduces the increase in earnings quality resulting from independent directors. The moderating effect of controlling shareholders is weaker for voluntarily hired independent directors compared to mandatory independent directors. Model 4 uses the ratio of seats controlled by independent directors to assess the influence of controlling shareholders on independent directors. Results showed that neither the coefficients of the interaction between the ratio of seats controlled by independent directors and the ratio of seats controlled by the controlling shareholder nor of the interaction between voluntary appointments of independent directors and the ratio of seats controlled by the controlling shareholder reached significance. This indicates that the ratio of seats controlled by the controlling shareholder does not have a moderating effect on the influence independent directors have on earnings quality.

The empirical results shown in Table 4 demonstrate that when the controlling shareholder possesses a higher ratio of shares, they can select independent directors who will comply with their decisions if legally required to hire independent directors. Therefore, independent directors cannot provide monitoring functions, which means that the control rights of controlling shareholders reduces the positive effect of independent directors on earnings quality. When a company can choose whether to voluntarily hire independent directors, financial incentives associated with controlling interests influence the company to not hire independent directors. When the controlling shareholder has weaker control rights, companies required to appoint independent directors or those that can choose whether to hire independent directors elect to hire higher-quality independent directors. Therefore, for companies required to appoint independent directors, the moderating effect of controlling shareholders on the influence independent directors have on earnings quality is greater compared to that for companies that voluntarily hire independent directors.

To determine the moderating effect of controller forms on the influence of independent directors on earnings quality, we performed panel data regression using Models 1 to 6, as shown in Table 5, including various interactions between a family dummy variable, a professional manager dummy variable, an alliance governance dummy variable, and independent directors.¹⁰ Empirical results showed that only the coefficient for the interaction between the alliance governance dummy variable and independent directors

¹⁰Because only two of the government-guided listed companies had hired independent directors, it was impossible to perform panel data regression analysis; thus, they were not examined in the model.

was significant. This suggests that if the controller form is family or professional manager-based, it does not affect independent directors influence on earnings quality; in other words, a moderating effect does not occur. Models 5 and 6 showed that the coefficient of the interaction term between voluntary appointments of independent directors and the dummy variable for the alliance governance dummy variable was not significant; however, the coefficient for the interaction between voluntary appointments of independent directors and the alliance governance form dummy variable was positive and significant. For companies required to appoint independent directors, alliance governance controllers do not have a moderating effect on the influence independent directors have on earnings quality. However, for companies that voluntarily hire independent directors, listed companies in alliance governance forms have a positive moderating effect on the influence independent directors have on earnings quality.

Table 5: The moderating effect of controlling shareholder roles on the influence of independent directors on earnings quality

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-0.221 *** (-7.876)	-0.226 *** (-8.050)	-0.223 *** (-7.942)	-0.227 *** (-8.076)	-0.219 *** (-7.834)	-0.228 *** (-8.150)
Whether independent directors were hired	2.021 *** (2.736)		2.027 *** (3.583)		2.028 *** (4.573)	
Ratio of independent directors on board		4.065 *** (2.808)		4.032 * (1.664)		4.052 *** (3.200)
Whether independent directors were voluntarily hired	-1.018 ** (-1.967)	-1.013 * (-1.748)	-1.023 *** (-2.728)	-1.004 (-0.688)	-1.028 *** (-4.065)	-1.013 ** (-2.529)
Family dummy variable	-0.110 *** (-4.035)	-0.105 ** (-2.035)				
Professional manager dummy variable			0.012 (0.952)	0.009 (1.021)		
Alliance governance form dummy variable					0.015 (1.024)	0.018 (1.008)
Whether independent directors were hired × Controlled by family (dummy variable)	0.009 (0.859)					
Ratio of independent directors on board × Controlled by family (dummy variable)		-0.029 (-0.978)				
Whether independent directors were voluntarily hired × Controlled by family (dummy variable)	-0.010 (-0.795)	0.006 (0.628)				
Whether independent directors were hired × Controlled by professional managers (dummy variable)			-0.004 (-0.380)			
Ratio of seats held by independent directors × Controlled by professional managers (dummy variable)				0.044 (1.380)		
Whether independent directors were voluntarily hired × Controlled by professional managers (dummy variable)			-0.004 (-0.278)	-0.018 (-1.708)		
Whether independent directors					-0.026	

were hired ×Controlled by alliance governance (dummy variable)							(-1.525)
Ratio of independent directors on board ×Controlled by alliance governance (dummy variable)							-0.061 (-1.107)
Whether independent directors were voluntarily hired ×Controlled by alliance governance (dummy variable)							0.045 ** (1.970)
Firm size	-0.007 (-1.582)	-0.006 (-1.347)	-0.006 (-1.488)	-0.005 (-1.290)	-0.007 (-1.626)	-0.005 (-1.254)	
Financial structure	-0.085 *** (-7.538)	-0.086 *** (-7.670)	-0.085 *** (-7.534)	-0.087 *** (-7.716)	-0.086 *** (-7.637)	-0.088 *** (-7.846)	
Operating characteristics	2.059 ** (2.479)	2.060 ** (2.557)	2.058 ** (2.438)	2.060 ** (2.532)	2.060 ** (2.552)	2.061 *** (2.603)	
Losses	-0.004 *** (-4.646)	-0.004 *** (-4.645)	0.004 *** (-4.696)	-0.004 *** (-4.694)	-0.004 *** (-4.632)	-0.004 *** (-4.617)	
Growth opportunities	-0.109 *** (-2.659)	-0.102 ** (-2.506)	-0.108 *** (-2.631)	-0.103 ** (-2.531)	-0.115 *** (-2.834)	-0.097 ** (-2.412)	
Ratio of shares held by institutional investors	-0.023 * (-1.771)	-0.025 * (-1.907)	-0.023 * (-1.731)	-0.025 * (-1.890)	-0.023 * (-1.763)	-0.025 * (-1.915)	
Adj R ²	0.818	0.815	0.843	0.821	0.824	0.835	
F-statistic	39.306 ***	39.050 ***	39.921 ***	39.817 ***	39.359 ***	39.921 ***	

To determine whether independent directors facilitate the improvement of earnings quality, the standard deviation of abnormal accruals from the previous five years was found using the model proposed by Dechow and Dichev (2002) multiplied by (-1), as an dependent variable. The ratio of independent directors on board was calculated by dividing the number of independent directors by the total number of seats on the board. In addition, interaction terms between independent directors and family dummy variables, professional manager dummy variables, or alliance governance dummy variables were incorporated, to observe the moderating effects of controlling shareholders on the impact degree of independent directors on earnings quality. The variables of firm size, debt ratio, operating characteristics, losses, growth opportunities, and holding ratio of institutional investors were used as control variables to prevent estimation error. The endogenous Hausman test and collinearity testing were applied to determine whether the model was endogenous and if the VIF values were less than 10, indicating that explanatory variables did not have a collinearity problem; a panel data regression fixed effect model was used for analysis. firm size was measured by taking the average *log* for total assets from *t*-4 to *t*; financial structure was measured using the average debt ratio from *t*-4 to *t*. Losses were expressed by the number of years, with losses from *t*-4 to *t*. Growth opportunity was measured by the average result of dividing R&D expenditures by sales income. Holding ratio of institutional investor was measured using the sum of the proportion of shares held by institutional investors. *, **, and *** indicate significance at a 10%, 5%, and 1% level, respectively.

6 Conclusions

A system of independent directors has been in operation in Taiwan for almost nine years. The effectiveness of this system has gained the attention of the industry, government officials, and academic scholars. In this study, we assessed whether a system of independent directors can increase earnings quality effectively from the perspective of earnings quality. We also examined whether the control rights of controlling shareholders and control right forms have an effect on the influence independent directors have on earnings quality. The results of this study support the notion that establishing independent directors can reduce the volatility of abnormal accruals, affirming the effectiveness of the system of independent directors for raising earnings quality. Other evidence showed that companies with a higher ratio of independent directors have higher earnings quality. Because Taiwan requires a significantly lower number of independent directors per board compared to the U.S. or European countries, and because a low ratio of independent directors inhibits the effective exercising of the functions of independent directors, we suggest that the government increase the minimum number of independent directors and the minimum ratio of independent directors required.

Currently, both voluntary appointments and mandatory appointments of independent directors exist in Taiwan. The study results showed that mandatory appointments of independent directors had a greater positive influence on earnings quality compared to that of voluntary appointments of independent directors. This was primarily because companies with higher controlling interests that are permitted to choose whether to hire independent directors elected not to hire independent directors. Therefore, less oversight value exists for companies that voluntarily hire independent directors. Earnings quality must be increased to reduce information asymmetry and thereby protect investor interests. The government should require all companies to establish independent directors to prevent the occurrence of financial reporting fraud.

The ratio of shares and of seats controlled by controlling shareholders reduces the positive impact of independent directors on earnings quality. This indicates that when controlling shareholders have greater control rights, the monitoring functions of independent directors are limited. The controlling shareholders of most listed companies in Taiwan have total control. This problem must be addressed to fully employ the functions of independent directors. To prevent independent directors from being controlled by controlling shareholders, the government should enhance the responsibilities and penalties for independent directors to motivate them to genuinely realize the oversight and service functions of an independent director system.

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