Attendance of board meetings and company performance: Evidence from Taiwan

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ABSTRACT

This paper empirically investigates board meeting attendance and its effects on the performance of Taiwanese listed corporations. Directors with higher qualifications attend board meetings more often by themselves. The ownership of the largest shareholder of a company also has a positive effect on director's own meeting attendance. High meeting attendance by directors themselves can enhance a firm's performance but high attendance by their representatives has an adverse effect. Independence of directors or a board is also positively associated with firm performance. These results largely hold even when the sample is decomposed to count for different ownership structures and director types.

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1. Introduction

The board of directors of a company has three main functions: monitoring, advising and contracting. It has the legal authority to ratify and monitor managerial initiatives, evaluate the performance of top managers, and reward or penalize that performance (Fama and Jensen, 1983a,b). The inside directors (executives of the company) provide valuable information about a firm's activities, while outside directors may provide both strategic input and objectivity in evaluating the top executives' decisions. Hence, it is important to understand the behavior and work effort of directors and the behavioral difference between different directors. One of major duties of directors, especially for outside directors, is to attend board meetings because board meeting is the main vehicle for directors to collect information, make decisions and monitor the management (Adams and Ferreira, 2008). Moreover, it is quite difficult to measure director work effort completely and directly in empirical studies. A straightforward way to partially identify director behavior and work effort is to investigate their board meeting attendance (Chou et al., 2010), which is the focus of this paper.

Existing empirical studies of board member activities are concentrated on board meeting attendance by outside directors and most studies are restricted to US companies. However, the data of board meeting attendance by the directors of US firms are not precise because the available data source only records whether a director attends more than 75% board meetings or not (e.g., Adams and Ferreira, 2008, 2012; Lawler and Finegold, 2006). This paper intends to overcome this shortcoming of the existing empirical literature by using a more comprehensive data set of board meeting attendance of Taiwanese companies. In contrast to the US companies, companies listed in the Taiwan Stock Exchange must provide detailed information of board meeting attendance of all directors in their annual reports. It includes board meetings attended by directors themselves and attended by the representatives authorized by a director. With this more accurate information, we can have a closer look on board member activities. Particularly, we can empirically test the determinants of board meeting attendance with considerable accuracy. It is found that manager directors attend much more board meetings by themselves than outside directors (inducting both independent and gray directors), while the attendance of family directors is between them.[1] Gray and family directors are also more likely to authorize a representative to attend board meetings on their behalf than other directors.

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[1] Directors coming from the controlling family of a company are called family directors in this paper. Furthermore, directors affiliated with the ultimate shareholder in terms of family relation or business relation are called ultimate directors. The details of firm and director classifications are given in the next section.

Another new feature of our database is that it contains comprehensive information of the qualification of each director. We include three proxies for the quality of a director in our analysis and find that all three measures are positively and significantly related to directors' own meeting attendance but negatively related to meeting attendance by their representatives. A more capable director seems more involving and is keener to play the director role by him/herself rather than to delegate the job to his/her representative. We also find that directors attend more board meetings by themselves and delegate fewer to their representatives if the largest shareholder of the firm has a greater proportion of cash flow rights. For other determinants of meeting attendance by directors themselves, our findings are consistent with the existing literature. Moreover, a determinant usually generates opposite effects on a director's own meeting attendance and authorized meeting attendance.

As an innovation, this study further explores work effort, or more specifically board meeting attendance, of various types of directors under different ownership structures. Concentrated ownerships in the forms of companies with a controlling family and/or a controlling ultimate shareholder are quite common in East Asia (e.g., Claessens et al., 2000; Claessens and Fan, 2002). To our knowledge, there is no literature to examine how directors play their roles differently due to ownership variation. According to the reality of the Taiwanese economy, this study considers five types of ownership structures. Our attention is on the contrast between widely dispersed firms and family/ultimate shareholder controlled firms. Both independent and gray directors tend to attend more meetings by themselves if they seat on the board of a widely dispersed firm but fewer meetings if they are on the board of a family firm, although not all of these results are statistically significant. On the other hand, manager directors attend fewer board meetings if they are employed by a widely dispersed firm or by a firm with less divergence between the ultimate shareholder's voting rights and cash flow rights. But this divergence makes family directors more likely reduce their own meeting attendance.

Whether the directors of a company properly play their monitoring, advising and contract roles is ultimately testified by whether their work improving the company's performance. With the relatively accurate information of board meeting attendance in our database, we can directly test the impact of directors' meeting attendance on firm performance. To our knowledge, this is the first in the literature to quantitatively examine this relation.[2] Our findings indicate that the frequency of board meetings attended by directors themselves has a positive and significant effect on a firm's profitability. However, the authorized meeting attendance is negatively correlated with performance. This negative effect is statistically significant and economically comparable to the positive effect of directors' own attendance.

While the typical agency problem of a widely dispersed firm is the conflict of interest between managers and shareholders, the main agency problem of a firm with concentrated ownership is the conflict of interest between controlling shareholders and minority shareholders. We study the director's role in resolving these agency problems and improving performance by considering further the attendance of board meetings by different types of directors in these firms separately. Independent directors seem to play a more profound role in family or ultimate shareholder controlled companies than in widely dispersed firms, as evidenced by the findings that the effect of their own attendance to board meetings is significant on the profitability of family/ultimate controlled companies but insignificant on widely dispersed firms. The presence of family directors and ultimate directors in board meetings also has a significant impact on these firms' performance.

The remainder of the paper is organized as follows. Section 2 specifies the motivations and research questions of this paper. It also presents the regression models for testing. Section 3 describes the statistics of our sample and reports the main empirical results using firm-level and director-level data. The final section concludes the paper.

2. Research questions and methods

This research focuses on two questions. The first is what factors determine a director to attend more (or less) board meetings. The second is whether and how a director's work effort in terms of board meeting attendance affects his/her company's performance. This section presents our motivations and research methods addressing these questions.

Because we want to address these issues by considering different firm ownership structures and different types of directors, we need to identify the ultimate shareholder of a firm. Following La Porta et al. (1999), we employ the cut-off of 20% control rights to trace who is the ultimate shareholder of a company. Direct voting rights are measured as the fraction of stocks held by a shareholder, and indirect voting rights are measured based on the latest link in the chain of stocks held by entities or nominal companies that are controlled by the shareholder. The ultimate shareholder is defined as the one who has the largest control rights by combining direct and indirect voting rights. Thus, the ultimate shareholder of a firm can be either an individual/family, a state agent, an institution or a widely held corporation. We call a company which has a controlling ultimate shareholder ultimate controlled firm. Our focus is on family controlled firms, ultimate controlled firms and widely dispersed firms. Note that a family controlled firm is definitely an ultimate controlled firm but an ultimate firm is not necessarily a family controlled firm.

In the literature, directors of a firm are usually classified into three types: inside directors who are current employees of the firm, gray outsiders who are outsiders but have business ties with the company and independent outsiders who do not have any relationship with the company (e.g., Baysinger and Bulter, 1985; Bhagat and Black, 2002). This classification is typical and well applicable to the US and the UK where the majority of the companies are widely dispersed firms. Because a large proportion of the firms in our study are controlled by families or ultimate shareholders, we classify directors into eight groups: family directors who are relatives of the controlling family, manager directors who are current employees of the firm, state directors who are agents of the government, institution directors who are agents of financial and investing institutions, gray directors who are outsiders but have business ties with the company, widely-held-corporation directors who are nominated by another widely held corporation, block outsiders who are large shareholders holding more than 1% of the firm, and independent directors who do not have any relationship to the company.[3] Moreover, we call a director ultimate director if he/she is affiliated with the ultimate shareholder of the company. As a group, ultimate directors include all family directors and some of state directors, institution directors and widely-held-corporation directors.

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[2] The only exception is the work by Adams and Ferreira (2009), which relates board meeting attendance to Return On Assets (ROA). However, their focus is on how female directors affect the governance and performance of US companies. They regress board meeting attendance on proportion of female directors in a firm and add ROA as one of control variables.

[3] Institutional, gray and block outsiders are usually classified as gray outsiders in the US studies.

2.1. The determinants of board meeting attendance

We are interested in the characteristics of a director that can determine his/her board meeting attendance. We are also interested in the question that whether directors behave differently in companies with different ownership structures and/or different features of large shareholders. To this end, we propose the following for empirical tests:

$$
\begin{aligned}
Attend_{i,t} = f(&X_{i,t}, Compensation_{i,t}, Women_{i,t}, Tenure_{i,t}, Interlock_{i,t}, \\
&Down_{i,t}, Pledged_{i,t}, Meeting_{i,t}, Qual1_{i,t}, Qual2_{i,t}, Qual3_{i,t}, \\
&Cashflow_{i,t-1}, Excess_{i,t-1}, ROA_{i,t-1}, Foreign_{i,t}, Domestic_{i,t}, \\
&Bsize/Size_{i,t}, Leverage_{i,t}, Cash_{i,t}, Invest_{i,t}, Var_{i,t}, Family_{i,t}, \\
&Widely_{i,t} \, \varepsilon_{i,t})
\end{aligned}
\tag{1}
$$

where $f(\cdot)$ represents a linear function. In the US, Securities and Exchange Commission (SEC) only requires firms to disclose the names of directors who absent more than 25% of the board meetings during a fiscal year, and more detailed data on a director's meeting attendance are not available. In this study, we take the advantage that Taiwanese firms must provide details of board meeting attendance for each director. Therefore, the dependent variable (Attend) in (1) is measured in two ways: the percentage of board meetings attended by a director him/herself, and the percentage of meetings attended by the authorized representatives of the director. The descriptions of all variables in (1) can be found in Table 1.

We regress model (1) at individual director level so that subscript i in (1) indexes individual director and subscript t indicates year. We consider two specifications of X. When the regression is over all directors in the sample, X is a vector with its elements being dummy variables indicating whether the director under consideration belongs to a particular type. Four types of directors, namely, independent, gray, manager, and family directors, are included as regressors. When regression is over directors of a particular type, X_i in (1) is director i's independence ratio (Indep), which is used as a control variable here and its details are given in the next Subsection.

Compensation to directorship provides incentives to enhance the willingness of attending board meeting for a director (Chou et al., 2010). In Taiwan, there is no strict requirement of reporting compensation details for each director. Companies are only required to report the total compensation to all directors in a company. Also, there is no requirement of reporting board meeting fee. Therefore, we measure Compensation in (1) as the logarithm of average compensation to a director in a company in a year.

Table 1
Summary of variable definitions.

	Variable	Description
Board meeting attendance	Own Meeting Attendance (Attend)	Percentage of board meetings attended by a director him/herself
	Authorized Meeting Attendance (Attend)	Percentage of board meetings attended by representatives authorized by a director
Director variable	Independence Ratio (Indep)	A director's independence status as specified by Appendix
	Woman Director (Woman)	Dummy variable equals one if the director is female and zero otherwise
	Compensation	Logarithm of compensation to a director in a year
	Tenure	The number of years that a director has served on the board
	Qualification 1 (Qual1)	Dummy variable equals one if a director is a lecturer or above in Business, Law, Finance, Accounting or Corporate Business related fields and zero otherwise
	Qualification 2 (Qual2)	Dummy variable equals one if a director has qualification of justice, procurator, attorney, CPA, specialist or technician of National Examination in Corporate Business related fields and zero otherwise
	Qualification 3 (Qual3)	Dummy variable equals one if a director has five years experience in business, law, finance, accounting or corporate business related fields and zero otherwise
	CEO Duality (Duality)	Dummy variable equals one if CEO and chairman is the same person and zero otherwise
	Director Ownership (Down)	The percentage of shares held by all directors
	Director Pledged Ratio (Pledged)	The percentage of all directors' shareholdings that are pledged for loans and credits
	Director Interlock (Interlock)	The number of listed firm directorships held by a director
Board variable	Board Meetings (Meeting)	The number of board meetings during a year
	Board size (Bsize)	Logarithm of the number of directors on a board
Ownership variable	Ownership (Cashflow)	The proportion of cash-flow rights held by the largest shareholder group
	Excess	The divergence between control (direct and indirect voting rights) and ownership (cash-flow rights) of the ultimate shareholder of a company
	Foreign Institutional Shareholdings (Foreign)	The percentage of shares held by foreign institutions and funds
	Domestic Institutional Shareholdings (Domestic)	The percentage of shares held by domestic institutions and funds
	Family	Dummy variable equals one if the ultimate shareholder of the company is a family group and zero otherwise
	Widely	Dummy variable equals one if the company is a widely dispersed firm and zero otherwise
Firm variable	Leverage	The ratio of book value of debt to book value of assets
	Growth Opportunity (R&D)	Research and development expenses over sales
	Firm Size (Size)	Logarithm of book value of assets
	Volatility (Var)	Variance of monthly returns stock over two prior years
	Excess Cash (Cash)	Cash and marketable security divided by the book value of total assets
	Investment Opportunity (Invest)	Capital expenditure divided by the book value of total assets
Performance variable	Return On Assets (ROA)	Net income divided by the book value of total assets
	Earnings Per Share (EPS)	Net income divided by the number of outstanding shares
	Sales To Assets Ratio (Sales)	Sales divided by the book value of total assets
	Sales Growth Rate (Growth)	The difference between current year's sales and last year's sales divided by last year sales

Directors and shareholders may use their own shareholdings as collaterals to increase control of the firm. They can collateralize their shareholdings to borrow money from banks and in turn buy more stocks of the firm. This, in turn, increases the deviation of their control rights to cash flow rights. They may also pledge their shareholdings for bank loans to invest in other opportunities. Pledging for loans effectively decreases the personal fund required for shareholdings (La Porta et al., 1999; Claessens et al., 2002). Thus, the regressors of (1) include the director pledged ratio, *Pledged*.

It is intuitive to expect that a director's qualification can affect their board meeting attendance since the qualification may be related to the effectiveness of a director's functioning and impact. Our database enables us to measure the qualification of a director in three dimensions as specified in Table 1. Thus, the characteristics of a director are more comprehensively portrayed.

The conflict of interest exists between managers and shareholders under the separation of ownership and control. However, ownership around the globe tends to be more concentrated and large shareholders are likely to be directly involved in management. This structure shifts the focus away from management expropriating shareholders to majority shareholders who have the opportunity to expropriate wealth from minority shareholders (e.g., Grossman and Hart, 1988; Shleifer and Vishny, 1997; Bebchuk et al., 2000). With large ownership and control, ultimate shareholders may resolve the agency problem between shareholders and managers. But the power of ultimate shareholders can prevent effective monitoring by other directors and the possible expropriation by ultimate shareholders (mainly controlling families) is also likely to be harmful to firm performance (e.g., La Porta et al., 1999, 2002; Claessens et al., 2000; Faccio and Lang, 2002). This potential of expropriation can be measured by divergence between control and cash flow rights of the ultimate shareholder (*Excess*), where control is based on direct and indirect voting rights of the ultimate shareholder (Claessens et al., 2000, 2006; Yeh and Woidtke, 2005). Another variable that proxies the controlling power of large shareholders in (1) is *Cashflow*, which measures the largest shareholder's cash flow rights. Thus, *Cashflow* and *Excess* in (1) are not simply control variables; they also proxy for the features of large shareholders.[4] Introducing these variables into the regression enables us to resolve the question that how these most important features related to the controlling power of large shareholders affects a director's behavior in terms of board meeting attendance.

Lagged performance measure, Return On Assets (*ROA*), is included in (1) because it is possible that past performance affects current board meeting attendance. We first regress (1) over all individual directors in the sample. In this regression, firm dummies (*Family* and *Widely*) are excluded because some types of directors do not exist under a certain ownership structure.[5] To investigate board meeting attendance by a particular type of directors, we separately regress (1) again over the subsamples of independent, gray, manager and family directors. In these regressions, firm dummies are included to examine the impact of the type of the firm the director works for.[6] In (1), we add year dummies and two-digit industry dummies to control for year and industry effects, respectively. Each regression is examined based on robust standard errors clustered at the director level.

2.2. The effects of board meeting attendance on performance

An essential way that a board exerts its influence on its firm is coming through decisions and plans made in board meetings. In other words, the directors of a firm have to attend their board meetings to monitor, stipulate and supervise the firm or to make strategic decisions for it. Failure to regularly attend board meetings can be seen as a director is unwilling or unable to fulfill his/her duties.[7] Hence, attending board meetings is to accomplish a director's responsibility and should be associated with subsequent higher firm performance. Thus, we posit the following hypothesis:

H1. Attendance of board meetings by directors themselves is positively correlated with firm performance.

Article 205 of Taiwanese Company Law stipulates that the quorum of any board meeting is a half of the number of board members and a resolution made by a board is eligible only if a half of or more attendees agree on it. Since authorized representatives are also counted, some directors may occasionally or quite often ask and authorize a shareholder or another director as their representatives to attend board meetings.[8] A plausible reason for directors sending representatives to board meetings can be that they are too busy to attend by themselves. Some directors, especially outside directors, have full-time jobs such as a CEO in other companies. Quite often, family directors of a family controlled firm are the managers or directors of an affiliated firm controlled by the family. These busy directors may not have enough time to fulfill their duties and thus may not attend board meetings regularly (Fich and Shivdasani, 2006; Adams and Ferreira, 2008). Instead of not attending board meetings by themselves, they may authorize a representative to attend meetings on their behalf to ensure meetings are eligible. Although busy directors usually have a good reputation and qualification (Kaplan and Reishus, 1990; Booth and Deli, 1996; Ferris et al., 2003), their representatives may not have the similar reputation and quality.[9] These representatives are likely to function not as well as directors themselves. Furthermore, the authorized representatives face an agency problem in the sense that they are more likely to shirk. Hence, the more meetings are delegated to representatives, the less effective is a director. These intuitions lead us to conjecture that

H2. Board meeting attendance by authorized representatives is negatively associated with subsequent firm performance.

To test these hypotheses, we specified a model as follows:

$$ROA_{i,t+1} = f(Attend_{i,t}, Indep_{i,t}, Family_{i,t}, Widely_{i,t}, Bsize_{i,t}, Duality_{i,t},$$
$$Woman_{i,t}, Qual1_{i,t}, Qual2_{i,t}, Qual3_{i,t}, Cashflow_{i,t}, Excess_{i,t},$$
$$Foreign_{i,t}, Domestic_{i,t}, Leverage_{i,t}, R\&D_{i,t}, Size_{i,t}, Var_{i,t},$$
$$Invest_{i,t}, \varepsilon_{i,t}) \tag{2}$$

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[4] The largest shareholder of an ultimate firm is often the ultimate shareholder. But they are not always identical.

[5] For instance, widely dispersed firms have no family directors.

[6] There is an exception. Because that all family directors are working for family controlled firms so that there is no necessity of introducing *Family* dummy and *Widely* dummy for family directors.

[7] The Taiwan Stock Exchange and GreTai (over-the-counter) Securities Market specifies the following major duties for the board of directors of a listed company (Corporate Governance Best Practice Principles for TSE/GTSM Listed Companies, article 27): 1. Stipulation of an effective and appropriate internal control system; 2. Selection and supervision of managers; 3. Review of the management policy and business plan of the company; 4. Review of the financial goals of the company; 5. Supervision of the result of operations of the company; 6. Supervision and handling of the risks encountered by the company; 7. Ensuring the compliance with relevant laws and regulations by the company; 8. Planning the future development of the company; 9. Creation and maintenance of the company image and fulfillment of social obligations; 10. Appointment of Certified Public Accountants (CPA) or attorneys.

[8] According to Article 205 of the Taiwanese Company Law, only shareholders or directors can be the representative of a director to attend board meetings.

[9] Many ultimate directors, especially family directors, do not have a good reputation and qualification. Holding several positions in affiliated firms as an agent of the ultimate shareholder can increase the control over the affiliated firms within the business group (Yeh and Woidtke, 2005).

We run regression (2) over all firms so that subscripts i and t index firm and year, respectively. The main performance measure of this study is ROA as presented in (2). In robustness check, we also consider other performance proxies. For meeting attendance (Attend) and director variables, the averages of individual director's measures over the firm is used in the regression.

In the existing literature the independence of a director is usually proxied by whether the director is an outsider or not. Then, the independence of a board is measured by the proportion of independent directors seated on the board. This study has a much more detailed measure of board independence. We use ten director independence criteria specified by the Taiwanese company law to evaluate the independence of each individual director and the independence of a board is proxied by the average independence of its members. The details of independence criteria and independent score calculation are presented in Appendix and each director can get a maximum of 10 points. We obtain data of independence score from the annual reports of companies in our sample. Because some companies report only 7 or 8 out of 10 independence criteria in their annual reports, the variable Indep for each director is the ratio of a director's independence score to the number of total independence criteria reported by the company. A director's independence ratio is thus a fraction varying from zero to one and it may take different values even for the same type of directors. Explanatory variable Indep in (1) is each director's ratio while Indep in (2) is the average ratio across all directors within a company.

In addition to the aforementioned variables, regression (2) includes a series of control variables and their definitions can also be found in Table 1.[10] In addition to commonly used control variables, director qualification variables are unique to this study and we expect the quality of a firm's directors makes a difference to its performance. We further add a dummy for family controlled firm (Family) and a dummy for widely dispersed firm (Widely) to examine whether these types of firms perform differently from other firms.[11] Year dummies and two-digit industry dummies are used to control for year and industry effects, respectively. Each regression is examined based on robust standard errors clustered at the firm level.

3. Data and empirical results

3.1. Sample selection and descriptive statistics of data

The sample for this study consists of all non-financial firms listed on the Taiwan Stock Exchange (TWSE) in 2006 and 2007.[12] The board composition, compensation, director ownership (i.e., cash-flow rights) and accounting data are collected from the Taiwan Economics Journal database. Control rights of an ultimate shareholder is calculated by thoroughly tracing the ultimate shareholder's direct and indirect voting rights, as specified by La Porta et al. (1999). Based on this calculation, we can identify the classification of directors (i.e., family director, state director, institution directors, etc.). The identification is a very complex and tedious process, which restricts the sample to cover only the first two years of the implementation of the TWSE disclosure rule. Director information, including tenure, gender, interlock, qualifications and meeting attendance, are manually collected from annual reports of sample companies. The sample consists of 647 and 661 firms in 2006 and 2007,

Table 2
Classification of sample firms and directors.

	2006	2007
Panel A. Firm classification		
Widely dispersed firm	221	219
Family controlled firm	345	360
State controlled firm	16	18
Widely-held-corporation controlled firm	50	51
Institution controlled firm	2	1
Total	634	649
Ultimate controlled firm	413	430
Panel B. Director classification		
Independent director	764	814
Family director	1290	1295
State director	99	103
Institution director	44	41
Manager director	814	724
Gray director	436	537
Widely-held-corporation controlled director	207	188
Block holder director	830	923
Total	4484	4625
Ultimate director	1639	1626

The definitions of firm classifications follow La Porta et al. (1999) and Claessens et al. (2000).

respectively. Total numbers of directors are 4564 in 2006 and 4743 in 2007. In the regressions, we eliminate firms or directors where the data of ownership, accounting, meeting attendance or board are missing.

Before starting to examine the descriptive statistics of each variable, let us have a look at the aggregate figures of firms and directors in the sample. This information is reported in Table 2. As mentioned in Section 2, we use the cut-off of 20% control rights to trace the ultimate shareholder of a firm. Based on this criterion, Panel A of Table 2 shows that there are 221 (219) widely dispersed firms in 2006 (2007); 345 (360) family controlled firms; 16 (18) state controlled firms; 50 (51) firms controlled by another widely held corporation and 2 (1) institution controlled firms.[13] Overall, there are 413 (430) firms have an ultimate shareholder (i.e., ultimate controlled firms) in 2006 (2007). According to the classification scheme mentioned in Section 2, directors are classified into eight groups and their distributions are given in Panel B of Table 2. Overall, there are 1639 (1626) directors can be classified as ultimate directors in 2006 (2007).

Panel A of Table 3 displays the descriptive statistics of the sample. For the characteristics of directors, we find that on average directors attend 77.6% of board meetings by themselves while 8.2% of the board meetings are attended by the representatives who are authorized by a director. There is a substantial difference between average compensation to a director (NT$ 1.59 million) and its median (NT$ 0.57 million).[14] The average independence ratio is 68.7% and the aggregate director ownership of a company is averaged at 20.2%. For the qualifications of directors, there are 5.7% of directors who are a lecturer or above in business, law, accounting, finance or corporate business related fields. About 4.2% of directors have a background of justice, procurator, attorney, CPA, specialist or technician of National Examination in Corporate Business related fields. Majority of directors have five-year experience in business, law, finance, accounting or corporate business related fields.

For firm performance, the average ROA is 4.8% per annum.[15] The average debt to asset ratio is around 37.1%. The average cash flow

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[10] The selection of control variables is conventional except for the qualifications of directors, see for example, Yermack (1996), Baliga et al. (1996), Filatotchev et al. (2005), Yeh and Woidtke (2005), Dahya and McConnell (2007), Choi et al. (2007), Dahya et al. (2008), an Adams and Ferreira (2009).

[11] We have also used a dummy for ultimate controlled firm in (2) but the results are quite similar. Therefore, we do not report these results in Table 7.

[12] Since 2006, the TWSE disclosure rules require listed companies to report detailed information on director meeting attendance.

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[13] Note, the sample size here is smaller than what is reported in the previous paragraph because some firms are eliminated due to missing ownership data.

[14] One US dollar was worth 29.06 New Taiwan dollars (NT$) as of January 1, 2013.

[15] The main performance measure in this paper is ROA. In robustness check in Section 3.4, we also consider Earning Per Share (EPS), Sales to Assets Ratio (Sales) and Sales Growth Rate (Growth). Their descriptive statistics are also included in Table 3.

Table 3
Descriptive statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Median	Max
Panel A. Firm, director and board characteristics						
Director and board characteristic						
Director's Own Meeting Attendance	9276	0.776	0.293	0	0.900	1
Authorized Meeting Attendance	9276	0.082	0.183	0	0	1
Director compensation (in thousands NT$)	1289	1592.92	3408.81	0	571.43	42857.14
Number of Meetings	1308	9.60	5.719	2	8	69
CEO duality	1309	0.273	0.445	0	0	1
Board Size	1309	7.110	2.445	3	7	21
Director Independence Ratio	8978	0.687	0.227	0	0.700	1
Aggregate Director Ownership	1289	0.202	0.135	0.023	0.166	0.95
Aggregate Director Pledged Ratio	1289	0.101	0.195	0	0	0.97
Woman Director	9307	0.130	0.336	0	0	1
Tenure	9195	8.322	9.021	0	5	53
Qualification 1	9227	0.057	0.233	0	0	1
Qualification 2	9227	0.042	0.199	0	0	1
Qualification 3	9227	0.967	0.177	0	1	1
Director Interlock	9240	0.491	1.086	0	0	9
Firm characteristic						
ROA	1279	0.048	0.117	−1.781	0.051	0.445
EPS	1308	1.909	3.695	−9.380	1.270	50.48
Sales to assets ratio	1279	0.886	0.710	0.0004	0.717	7.863
Sales growth ratio	1306	0.112	0.359	−5.087	0.101	2.494
Leverage	1279	0.371	0.174	0.0158	0.361	0.970
Market capitalization (in million NT$)	1230	22,100	8350	180.24	45486.26	1,310,000
Cash flow right	1274	0.232	0.173	0	0.200	0.904
Excess right	1274	0.063	0.105	0	0.015	0.751
R&D/Sale	1279	0.010	0.051	0	0	1.635
Excess cash	1279	0.087	0.100	0.0004	0.049	0.733
Investment	1278	0.371	0.336	0	0.269	1.971
Volatility	1221	0.019	0.024	0.000011	0.013	0.43
Domestic Institutional Shareholdings	1286	0.019	0.035	0	0.002	0.41
Foreign Institutional Shareholdings	1286	0.002	0.009	0	0	0.09

Variable	Independent director	Family director	Gray director	Manager director
Panel B. Mean characteristics of four types of directors				
Director's Own Meeting Attendance	0.708	0.799	0.727	0.886
Authorized Meeting Attendance	0.076	0.086	0.106	0.043
Director Independence Ratio	0.986	0.525	0.705	0.666
Woman Director	0.118	0.148	0.146	0.086
Tenure	3.667	10.42	8.589	8.667
Qualification 1	0.189	0.026	0.042	0.016
Qualification 2	0.116	0.025	0.031	0.013
Qualification 3	0.938	0.973	0.966	0.994
Director Interlock	0.474	0.661	0.395	0.218

The board composition, compensation and ownership data such as control rights and cash-flow rights and accounting data are collected from the Taiwan Economics Journal database. Director information, including tenure, gender, qualifications and director and supervisor meeting attendance are collected from companies' annual reports. Panel A reports statistics over the whole sample while Panel B presents the averages of director characteristics over a particular type of directors.

right is 23.3% and average excess right is 6.25%, which are larger than their medians. Such difference between average and median prevails for other firm variables too. The average (median) foreign institutional shareholding is 0.19% (0%), which implies that foreign institutions only hold a very small portion of stocks of listed firms in Taiwan.

Panel B of Table 3 documents the average of director characteristics for four types of directors of our main interests. Not surprisingly, outside directors (including both independent and gray directors) attend fewer board meetings than other two types of directors on average. In terms of the first two qualifications, independent directors are much high than other directors but the difference between their third qualifications is very small across four types of directors. We also note that family directors have the highest director interlock, which reflects the fact that a family member often seats on the boards of multiple firms controlled by the family.

Before conducting formal empirical analysis, we examine the correlations among main variables, which are reported in Table 4. The correlation coefficients among the majority of explanatory variables are quite low. Only the family firm dummy, the widely

dispersed firm dummy and cash flow rights are highly correlated to each other. For this reason, they enter into regression models separately. The correlation between own meeting attendance and authorized attendance is −0.504. Therefore we also test them separately to avoid possible multicollinearity.

3.2. The determinants of attendance at board meetings

About the determinants of board meeting attendance, we test for two dependent variables: individual director's own meeting attendance and authorized meeting attendance. Table 5 reports the results of the pooled regression of (1). As shown by specifications 1 and 2, independent and gray directors attend fewer board meetings by themselves relative to other directors, which is consistent with the statistics reported in Panel B of Table 3. Manager directors on the other hand have the highest meeting attendance, which is hardly surprising given board meetings usually hold in their business time.

Director compensation is positively related to their meeting attendance and it is significant at least at the 10% level. Although it is intuitive that directors appear in the board meetings more

Table 4
Correlation between main variables.

	2	3	4	5	6	7	8	9	10	11	12	13
1. *ROA*	0.057[b]	−0.058[b]	0.020	0.091[c]	0.012	−0.028	−0.008	−0.067[b]	0.157[c]	0.138[c]	0.048[a]	0.011
2. Own attendance		−0.504[c]	0.744[c]	−0.008	−0.183[c]	−0.097[c]	−0.031	−0.022	−0.034	0.065[b]	0.021	0.049[a]
3. Authorized attendance			0.202[c]	0.001	0.240[c]	−0.005	0.167[c]	−0.045	0.144[c]	−0.061[b]	0.013	0.016
4. Total attend				−0.008	−0.022	−0.114[c]	0.093[c]	−0.060[b]	0.073[c]	0.027	0.033	0.068[b]
5. Indep					0.029	0.066[b]	−0.085[c]	−0.069[b]	0.008	0.173[c]	0.089[c]	−0.012
6. Bsize						−0.147[c]	0.185[c]	−0.128[c]	0.260[c]	−0.034	0.049[a]	0.030
7. Duality							−0.143[c]	0.113[c]	−0.077[c]	0.022	−0.012	−0.033
8. Interlock								−0.146[c]	0.213[c]	0.029	−0.035	−0.043
9. Woman									−0.100[c]	−0.031	−0.020	−0.065[b]
10. Compensation										0.063[b]	0.048[a]	0.043
11. Qual1											0.165[c]	−0.125[c]
12. Qual2												−0.022

	14	15	16	17	18	19	20	21	22	23	24 Widely
1. *ROA*	0.001	0.058[b]	0.119[c]	0.078[c]	−0.142[c]	−0.031	0.170[c]	−0.172[c]	−0.180[c]	−0.027	0.004
2. Own attendance	0.074[c]	−0.051[a]	−0.001	0.014	−0.049[a]	0.003	−0.017	−0.068[b]	−0.082[c]	0.040	−0.008
3. Authorized attendance	−0.129[c]	0.083[c]	0.031	0.078[c]	−0.069[b]	−0.002	0.155[c]	−0.017	0.073[c]	−0.096[c]	0.034
4. Total attend	−0.016	0.007	0.022	0.076[c]	−0.109[c]	0.003	0.101[c]	−0.091[c]	−0.037	−0.019	0.017
5. Indep	−0.271[c]	−0.084[c]	0.080[c]	0.048[a]	−0.096[c]	0.064[b]	0.015	−0.026	−0.035	−0.306[c]	0.261[c]
6. Bsize	−0.170[c]	0.203[c]	0.135[c]	0.016	−0.075[c]	0.009	0.301[c]	−0.170[c]	0.183[c]	−0.076[c]	0.042
7. Duality	0.025	−0.171[c]	−0.076[c]	−0.022	−0.008	0.004	−0.064[b]	0.061[b]	−0.027	−0.043	0.098[c]
8. Interlock	−0.214[c]	0.416[c]	0.069[b]	0.084[c]	−0.078[c]	−0.002	0.325[c]	−0.110[c]	−0.003	−0.015	−0.049[a]
9. Woman	0.084[c]	−0.094[c]	−0.066[b]	−0.026	0.140[c]	−0.062[b]	−0.142[c]	0.215[c]	−0.031	0.026	0.028
10. Compensation	−0.182[c]	0.088[c]	0.091[c]	0.218[c]	−0.095[c]	−0.014	0.510[c]	−0.127[c]	−0.004	−0.118[c]	0.131[c]
11. Qual1	−0.032	0.023	0.127[c]	0.050[a]	−0.075[c]	0.010	0.120[c]	−0.043	−0.088[c]	−0.073[c]	0.046
12. Qual2	0.014	−0.023	0.041	0.077[c]	−0.021	−0.013	0.058[b]	−0.065[b]	−0.094[c]	0.036	−0.030
13. Qual3	−0.013	0.031	0.017	0.025	−0.002	−0.001	0.032	0.025	−0.072[c]	−0.035	0.046
14. Cash flow		−0.266[c]	−0.084[c]	−0.074[c]	0.024	−0.086[c]	−0.228[c]	0.031	0.016	0.567[c]	−0.575[c]
15. Excess			0.059[b]	−0.017	−0.043	0.021	0.221[c]	−0.030	−0.010	0.051[b]	−0.250[c]
16. Domestic				0.103[c]	−0.028	−0.007	0.201[c]	−0.077[c]	−0.099[c]	−0.057[b]	0.008
17. Foreign					−0.044	0.003	0.227[c]	−0.058[b]	−0.072[b]	−0.022	0.062[b]
18. Leverage						−0.097[c]	−0.120[c]	0.236[c]	0.038	0.029	−0.026
19. R&D							0.004	0.029	−0.028	−0.029	0.034
20 Size								−0.197[c]	−0.047[b]	−0.134[c]	0.092[c]
21. Var									−0.041	−0.032	0.038
22. Investment										0.034	−0.067[b]
23. Family											−0.798[c]

In the table,
[a] Significance at the 0.1 level.
[b] Significance at the 0.05 level.
[c] Significance at the 0.01 level.

often if they are paid higher, caution should be exerted in interpreting this result. Recall that we have only firm-level compensation data, the compensation variable used in the regression does not vary across directors within a firm. Thus, variation in incentive to directorship and variation in the effect of the incentive are partially masked. Table 5 also demonstrates that directors who served on the board for a longer period usually attend more board meetings by themselves. This relation is significant at the 1% level. On the other hand, a director who holds more directorships is less likely to attend board meetings by themselves as the regression coefficient of director interlock is negative. Moreover, directors attend proportionately fewer meetings if a company has more board meetings. These results for director compensation, tenure and interlock, and the number of board meetings are consistent with previous studies (e.g., Adams and Ferreira, 2008). For three qualification variables, all of them are significantly and positively correlated with director's own meeting attendance. Thus, the higher is a director's qualification, the more board meetings he/she attends.

We like to bring the attention to the significantly positive effect of lagged *Cashflow* on director's own meeting attendance. The result implies directors generally attend board meetings more often when the largest shareholder has more interests in the firm. Nevertheless, the impact of lagged *Excess* on meeting attendance by directors themselves is negative and significant at the 10% level. Directors do not necessarily work harder if the ultimate shareholder has more power to entrench the resources away from the minority shareholders. Note that these results are of aggregate effects of large shareholders, which mask cross-sectional difference over different types of directors, which is the focus of next regressions. Finally, lagged *ROA* is positively but insignificant correlated to directors' own meeting attendance. This implies that there is no strong evidence showing past performance affects directors attending board meetings by themselves.

Domestic institutional shareholdings are negatively and significantly related to a director's own meeting attendance only at the 10% levels. Foreign institutional shareholdings have the same sign but are not significant. In contrast, the effects of firm level control variables such as relative board size and investment opportunity are statistically significant. Other control variables are insignificant in both specifications 1 and 2.

It is also interesting to examine the reasons for directors authorizing a representative to attend board meetings rather than attending the meetings by themselves. First, we can see from specifications 3 and 4 in Table 5 that family directors and gray directors are more likely to authorize a representative to attend board meetings on their behalf than other directors. While independent directors are also more likely to do so, the result is not statistically significant. Director compensation is positively but insignificantly related to authorized meeting attendance. Director interlock is significantly and positively related to authorized meeting attendance, while director tenure is significantly and negatively correlated to it. Higher director interlock increases the director's willingness of

Table 5
Determinants of board meeting attendance.

	Own meeting attendance		Authorized meeting attendance	
	1	2	3	4
Independent director	−0.108 (0.021)***	−0.107 (0.020)***	0.016 (0.013)	0.014 (0.013)
Gray director	−0.095 (0.019)***	−0.091 (0.019)***	0.035 (0.012)***	0.030 (0.013)**
Manager director	0.051 (0.019)***	0.055 (0.019)***	−0.017 (0.013)	−0.022 (0.013)*
Family director	−0.032 (0.019)*	−0.031 (0.019)*	0.023 (0.013)*	0.025 (0.012)**
Compensation	0.0012 (0.0007)*	0.0014 (0.0007)**	0.0003 (0.0005)	0.0002 (0.0005)
Women	−0.001 (0.011)	−0.001 (0.011)	−0.0006 (0.007)	−0.0002 (0.007)
Tenure	0.004 (0.0004)***	0.004 (0.0004)***	−0.0005 (0.0002)**	−0.0005 (0.0002)**
Interlock	−0.008 (0.003)**	−0.005 (0.004)	0.011 (0.002)***	0.009 (0.003)***
Down	0.0002 (0.0003)		−0.0002 (0.0002)	
Pledged	−0.0001 (0.0002)	−0.0001 (0.0002)	0.0002 (0.0002)	0.0001 (0.0001)
Meeting	−0.004 (0.001)***	−0.004 (0.001)***	−0.0014 (0.0004)***	−0.0014 (0.0004)***
Qual1	0.027 (0.015)*	0.027 (0.015)*	−0.010 (0.009)	−0.010 (0.009)
Qual2	0.051 (0.016)***	0.051 (0.016)***	−0.013 (0.010)	−0.013 (0.010)
Qual3	0.068 (0.022)***	0.069 (0.022)***	−0.016 (0.015)	−0.017 (0.015)
Lagged Cashflow		0.0006 (0.0003)**		−0.0008 (0.0002)***
Lagged Excess		−0.0006 (0.0004)*		−0.00001 (0.0002)
Lagged ROA	0.073 (0.046)	0.073 (0.046)	0.004 (0.024)	0.010 (0.024)
Foreign	−0.646 (0.429)	−0.648 (0.430)	1.127 (0.293)***	1.103 (0.392)***
Domestic	−0.241 (0.126)*	−0.236 (0.127)*	−0.011 (0.072)	−0.018 (0.072)
Bsize/Size	−1.029 (0.205)***	−0.947 (0.205)***	0.769 (0.138)***	0.698 (0.138)***
Leverage	0.012 (0.025)	0.017 (0.025)	−0.023 (0.016)	−0.028 (0.016)*
Cash	0.022 (0.040)	0.025 (0.040)	0.014 (0.025)	0.010 (0.025)
Invest	−0.023 (0.012)*	−0.023 (0.012)*	0.017 (0.008)*	0.016 (0.008)*
Var	−0.244 (0.202)	−0.246 (0.201)	0.073 (0.086)	0.085 (0.084)
Constant	0.871 (0.082)***	0.852 (0.083)***	−0.025 (0.042)	0.001 (0.042)
R-square	0.078	0.079	0.048	0.051
F-test	14.81***	14.88***	6.98***	7.36***
Observations	8351	8351	8351	8351

The dependent variable is a director's own meeting attendance (specifications 1–2) or the authorized meeting attendance (specifications 3–4). Each regression includes year and two-digit SIC code dummies. Numbers in parentheses are standard errors based on robust standard errors clustered at the director level.
* Significance at the 10% level.
** Significance at the 5% level.
*** Significance at the 1% level.

director pledged ratio and qualifications of directors, are insignificant across specifications 3 and 4.

Opposite to the case of director's own attendance, lagged Cashflow is negatively and significantly related to authorized meeting attendance. Directors are not more likely to send representatives if the ultimate shareholder has more entrench power (i.e., greater Excess) or when past performance is poor (i.e., lower ROA). For other variables, only foreign institutional shareholding, board size over firm size, leverage, and investment opportunity are significant.

To investigate the effects of firm ownership structure and the controlling power of large shareholders in more detail, we run regression (1) again where regressions are over each director group rather than all directors. With respect to independent, grey and manager directors, we separately consider Family firm dummy and Widely dispersed firm dummy. Thus, corresponding to each specification in Table 5, there are two specifications in Panels A–C of Table 6. For family directors we do not consider firm dummies since these directors serve only one type of firms—family controlled firms. Table 6 only reports the results of the estimation of the coefficients of laggedCashflow and Excess andROA, and firm dummies while the coefficient estimates of other variables are not reported because they are qualitatively similar to their counterparts in Table 5.

As shown by Panel A of Table 6, independent directors of family controlled firms (widely dispersed firms) attend fewer (more) board meetings than their counterparts in other firms. This pattern also appears in the attendance of gray directors. The only difference is that the former is statistically insignificant while the latter is significant. These findings are supportive to the hypothesis that outside directors tend to miss more board meetings if the firm's ownership is more concentrated. We conjecture that the reason for outsider directors are less interested in attending board meetings of family controlled firms is that they are less influential in these firms because family firms are often tightly or completely controlled by the dominant family. On the other hand, they can play a more effective role in wildly dispersed firms so that they are more attracted to board meetings of these firms. In contrast to Table 5, the effects of lagged Cashflow and Excess on the meeting attendance by both types of directors are not significant, while lagged ROA is still insignificant.

For manager directors, the meeting attendance pattern is opposite to that of outside directors, as specifications 1 and 2 show manager directors attend more meetings if they work for a family controlled firm but they attend fewer meetings if they are employed by a widely dispersed firm. Moreover, the effect of lagged Excess is positive and marginally significant while the effect of lagged Cashflow is also positive but insignificant. Thinking of attending more board meetings is one of forms of working harder, these results in Panel C are consistent with the claim that agency problem between managers and shareholders is less severe in a firm with more concentrated ownership and/or a more powerful controlling shareholder. We note that past company performance in terms of ROA has a significantly positive effect on manager directors' meeting attendance. It seems that out four types of directors considered in Table 6, only manager directors' response to firm performance is statistically significant when they determine their work efforts. For family directors, Panel D reports that they attend fewer board meetings if the ultimate shareholder has greater lagged Excess. The reason for this result is that family directors are family members of the ultimate shareholder and they may delegate their responsibilities of monitoring the management and decision-making for the firm to the ultimate shareholder. Their presence in the board meeting is likely to be symbolic or to merely meet some regulation requirement. As a result, they do not want to be deeply involved in the business if the

sending a representative to attend board meetings, but a director with longer tenure is less likely to send a representative. These results are complementary to the results of their counterparts of own meeting attendance we saw in specifications 1 and 2. On the other hand, the number of a company's board meetings is negatively and significantly related to authorized meeting attendance, which is similar to the previous result of director's own attendance. Other director variables, including woman director, director ownership,

Table 6
Determinants of directors' meeting attendance by different types of directors.

	Own meeting attendance				Authorized meeting attendance			
	1	2	3	4	5	6	7	8
Panel A: Independent director								
Lagged Cashflow			0.0003	0.0008			−0.0003	−0.0006
			(0.0008)	(0.0009)			(0.0004)	(0.0004)
Lagged Excess			−0.0004	0.0001			0.0005	0.0004
			(0.0008)	(0.0009)			(0.0005)	(0.0005)
Lagged *ROA*	0.132	0.134	0.131	0.119	−0.007	−0.008	−0.006	−0.002
	(0.093)	(0.093)	(0.094)	(0.095)	(0.053)	(0.053)	(0.053)	(0.054)
Family	−0.002		−0.007		−0.022		−0.017	
	(0.018)		(0.023)		(0.010)**		(0.013)	
Widely		0.016		0.031		0.012		0.005
		(0.018)		(0.026)		(0.010)		(0.014)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1381	1381	1381	1381	1381	1381	1381	1381
Panel B: Gray director								
Lagged Cashflow			−0.0003	0.0002			0.0003	−0.0001
			(0.0007)	(0.0008)			(0.0005)	(0.0005)
Lagged Excess			−0.0009	−0.0001			0.0016	0.001
			(0.001)	(0.001)			(0.0008)*	(0.0008)
Lagged *ROA*	−0.056	−0.052	−0.052	−0.052	0.056	0.053	0.051	0.053
	(0.095)	(0.096)	(0.095)	(0.095)	(0.054)	(0.054)	(0.054)	(0.054)
Family	−0.036		−0.028		−0.014		−0.024	
	(0.016)**		(0.019)		(0.010)		(0.013)*	
Widely		0.044		0.046		−0.004		0.001
		(0.016)***		(0.021)**		(0.010)		(0.013)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2507	2507	2507	2507	2507	2507	2507	2507
Panel C: Manager director								
Lagged Cashflow			0.0008	0.0003			−0.0009	−0.0008
			(0.0006)	(0.0006)			(0.0003)***	(0.0003)**
Lagged Excess			0.001	0.001			−0.001	−0.001
			(0.0005)**	(0.0006)			(0.0003)***	(0.0003)***
Lagged *ROA*	0.147	0.147	0.119	0.127	−0.062	−0.062	−0.039	−0.041
	(0.073)**	(0.071)**	(0.072)*	(0.072)*	(0.041)	(0.040)	(0.041)	(0.041)
Family	0.018		−0.003		−0.023		−0.003	
	(0.014)		(0.016)		(0.008)***		(0.009)	
Widely		−0.029		−0.016		0.026		0.006
		(0.013)**		(0.017)		(0.008)***		(0.010)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1383	1383	1383	1383	1383	1383	1383	1383
Panel D: Family director								
Lagged Cashflow				0.0007				−0.001
				(0.0005)				(0.0004)***
Lagged Excess				−0.0016				−0.0003
				(0.0006)**				(0.0004)
Lagged *ROA*				0.063				0.054
				(0.082)				(0.043)
Other controls				Yes				Yes
Observations				2689				2689

The dependent variable is meeting attendance of individual director or his/her representative, where regressiones cross over the same type of directors. Explanatory variable *Indep* replaces director type dummies in Table 5. Other explanatory variable include those in Table 5 and a dummy for firm ownership structure (except for Panel D) but only the estimates of the coefficients of *Cashflow*, *Excess*, *ROA*, and firm ownership structure are reported. Each regression includes year and two-digit SIC code dummies. Numbers in parentheses are standard errors based on robust standard errors clustered at the director level.

* Significance at the 10% level.
** Significance at the 5% level.
*** Significance at the 1% level.

ultimate shareholder is sufficiently powerful as measured by *Excess*.

For authorized meeting attendance, the most notable result is of manager directors in Panel C. The pattern of their authorized meeting attendance is opposite to the pattern of their own attendance; i.e., a factor inducing them to attend more board meetings by themselves leads them to reduce authorized meeting attendance. The only exception is *Family* dummy in specifications 3 and 7, where the coefficients are both negative and insignificant. Lagged *Cashflow* and *Excess* are significant factors in affecting a manager director's decision of delegating board meetings to a representative. For other directors, the pattern of authorized meeting atten-

dance is not always contradictory to the pattern of own meeting attendance. There are quite a few cases where a factor making these directors attend more meetings by themselves also makes them delegate more meetings to their representatives although they are mostly insignificant.

3.3. The impact of board meeting attendance on firm performance

After examining the determinants of directors' board meeting attendance, we now investigate whether attending board meetings is associated with a firm's performance. Table 7 documents the estimation results of the relationship between firm performance and

Table 7
ROA and board meeting attendance: Pooled regression.

	1	2	3	4	5	6
Own attendance	0.051 (0.024)**	0.052 (0.025)**	0.053 (0.024)**			
Authorized attendance				−0.072 (0.037)*	−0.074 (0.038)**	−0.076 (0.038)**
Indep	0.064 (0.032)**	0.053 (0.033)	0.053 (0.032)*	0.065 (0.032)**	0.054 (0.033)	0.054 (0.032)*
Family		0.007 (0.008)			0.006 (0.008)	
Widely			−0.009 (0.008)			−0.008 (0.008)
Bsize	−0.004 (0.012)	−0.003 (0.012)	−0.003 (0.012)	−0.004 (0.012)	−0.004 (0.012)	−0.003 (0.012)
Duality	−0.0001 (0.008)	−0.001 (0.008)	−0.0005 (0.008)	−0.001 (0.008)	−0.002 (0.008)	−0.002 (0.008)
Women	−0.013 (0.028)	−0.013 (0.028)	−0.011 (0.029)	−0.013 (0.029)	−0.013 (0.028)	−0.011 (0.029)
Qual1	0.081 (0.030)***	0.086 (0.030)***	0.085 (0.031)***	0.081 (0.030)***	0.087 (0.030)***	0.086 (0.030)***
Qual2	−0.002 (0.039)	−0.0004 (0.039)	−0.0008 (0.039)	−0.0005 (0.039)	0.0007 (0.039)	0.0002 (0.039)
Qual3	0.010 (0.021)	0.011 (0.023)	0.010 (0.023)	0.013 (0.020)	0.013 (0.022)	0.013 (0.022)
Cashflow	0.048 (0.027)*			0.047 (0.027)*		
Excess	0.036 (0.038)			0.038 (0.038)		
Foreign	0.411 (0.283)	0.371 (0.279)	0.392 (0.283)	0.459 (0.286)	0.421 (0.282)	0.442 (0.286)
Domestic	0.192 (0.106)*	0.192 (0.105)*	0.187 (0.108)*	0.187 (0.104)*	0.187 (0.103)*	0.182 (0.105)*
Leverage	−0.068 (0.041)	−0.071 (0.042)*	−0.071 (0.042)*	−0.071 (0.041)*	−0.073 (0.032)*	−0.073 (0.042)*
R&D	−0.119 (0.041)***	−0.125 (0.042)***	−0.124 (0.042)***	−0.121 (0.042)***	−0.127 (0.043)***	−0.126 (0.043)***
Size	0.009 (0.003)***	0.008 (0.003)**	0.009 (0.004)**	0.010 (0.003)***	0.009 (0.003)***	0.009 (0.003)***
Var	−0.512 (0.429)	−0.510 (0.446)	−0.513 (0.445)	−0.520 (0.424)	−0.519 (0.441)	−0.522 (0.439)
Invest	−0.053 (0.016)***	−0.054 (0.016)***	−0.055 (0.017)***	−0.053 (0.016)***	−0.055 (0.016)***	−0.056 (0.016)***
Constant	−0.150 (0.061)**	−0.128 (0.063)**	−0.120 (0.063)*	−0.109 (0.059)*	−0.085 (0.061)	−0.078 (0.060)
R-square	0.170	0.167	0.167	0.169	0.166	0.167
F-test	8.83***	8.76***	8.72***	8.46***	8.38***	8.34***
Observations	1188	1177	1177	1188	1177	1177

The dependent variable is the Return On Assets (ROA) of subsequent year. Specifications 1 to 3 examine the relation between a firm's ROA and average board meeting attendance by its directors, while specifications 4 to 6 test the relation between ROA and average authorized meeting attendance. Each regression includes year and two-digit SIC code (industry) dummies. Numbers in parentheses are standard errors based on robust standard errors clustered at the firm level.

* Significance at the 10% level.
** Significance at the 5% level.
*** Significance at the 1% level.

board meeting attendance as specified by regression model (2). We find that meeting attendance by directors themselves is positively related to the firm's subsequent ROA and this relation is significant at the 5% level. This means that directors who attend more board meetings can lead a firm to be more profitable, which is consistent with hypothesis H1 that as the directors of a firm work harder (i.e. by attending more meetings) it performs better. As Table 3 documented, the standard deviation of own meeting attendance is 0.293 while the standard deviation of ROA is 0.117. Thus, the results in Table 7 imply that a one standard deviation in director meeting attendance is, on average, associated with about 0.13 times of a standard deviation higher subsequent ROA. On the other hand, authorized meeting attendance is negatively associated with firm performance at least at the 10% significance level.[16] Authorizing

representatives instead of attending board meetings by directors themselves can harm a firm's profit performance. This implies that the representative of a director usually make no or little contribution during board meetings. Their appearance in the meeting cannot replace the function of directors themselves as conjectured in hypothesis H2.

Independence of directors should enhance the monitoring power of the board (Dahya and McConnell, 2007; Choi et al., 2007), and therefore should also enhance the performance of the firm. Our regression results show that the proxy for board independence is positively correlated to firm performance, significant at the 5% or 10% level in some specifications.

For ownership variables, we note that Cashflow is positively correlated with firm performance, and this relation is statistically significant at the 10% level. On the other hand, the effect of the ultimate shareholder's Excess on subsequent ROA is positive but insignificant. These two results show that a firm performs better if the largest (ultimate) shareholder has greater ownership and is

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[16] Because own meeting attendance plus authorized meeting attendance plus meeting absence is identically equal to one, we do not report regressions against board meeting absence in Tables 7–9 but they are available upon request.

more powerful. They are consistent with the hypothesis that there is no substantial conflict of interest between controlling shareholders and minority shareholders. Domestic institutional shareholdings show a significantly positive impact which is consistent with previous findings (see, for instance, Filatotchev et al., 2005). We also note that in Taiwan family firms perform better than the other firms on average but widely-dispersed firms perform worse. However, these differences are statistically insignificant, as indicated by the coefficients of *Family* and *Widely* dummies in columns 2–3 and 5–6 of Table 7.

The majority of control variables are statistically significant to firm performance. Leverage, R&D over sale and investment opportunity are negatively and significantly related to firm performance across all specifications, which are similar to the previous findings (Cui and Mak, 2002; Yeh and Woidtke, 2005). Firm size is positively correlated to firm performance and significant at the 1% level. Note that one of qualification variables, director who is a lecturer or above in business related field, is positively related to firm performance and significant at the 1% level. Recalling that the standard deviation of *Qual*1 is 0.233 (see Table 3), we find from Table 7 that a one standard deviation improvement in director Qualification 1 is associated with a better subsequent *ROA* by about 0.169 times of a standard deviation. This is in the similar order of the effect of directors' own meeting attendance. For the rest of variables, i.e., the variance of stock return, woman director, board size and duality of CEO, they are all insignificantly associated with firm performance.

To examine the effects of meeting attendance of different directors, we further investigate the effects of board meeting attendance on company performance under various ownership structures. To this end, we consider three groups of companies: family controlled firms, widely dispersed firms and ultimate controlled firms. For each group of firms, we run multiple OLS regressions of (2) and each regression is against the meeting attendance of a particular type of directors. *Indep* in (2) now is the average independence ratio of this type of directors within a company. Panel A of Table 8 reports the results of family controlled firms, where we separately test the attendance of four types of directors: family, manager, independent and gray directors. As in Table 7, each director's meeting attendance is further decomposed into their own attendance and authorized meeting attendance. The results show that meeting attendance by family directors is positively related to firm performance and significant at the 10% level. This result can be interpreted as the evidence that more involvement of controlling shareholders may mitigate the agency problem between shareholders and managers. The effect of meeting attendance by independent directors is also positively significant. In contrast, the authorized meeting attendances for all four types of directors have a negative but insignificant impact on the performance of family firms. For *Indep*, only the average independence ratio of independent directors has a significant effect on performance, i.e., the higher is the independence of independent directors the better the company performs.

Table 8
ROA and board meeting attendance of different directors under various ownership structures.

	Family director/Ultimate director		Manager director		Independent director		Gray director	
Panel A: Family controlled firm								
Own attendance	0.037		−0.015		0.033		0.012	
	(0.019)*		(0.049)		(0.019)*		(0.016)	
Authorized attendance		−0.028		−0.053		−0.016		−0.041
		(0.036)		(0.089)		(0.041)		(0.034)
Indep	−0.044	−0.048	−0.002	0.002	0.121	0.134	0.008	0.003
	(0.060)	(0.061)	(0.034)	(0.035)	(0.039)***	(0.041)***	(0.029)	(0.029)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.155	0.153	0.308	0.309	0.318	0.311	0.353	0.358
F-test	6.29***	6.20***	3.34***	3.36***	4.34***	4.20***	4.97***	5.06***
Observations	625	625	299	299	331	331	364	364
Panel B: Widely dispersed firm								
Own attendance			−0.030		0.032		0.052	
			(0.068)		(0.040)		(0.037)	
Authorized attendance				0.127		−0.044		−0.078
				(0.122)		(0.077)		(0.060)
Indep			0.055	0.050	0.060	0.065	0.111	0.106
			(0.072)	(0.072)	(0.172)	(0.169)	(0.055)**	(0.056)*
Other controls			Yes	Yes	Yes	Yes	Yes	Yes
R-square			0.350	0.354	0.256	0.256	0.279	0.279
F-test			4.17***	4.24***	2.46***	2.45***	3.89***	3.89***
Observations			298	298	261	261	376	376
Panel C: Ultimate controlled firm								
Own attendance	0.051		−0.011		0.044		−0.0004	
	(0.018)***		(0.043)		(0.016)***		(0.016)	
Authorized attendance		−0.029		−0.065		−0.043		−0.028
		(0.032)		(0.076)		(0.032)		(0.026)
Indep	−0.029	−0.036	−0.015	−0.011	0.128	0.143	−0.004	−0.003
	(0.047)	(0.048)	(0.031)	(0.031)	(0.029)***	(0.032)***	(0.028)	(0.027)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.145	0.140	0.284	0.286	0.299	0.289	0.275	0.278
F-test	6.97***	6.71***	3.63***	3.67***	4.81***	4.56***	5.63***	5.73***
Observations	742	742	357	357	405	405	452	452

The dependent variable is the Return On Assets (*ROA*) of subsequent year. Each regression includes year and two-digit SIC code (industry) dummies. Numbers in parentheses are standard errors based on robust standard errors clustered at the firm level.
* Significance at the 10% level.
** Significance at the 5% level.
*** Significance at the 1% level.

Table 9
Performance and board meeting attendance: Pooled regression.

	1	2	3	4	5	6
Panel A: Earnings per share						
Own attendance	1.498	1.559	1.569			
	(0.615)**	(0.629)**	(0.630)**			
Authorized attendance				−2.844	−2.951	−2.994
				(1.207)**	(1.221)**	(1.219)**
Indep	0.988	0.634	0.549	1.034	0.675	0.611
	(1.172)	(1.157)	(1.156)	(1.170)	(1.155)	(1.152)
Family		0.193			0.159	
		(0.247)			(0.247)	
Widely			−0.141			−0.124
			(0.245)			(0.244)
Cashflow	1.538			1.494		
	(0.795)*			(0.796)*		
Excess	1.318			1.300		
	(1.515)			(1.504)		
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.249	0.245	0.245	0.251	0.247	0.247
F-test	10.05***	10.14***	10.11***	9.90***	9.99***	9.99***
Observations	1188	1177	1177	1188	1177	1177
Panel B: Sales to assets ratio						
Own attendance	0.456	0.465	0.464			
	(0.172)***	(0.175)***	(0.175)***			
Authorized attendance				−0.350	−0.393	−0.374
				(0.270)	(0.275)	(0.274)
Indep	0.410	0.343	0.387	0.423	0.355	0.402
	(0.222)*	(0.231)	(0.226)*	(0.224)*	(0.232)	(0.228)*
Family		−0.052			−0.056	
		(0.056)			(0.056)	
Widely			0.009			0.012
			(0.058)			(0.058)
Cashflow	0.077			0.081		
	(0.169)			(0.171)		
Excess	0.356			0.351		
	(0.306)			(0.207)		
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.254	0.255	0.254	0.250	0.250	0.249
F-test	6.58***	6.23***	6.33***	6.26***	5.80***	5.96***
Observations	1188	1177	1177	1188	1177	1177
Panel C: Sales growth						
Own attendance	0.159	0.163	0.161			
	(0.074)**	(0.075)**	(0.075)**			
Authorized attendance				−0.190	−0.196	−0.195
				(0.133)	(0.133)	(0.132)
Indep	0.042	0.061	0.046	0.046	0.065	0.051
	(0.104)	(0.104)	(0.102)	(0.104)	(0.104)	(0.102)
Family		−0.010			−0.012	
		(0.019)			(0.019)	
Widely			0.033			0.034
			(0.021)			(0.021)
Cashflow	−0.015			−0.016		
	(0.069)			(0.069)		
Excess	−0.059			−0.062		
	(0.101)			(0.101)		
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.061	0.064	0.066	0.060	0.063	0.065
F-test	3.54***	3.60***	3.86***	3.34***	3.43***	3.71***
Observations	1188	1177	1177	1188	1177	1177

The dependent variables are the Earnings Per Share (*EPS*) of subsequent year, Sales to Assets Ratio (*Sales*) of subsequent year and Sales Growth Ratio (*Growth*), respectively. Specifications 1 to 3 examine the relation between a firm's performance and average board meeting attendance by its directors, while specifications 4 to 6 test the relation between performance and average authorized meeting attendance. Each regression includes year and two-digit SIC code (industry) dummies. Numbers in parentheses are standard errors based on robust standard errors clustered at the firm level.
* Significance at the 10% level.
** Significance at the 5% level.
*** Significance at the 1% level.

Panel B of Table 8 reports the results of widely dispersed firms, which have manager directors, independent directors and gray outsiders. None of these directors' own meeting attendance or authorized attendance has any significant impact. However, the independence of gray directors has a positive impact on firm performance, significant at the 5% or 10% level. The lack of significance of board meeting attendance is a bit surprising. Nevertheless, it may be premature to conjecture that directors do not play their roles in widely dispersed companies as in family controlled firms. If we compare independent directors' own meeting attendance in widely dispersed firms (see Panel B of Table 8) with its counterpart in family controlled firms (Panel A of Table 8), we

find that their coefficient estimates are quite similar (0.032 vs 0.033). For gray directors, the former is even larger than the latter (0.052 vs 0.012). But the data on widely dispersed firms are much noisier as evidenced by the greater standard errors of coefficient estimates. We also find (not tabulated) that the regression residuals of widely dispersed firms are larger. Thus, although the estimates for these firms are similar to or even larger, i.e., the effects of independent and gray directors' meeting attendance on the performance of widely dispersed firms are economically comparable or even larger than the effects on the performance of family controlled firms, they are not statistically significant.

For ultimate controlled firms, which are comprised of family, state, institution and widely-held-corporation controlled firms, the results are reported by Panel C of Table 8. The meeting attendance of ultimate directors and independent directors are positively and significantly correlated with company performance at the 1% level. The result of independent director implies that more monitoring by independent directors may mitigate the agency problem between controlling shareholders and minority shareholders, similar to the case of family controlled firms. They are also consistent with the positive advisory role played by ultimate and independent directors. Also, the independence of independent directors is significantly associated with company performance. The similarity between the results in Panels A and C is expected because the majority of ultimate controlled firms are family controlled firms. However, a more careful comparison between Panels A and C shows that the coefficient of ultimate director's own meeting attendance is larger and more significant than that of family director's. Since a family director is definitely an ultimate director, this result indicates that the ultimate directors in non-family firms have a more profound impact on profitability than family directors when they attend board meetings. A similar conclusion can be drawn for independent directors.

In sum, we find evidence which supports Hypotheses 1 and 2 that attending more board meetings by director themselves has significantly positive effects on a firm's performance while meeting attendance by authorized representatives in fact is likely to have adverse effects. The positive role is by large played by family/ultimate directors and independent directors in family or ultimate controlled firms.

3.4. Robustness check

We further test the robustness of our findings of the impacts of the board meeting attendance on firm performance by replacing ROA in regression (2) by Earnings Per Share (EPS), Sales to Assets Ratio (Sales) and Sales Growth (Growth).[17] Their definitions are given in Table 1 and their descriptive statistics are shown in Table 2. We re-regress model (2) and Panels A, B and C of Table 9 report the results when EPS, Sales and Growth are dependent variables, respectively. They are pooled regressions which have the same explanatory variables as Table 7 but only coefficients of most concerned variables are reported in Table 9 to save space. The results on other variables are available upon request. Similar to the results in Table 7 where ROA is the proxy for firm performance, we find that directors' own meeting attendance is positively and significantly related to the three performance measures at least at the 5% levels across all specifications. Authorized meeting attendance on the other hand is negatively correlated to the three performance measures, but it is significant at the 1% levels only when EPS is used as performance measure. For independence ratio, it is positively related to firm performance in all specifications but significant only for some

specifications. Similar to the case of ROA, Cashlow has a significant effect on EPS. However, its effects on Sales and Growth are insignificant. Overall, we have evidences showing the relationship between firm performance and board meeting attendance is reasonably robust.

4. Concluding remarks

This paper investigates board meeting attendance and firm performance, considering different ownership structures of firms and different types of directors. It first tests the determinants of meeting attendance by using more comprehensive data than the existing analyses. Our main findings show that more capable directors in terms of higher qualifications are more likely to attend board meetings by themselves. The cash flow rights of the largest shareholder of a company are also positively related to directors' own board meeting attendance. For outside directors, they are more like to attend board meeting if they seat on the board of a widely dispersed company but less likely to present if they seat on the board of a family controlled firm.

We then examine the impact of directors' work efforts on performance. There is a positive association between director's own meeting attendance and firm performance but the relation between authorized meeting attendance and firm performance is negative. This implies that for the sake of the company they are serving directors should attend board meetings by themselves rather than send their relatives or friends as their representatives to the meetings. When our sample is divided into three types of firms (i.e., family controlled firms, widely dispersed firms and ultimate controlled firms), we find that family, ultimate, and independent directors have positive impacts on the performance of family or ultimate controlled firms if they attend board meetings but negative and insignificant impacts if they authorize a representative to participate the meetings. These findings suggest that independent directors are likely to mitigate the agency problem between controlling shareholders and minority shareholders through their monitoring role played in these firms. In the meantime, if family and ultimate directors work harder in the form of attending more board meetings they can exert more effective control on the management and make the firm more profitable.

Considering independent and gray directors together as a group, our findings seem to suggest that outside directors are less attracted to board meetings if the ownership structure of their company is highly concentrated. However, as long as they attend board meetings, they can play a positive role and the company is beneficial by their work efforts.

Appendix A. Measuring the independence of a director

According to the relevant requirements set by Taiwan's Securities and Futures Bureau, the professional qualification and independence status of a company's board members must be disclosed in its annual report. There are ten criteria measuring the independent status of a director:

1. Not an employee of the company or any of its affiliates.
2. Not a director of the company or any of its affiliates. The same does not apply, however, in cases where the person

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[17] These measures as proxies of firm performance are widely used, see for example, Fosberg (1989), Kaplan (1994), Bhagat and Black (2002), Fodi et al. (2007), and Chen et al. (2011).

is an independent director of the company, its parent company, or any subsidiary in which the company holds, directly or indirectly, more than 50% of the voting shares.

3. Not a nature-person shareholder who holds shares, together with those held by the person's spouse, minor children, or held by the person under others' names, in an aggregate amount of 1% or more of the total number of outstanding shares of the company or ranking in the top 10 in holdings.
4. Not a spouse, relative within the second degree of kinship, or lineal relative within the fifth degree of kinship, of any of the persons in the preceding three subparagraphs.
5. Not a director, supervisor, or employee of a corporation shareholder that directly holds 5% or more of the total number of outstanding shares of the company or that holds shares ranking in the top five in holdings.
6. Not a director, supervisor, officer, or shareholder holding 5% or more of the shares, of a specified company or institution that has a financial or business relationship with the company.
7. Not a professional individual who, or an owner, partner, director, supervisor, or officer of a sole proprietorship, partnership, company, or institution that, provides commercial, legal, financial, accounting services or consultation to the company or to any affiliate of the company, or a spouse thereof.
8. Not having a marital relationship, or a relative within the second degree of kinship to any other director of the company.
9. Not been a person of any conditions defined in Article 30 of the Company Law. For Article 30, see below.
10. Not a governmental, juridical person or its representative as defined in Article 27 of the Company Law. For Article 27, see below.

We give one point to a director if he/she meets one of criteria during the two years before being elected or during the term of office. We sum up all points a director has as his/her independence score and divide this score by 10 to obtain independence ratio as a measure of the director's independence status. Some companies do not report the results of all criteria. If this is the case, the independence ratio is obtained by divided by the total number of criteria the company reports rather than 10.

A.1. Article 30

A person who is under any of the following circumstances shall not act as a managerial personnel of a company. If he has been appointed as such, he shall certainly be discharged:

1. Having committed an offence as specified in the Statute for Prevention of Organizational Crimes and subsequently adjudicated guilty by a final judgment, and the time elapsed after he has served the full term of the sentence is less than five years;
2. Having committed the offence in terms of fraud, breach of trust or misappropriation and subsequently punished with imprisonment for a term of more than one year, and the time elapsed after he has served the full term of such sentence is less than two years;
3. Having been adjudicated guilty by a final judgment for misappropriating public funds during the time of his public service, and the time elapsed after he has served the full term of such sentence is less than two years;
4. Having been adjudicated bankrupt, and having not been reinstated to his rights and privileges;
5. Having been dishonored for unlawful use of credit instruments, and the term of such sanction has not expired yet; or

6. Having no or only limited disposing capacity.

A.2. Article 27

Where a government agency or a juristic person acts as a shareholder of a company, it may be elected as a director or supervisor of the company provided that it shall designate a natural person as its proxy to exercise, in its behalf, the duties of a shareholder. Where a government agency or a juristic person acts as a shareholder of a company, its authorized representative may also be elected as a director or supervisor of the company; and if there is a plural number of such authorized representatives, each of them may be so elected.

Any of the authorized representatives of a company referred to in Paragraphs I and II of this Article may, owing to the change of his/her functional duties, be replaced by a person to be authorized by the company so as to fulfill the unexposed term of office of the predecessor.

Any restriction placed upon the power or authority of the authorized representatives set forth in Paragraph I and Paragraph II of this Article shall not be set up as a defence against any bona fide third party.

Appendix B. Supplementary material

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.jbankfin.2013.07.028.

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