Market Reaction to Voluntary and Mandatory Announcements of Independent Director Appointments

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ABSTRACT: In this paper, we use a unique natural experimental setting to examine the market value of both voluntary and mandatory independent director appointments using a sample of Taiwanese listed firms. We find a significantly positive stock price reaction when a firm announces it is appointing independent directors to its board. Particularly, poor corporate performance and a higher degree of information asymmetry significantly benefit from the mandatory appointment. We conclude that the mandatory regulation for Taiwan listed firms to have a minimum number and ratio of independent directors on their boards appears to be a sound policy.

1. Introduction

Corporate governance proponents recommend adding independent outside directors to corporate boards (Dahya and McConnell 2005) since many agency theories contend that outside directors should be an important element of corporate governance. Outside directors can monitor top management more effectively than other directors and provide expertise (Jensen 1993). However, do independent directors provide a valuable service to shareholders, in emerging markets where inclusion of independent directors on corporate boards is required? This paper addresses this issue by examining the stock price reaction to the appointment of independent directors to corporate boards in a unique natural experimental setting, the stock market in Taiwan, where board independence is currently undergoing reform.

Appointment of independent directors to corporate boards has become the focus of attention in Asia's emerging markets since the 1997 Asian financial crisis. Following this trend, Taiwan actively pursues a regulatory environment that aligns its corporations with internationally accepted corporate governance best practice. To revamp corporate governance, Taiwan is carrying out a two-stage board independence reform (Young et al., 2008). The first stage, beginning in February 2002, applied to firms filing for initial listings. The Taiwan Stock Exchange (TSE) and GreTai Securities Market (known as over-the-counter market, OTC) adopted rules requiring newly listed boards of companies to have at least two independent directors. Thus, the 2002 Listing Rules allow 'unaffected firms' (i.e., firms that were listed prior to February of 2002, and thus were free from the mandatory requirement to appoint independent directors) latitude regarding whether to appoint/increase independent directors.

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The second stage, beginning in January of 2006, required the appointment of independent directors for all public firms with a capital of greater than 50 billion NTD (New Taiwan Dollars). For each firm, there must be at least two independent directors constituting at least one-fifth of the total number of directors on the board. Following the Listing Rules of 2002 and 2006, Taiwanese listed firms can be classified as the voluntary appointment firms (unaffected firms) that voluntarily appoint at least one independent director, and mandatory appointment firms which are compelled to appoint independent directors. In this paper, we use the unique opportunity of this natural setting to examine the stock market reaction to the announcements of independent director appointments of Taiwan listed firms, including both voluntary and mandatory announcements.

Empirical evidence on this issue is mixed. For example, Lin et al. (2003) found that the stock market reaction to the announcement of the appointment of outside directors is not economically significant for UK firms, while Dahya and McConnell (2005) report that announcements of outside director appointments are positively related to stock price reactions in the UK. Rosenstein and Wyatt (1990) similarly found that announcements of outside director appointments are positively related to stock price reactions in the US. More recently, Huang et al. (2008) and Hsu and Li (2009) report that the stock market response to voluntary announcements of independent director appointments[2] for Taiwan firms is positive. In U.S. and UK firms there are usually many independent directors on boards. Thus, adding a new independent director may not significantly increase the firm's value (Huang et al. 2008). In addition, compared to U.S. and UK firms, Taiwanese firms generally have more pervasive agency problems (Huang et al. 2008) and investors expect independent directors to improve the board's monitoring efficiency and response in the form of positive stock returns.

Several studies find that there is a positive relationship between corporate performance and board independence. For example, for the UK, Dahya and McConnell (2007) report improvements in both accounting and market based measures of performance following increases in outside directors. Similarly, Duchin et al. (2010) report a large and statistically significant relation between board independence and performance for US firms when the cost of acquiring information is low. In addition, Bozcuk (2011) finds a positive performance effect for independent outside directors on the corporate boards of Turkish firms.

Consistent with these recent studies, an appointment of independent directors to the boards of major firms may give a positive signal, resulting in an increase in share prices. We therefore hypothesize that the announcement of independent director appointment will generate a positive market reaction for Taiwanese listed firms. However, previous research (Davidson III et al. 2004; Hsu and Li 2009; Huang et al. 2008; Young et al. 2008) focuses primarily on the stock market reaction to the voluntary announcement of independent director appointments, ignoring the effect of mandatory announcements. Extending the literature, we examine the full extent of the announcement effect for Taiwanese listed firms including voluntary and mandatory independent director appointments from February 2002 to December 2011.

Our empirical findings indicate that a statistically significant positive reaction occurs following the announcement of independent director appointments. This result implies that investors expect that the independent directors may enhance the board function and promote the firm performance. Thus, the market rewards announcing firms. We also find that CARs are positive and higher for each of the following characteristics: lower proportion of independent directors, appointed independent directors with industry expertise, firms belonging to the electronic industry, firms with poor performance, and firms with a higher degree of information asymmetry. In particular, our results show that poor corporate performance and a higher degree of information asymmetry benefit more from the mandatory announcement of independent director appointments, which suggests that mandatory announcements dominate voluntary announcements. This implies that investors endorse the

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[2] The 2002 Listing Rules allow Taiwanese firms that were listed prior to February of 2002 to be free from the mandatory requirement to appoint independent directors. Consequently, announcing firms that went public before February 2002 are included in the sample to represent voluntary announcement of independent director appointments. Before the 2002 Listing Rules, corporate board governance of Taiwan listed firms was weak and unbalanced, especially for the new listed firms. However, this mandatory regulation, which ostensibly prevents the board from being overly-intimate with controlling shareholders, may provide Taiwan's minority investors with more protection (Young et al. 2008), and contribute to overall firm value.

requirement for Taiwan listed firms to have a minimum number and ratio of independent directors.

The remainder of the paper is organized as follows. Section 2 describes sample selection and data source. Section 3 analyzes the empirical results of univariate measurement and multivariate tests. Finally, Section 4 concludes the paper.

2. Sample Selection and Data Source

In the Taiwan market, Huang et al. (2008) find significant positive abnormal returns based on a sample of 58 voluntary appointment announcements over the period January 1, 1999 to June 30, 2003. Employing 108 voluntary independent director announcements from 2002 to 2004, Hsu and Li (2009) also find a significant positive market reaction for Taiwanese firms. Distinctively, we collect 235 announcements (including voluntary and mandatory announcements) of independent director appointments from the Market Observation Post System[3] over the February 2002 to December 2011 period. Compared to these studies, our analysis has longer research period (covering the two stages of the board independence reform in Taiwan), a larger sample, and greater coverage of announcements. The event date is based on the legally effective date of independent director appointment or the date of news announcements from the *United Daily News* Database, whichever is earlier. The daily returns of the firms' stock prices, when available, were obtained from the *Taiwan Economic Journal* (TEJ) database.

3. Empirical Results
3.1. Sample description

Panel A of Table 1 shows the distribution of 235 announcements with respect to year. All numbers of announcements, independent directors, and proportion of independent directors increased over time. Particularly, 2011 has the most appointments, total independent directors, and average proportion of independent directors, because board independence increases with corporate governance reform in Taiwan.

Panel B of Table 1 provides the descriptive statistics of our variables. Panel B shows that 30.2% (i.e. 71 firms) of the sample firms voluntarily appoint independent directors, with a large standard deviation of 0.460. In addition, the proportion of independent directors is 25.4%, on average. The proportions of independent directors in the literature are 58.4%, 52%, and 57% for the US (Klein 2002), New Zealand (Hossain et al. 2000) and Singapore (Mak and Li 2001), respectively. The proportion of independent directors in Taiwan is thus far lower, implying that the boards remain dominated by insiders. For at least one independent director with industry expertise on the board, the average is 0.843 and the median is 1. Among the sample firms, average leverage is 0.419, average sales growth ratio is 0.212, average ROE is 0.134, average length of the firm's listing on the stock market is 6 years, and average total assets are approximately 58.690 billion NTD (New Taiwan Dollars), with a large standard deviation of 86.211. Finally, approximately 73.2% of the sample firms belong to the electronics industry, which is Taiwan's largest and most internationalized industry.

3.2. Univariate measurement

This paper adopts the market model of Brown and Warner (1985) and James (1987) to measure the abnormal returns of firms around announcements. The parameters of the market model are estimated by regressing the firms' stock returns during the period 150-30 days prior to the event date on the TSE TAIEX (Taiwan Stock Exchange Weighted Index). The abnormal return is defined as the difference between the market return and the estimated return. The CAR is the sum of abnormal returns for the days in the specified event windows. The statistical tests of significance are based on standardized abnormal returns and CARs.

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[3] The Market Observation Post system is developed by the Taiwan Stock Exchange and GreTai Securities Market.

Table 1. Descriptive statistics of the sample

Panel A: Distribution of the sample by year of announcement

Year	Announcement firms	Total independent directors	Average proportion of independent directors to the boards
2002	2	3	0.226
2003	28	42	0.221
2004	20	34	0.244
2005	24	40	0.236
2006	25	42	0.239
2007	25	47	0.243
2008	21	36	0.241
2009	26	55	0.280
2010	32	65	0.264
2011	32	78	0.301
All	235	442	0.254

Panel B Descriptive statistics of variables (N=235)

Variables	Mean	Median	S.D.	Min.	Max.
Voluntary appointment of independent directors (VOL)	0.302	0.000	0.460	0.000	1.000
Proportion of independent directors (PROP)	0.254	0.273	0.102	0.067	0.600
Independent directors with industry expertise (EXP)	0.843	1.000	0.365	0.000	1.000
Firms belong to the electronics industry (IND)	0.732	1.000	0.444	0.000	1.000
Leverage (LEVG)	0.419	0.431	0.173	0.048	0.845
Growth opportunities (GROW)	0.212	0.125	0.604	-0.707	7.766
Prior firm performance (ROE)	0.134	0.139	0.168	-0.734	0.768
Length of a firm's listing by years (AGE)	6.000	4.000	7.800	0.500	49.500
Firm size (in billions NTD) (SIZE)	58.690	46.098	86.211	3.497	461.359

3.2.1. Stock price response to announcements of independent director appointments

Table 2 presents the average stock return responses of the firms to the announcement of independent director appointment. For the 3-, 5-, and 11-day event windows, the average cumulative abnormal returns (ACAR) was 1.305%, 1.602%, and 1.380%, significant at least at the 5 percent level, on the announcement of independent director appointment, respectively. This suggests that the news of a firm appointing independent directors generates a wealth increase for its stockholders. A nonparametric Wilcoxon signed rank test displays the same results. These results imply that, when a firm announces the appointment of independent directors, investors expect that the appointed independent directors may enhance the board's monitoring function and promote firm performance.

Table 2. The impact of the independent director appointment on the CARs of firms (N=235)

Event windows	ACAR	t-statistic	Median CAR	Wilcoxon z-statistic
3-day window 【-1,1】	1.305%	4.824***	0.732%	4.187***
5-day window 【-2,2】	1.602%	4.047***	1.030%	3.578***
11-day window 【-5,5】	1.380%	2.314**	1.210%	1.655*

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

3.2.2. Stock price response to voluntary and mandatory announcements of independent director appointments

Following the Listing Rules of 2002 and 2006 in Taiwan, our sample firms are divided into voluntary appointment firms and mandatory appointment firms, as discussed above. We use this natural setting to investigate the stock market reactions to voluntary and mandatory announcements of independent director appointments, to address a gap in the literature regarding mandatory announcements[4].

In Table 3, both Panels A and B show that CARs for all three event windows are significantly positive through either traditional *t*-tests or the Wilcoxon signed rank tests. These results, consistent with the literature, suggest that the stock market positively responds to voluntary announcements of independent director appointments, indicating that investors regard independent directors as an effective mechanism to reduce agency problems and thus increase firm value. However, our findings also suggest that market rewards firms announce independent director appointments in response to regulatory mandates, demonstrating that the market reacts similarly to both voluntary and mandatory announcements.

Table 3. The CARs for the voluntary and mandatory announcements of independent director appointments

Panel A: The CARs for voluntary independent director appointments (N=71)

Event windows	ACAR	t-statistic	Median CAR	Wilcoxon z-statistic
3-day window 【-1,1】	0.992%	2.191**	0.588%	1.960**
5-day window 【-2,2】	1.163%	1.812*	1.030%	1.765*
11-day window 【-5,5】	1.360%	1.721*	0.996%	1.652*

Panel B: The CARs for mandatory independent director appointments (N=164)

Event windows	ACAR	t-statistic	Median CAR	Wilcoxon z-statistic
3-day window 【-1,1】	1.441%	4.304***	0.972%	3.709***
5-day window 【-2,2】	1.793%	3.621***	0.988%	3.157***
11-day window 【-5,5】	1.388%	1.920*	1.226%	1.821*

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

3.2.3. Stock price responses to the proportion of independent directors on the board

Dahya and McConnell (2005) documented that boards with more outside directors better monitor management than boards dominated insiders. To investigate the perceived benefits to shareholders of the different proportions of independent directors, we divided the firm samples into two subsamples based on the proportion of the independent directors, defined as the number of

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[4] For example, Huang et al. (2008), Young et al. (2008) and Hsu and Li (2009) focused only on the voluntary announcements of independent director appointments and found significantly positive stock market reactions to such announcements. In addition, Davidson III et al. (2004) investigated the market reaction surrounding the voluntary appointment of directors to audit committees and found a significantly positive stock price reaction when new members of audit committees have financial expertise.

independent directors divided by the number of total directors on the board. Firms with a proportion of independent directors higher (lower) than the median (0.273) were assigned to the high proportion (low) group. Panel A of Table 4 compares the ACAR for firms with a lower proportion of independent directors with that of firms with a higher proportion of independent directors around date of announcements. The ACARs of all three event windows for firms with a lower proportion of independent directors (1.482%, 1.896%, and 2.162%, respectively) are larger than those with a higher proportion of independent directors (1.131%, 1.311%, and 0.604%, respectively); However, the difference test between these two subsamples is not significant at the 10 percent level across all event windows.

Huang et al. (2008) suggest that within a firm, the marginal value of outside director decreases as the number of outside director increases. Block (1999) finds that when the number of independent outside directors exceeds a marginal point, an increase in the number does not lead to positive abnormal stock returns. Therefore, we further examine the impact of different proportions of independent director appointments on the magnitude of the announcement firm's stock price reaction by four quartiles[5], as shown in Panel B of Table 4. The ACARs of all three event windows for firms in the second quartile (0.873%, 1.482% and 2.532%, respectively) are positive and significant. However, the ACARs of all event windows for the third quartile firms are not significant. This finding implies that the stock market positively responds to independent director announcements but this response is nonlinear with respect to the proportion of independent directors on the boards.

Table 4. The CARs for the lower and higher proportion of the independent directors

Panel A: The CARs for the lower and higher proportion of the independent directors

Event windows	lower proportion firms (t-statistic, N=118)	higher proportion firms (t-statistic, N=117)	p-value for difference test
3-day window 【-1,1】	1.482% (4.142***)	1.131% (2.781***)	0.518
5-day window 【-2,2】	1.896% (3.534***)	1.311% (2.249**)	0.461
11-day window 【-5,5】	2.162% (2.623***)	0.604% (0.703)	0.192

Panel B: The CARs for the quartiles of the independent director proportions

Event windows	ACAR (t-statistic)			
	1st quartile (N=58)	2nd quartile (N=59)	3rd quartile (N=59)	4th quartile (N=59)
3-day window 【-1,1】	2.101% (3.667***)	0.873% (2.072**)	0.739% (1.342)	1.523% (2.542**)
5-day window 【-2,2】	2.318% (2.706***)	1.482% (2.267**)	0.864% (0.985)	1.758% (2.280**)
11-day window 【-5,5】	1.786% (1.411)	2.532% (2.369**)	0.305% (0.237)	1.145% (0.788)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

3.2.4. Stock price responses to appointment of independent directors with expertise

Davidson III et al. (2004) find a significantly positive stock price reaction when new members of audit committees have financial expertise, suggesting that such an addition increases firm value. Hence, we investigate how investors value an independent director with industry expertise, using the firm's stock price reaction. Specifically, we separate all announcing firms into four groups based on the independent director's work experience[6], including (1) when all independent directors (one or more than one director) are one of either chief (or vice chief) executive officer, chief financial officer, vice president, president, or an executive in the banking industry, we classify these directors as having industry management experience; (2) when all independent directors are college professors (including

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[5] This study analyzes 235 appointment announcements whose proportions of independent directors on the boards rank from 0.067 to 0.600. We divided all announcements into four quartiles by the proportion value 0.167, 0.273 and 0.297.

[6] We use the most recent work experience rather than total work experience because a director's most recent work experience is indicative of the most up-to-date skills (same as Davidson III et al., 2004).

assistant professor, associate professor and professor), we categorize these directors as having academic experience; (3) when all independent directors of the firm are former government officials, we classify these directors as having government work experience; and (4) when a firm has two or more than two independent directors whose work experiences are different, such as one is a scholar and others are industry executives, we classify these as combinations.

Table 5 presents the ACAR for four groups of announcing firms by their independent director characteristics. Uniquely, the ACARs of all event windows for the industry executive directors (1.400%, 1.506%, and 1.813%, respectively) are positive and significant. This result implies that investors reward firms whose corporate boards include independent directors with industry management experience. Presumably, these independent directors bring diversified management skills and knowledge to their jobs, improving the firm's performance (Sarkar and Sarkar, 2009).

Table 5. The CARs for the independent director appointment of firms by the expertise

	ACAR (t-statistic)			
Event windows	Industry executives	Scholars	Former officials	Combinations
3-day window 【-1,1】	1.400% (3.757***)	0.510% (0.749)	1.634% (3.235***)	1.263% (2.763***)
5-day window 【-2,2】	1.506% (2.926***)	-0.289% (-0.317)	1.775% (1.839*)	2.331% (2.993***)
11-day window 【-5,5】	1.813% (2.256**)	-2.495% (-1.833*)	-1.584% (-0.382)	1.772% (1.672*)
samples	146	24	4	61

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

3.2.5. Stock price responses to announcements of independent directors by industry

Table 6. The CARs for the independent director appointments of firms by industry

Code[a]	Industry	Samples	ACAR (t-statistic)		
			3-day window 【-1,1】	5-day window 【-2,2】	11-day window 【-5,5】
13	Plastics	5	0.736%(0.742)	0.277%(0.171)	0.344%(0.106)
14	Textiles	7	-0.729%(-1.106)	-0.084%(-0.143)	3.424%(1.287)
15	Electrical Machinery	10	0.395%(0.482)	1.305%(1.183)	0.318%(0.222)
16	Wire and Cable	2	4.533%(0.914)	4.709%(2.792)	3.320%(3.047)
17	Chemical	14	1.358%(1.506)	0.982%(0.708)	1.115%(0.562)
20	Steel	3	-0.368%(-0.792)	-1.750%(-7.296***)	-0.484%(-0.014)
21	Rubber	2	-0.266%(-0.050)	0.558%(0.134)	-4.726%(-4.363)
23, 24[b]	Electronics	179	1.417%(4.444***)	1.866%(3.849***)	1.435%(1.978**)
25	Construction	6	0.474%(0.287)	-1.674%(-0.678)	-3.485%(-0.963)
26	Transportation	3	1.57342%(0.624)	2.138%(1.005)	1.815%(0.479)
27	Tourism	3	5.135%(0.918)	4.188%(0.806)	9.273%(4.375**)
99	Other	1	1.162%(0.3164)	0.679%(0.143)	3.537%(0.503)

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.
[a] The announcing firms are categorized into 13 industries based on the security code of the Taiwan Security Exchange Council (TSEC). The industry code is represented by the first two digits of the security code.
[b] The Electronics industry is divided into two industry sectors. One industry sector includes semiconductor, computer and peripheral equipment, electronic parts/components, and other electronics (the first two digits of the security code is '23'). The other industry sector contains communications and internet, electronic products distribution, and information service (the first two digits of the security code is '24').

The electronics industry is Taiwan's largest and most internationalized industry. Pressure from international institutional shareholders may force firms to appoint independent directors (Huang et al., 2008). Therefore, we examine the stock market reaction to the announcements of independent director appointments with respect to industry. Table 6 presents the ACAR for the announcing firms by industry. The electronics industry has the most appointments and its ACARs for all event windows (1.417%, 1.866%, and 1.435%, respectively) are positive and significant. However, the statistical significance of the price reaction for the remainder of the industry is much weaker across all event windows. This means that electronics firms significantly benefit from the announcement of the independent director appointments.

3.3. Multivariate tests

Our results so far show that the market rewards firms when they announce independent director appointments. In this section, we seek to confirm our univariate findings and to investigate other factors that may potentially affect firm abnormal returns around announcements of independent director appointments. To examine the impacts of these factors on announcement period returns for appointing firms, we specify a regression model as follows:

$$CAR_i(t_1, t_2) = \beta_0 + \beta_1 VOL_i + \beta_2 PROP_i + \beta_3 PROP_i^2 + \beta_4 EXP_i + \beta_5 IND_i + \beta_6 LEVG_i$$
$$+ \beta_7 GROW_i + \beta_8 ROE_i + \beta_9 AGE_i + \beta_{10} SIZE_i + \varepsilon_i \qquad (1)$$

where the following apply.

$CAR_i(t_1, t_2)$: The dependent variable is the 11-day cumulative abnormal return for firm i over event window (-5, +5).

VOL_i : A dummy variable that takes the value one if firm i voluntarily appoints independent directors, and zero otherwise.

$PROP_i$: The proportion of the independent directors for firm i is defined as the number of independent directors to the number of total directors on the board.

$PROP_i^2$: A quadratic variable, a squared term of $PROP$, is used to measure the nonlinear relationship between the abnormal returns and the proportion of independent directors.

EXP_i : A dummy variable set to one if firm i appoints an independent director who has industry management experience to its board, and zero otherwise.

$INDi$: A dummy variable set to one when firm i belongs to the electronics industry, and zero otherwise.

$LEVG_i$: A measure of the leverage of firm i, defined as total liabilities divided by total assets.

$GROW_i$: A measure of the growth opportunity of firm i, measured as sales growth. This variable also reflects the extent of agency conflicts. Hutchinson and Gul (2004) find that the incidence of information asymmetry is higher for growth firms; therefore, such firms usually have higher agency costs, which are negatively associated with firm performance. Thus, we expect that an independent director appointment will be less beneficial to a firm with higher growth opportunity.

ROE_i : ROE refers to the prior performance of firm i in the previous year. We expect that an independent director appointment will be more beneficial to a firm with poor prior performance. This is because investors expect that independent directors with monitoring ability and expertise will remove poorly performing managers and advise management (Huang et al., 2008).

AGE_i : The length of time that firm i has been publicly listed on the TSE is a proxy for the degree of information asymmetry. The proxy is valid for several reasons. First, like those in the U.S., publicly listed firms in Taiwan are required to disclose their financial and operational information each quarter. The publicly available information increases the transparency of these firms' financial situation and thus reduces the information asymmetry between firms and investors. Second, Datta et al. (2000) point out that greater firm age is associated with a lower degree of information asymmetry. Similarly, a longer time period from a firm's listing on the stock market to date of the announcement implies a lower degree of information asymmetry. One can expect that monitoring by independent directors helps investors reduce potential agency costs resulting from high information asymmetry. We hypothesize that a firm with higher information asymmetry is likely to

benefit more from the announcement of independent director appointment.

$SIZE_i$: Firm size is controlled for its effect on information announcements; it is measured as the natural log of firm's total assets.

ε_i : Random error term.

Table 7 reports the regression analysis on the abnormal returns for the firms around the announcements of independent director appointments. In regressions (1) and (2), the coefficients (-4.602 and -5.116, respectively) on the proportion of independent director (PROP) are significantly negative at least at the 10 percent level, indicating that the appointment is more beneficial to a firm with a lower proportion of independent directors. However, the coefficients for the quadratic variable *PROP²* are positive and significant while those for the *PROP* variable are negative and significant, suggesting that the relationship between the proportion of independent directors on the boards and the announcement effect is nonlinear, consistent with our univariate findings. In other words, announcement of independent director appointments is more beneficial to a firm with a lower proportion of independent directors. When the proportion of independent directors exceeds a certain point, the announcement effect decreases the firm's abnormal stock returns. Furthermore, the coefficients on both of the independent director's industry expertise (EXP) and the firm's industry characteristic (IND) are significantly positive , indicating that the announcement is beneficial for firms appointing independent directors with management expertise and firms in the electronic industry, consistent with our univariate results.

For firm characteristics, only prior performance (ROE) and the length time the firm has been listed are significantly negative. This means that poor corporate performance (lower prior ROE) and a higher degree of information asymmetry (shorter length time firm has been listed) benefit more from the appointment of independent directors. This could be because investors expect independent directors with monitoring ability and expertise to advise management, and firms with longer time in the stock market to enhance information transparency. However, other variables, such as voluntary announcement (VOL), leverage ratio (LEVG), growth opportunities (GROW) and firm size (SIZE), are not statistically significant in regressions (1) and (2).

We also examine the effect of interaction between appointment types (voluntary and mandatory appointments), and corporate performance and information asymmetry on the announcements. The estimated coefficient on the interaction term between mandatory announcement and the corporate performance, MAND*ROE[7], is negative and significant at the 1 percent level (coef. = -0.121). This suggests that the market rewards mandatory firms that are poorly performing firms. The coefficient of the interaction term between mandatory announcement and the length of time a firm has been listed on the stock market, MAND*AGE, is also negative and significant at the 5 percent level (coef. = -2.026). This means that the market rewards mandatory firms that have a higher level of information asymmetry, because a shorter period of time listed on the stock market is associated with a higher degree of information asymmetry. However, the coefficients on these same interaction terms for the voluntary announcement, VOL*ROE and VOL*AGE, are not statistically significant. Consequently, our findings are that poor corporate performance and a higher degree of information asymmetry benefit more from the announcement of mandatory appointments, suggesting that the mandatory announcement effect dominates the voluntary announcement effect. Therefore, our results reveal that investors endorse the mandatory request for Taiwanese listed firms to have a minimum number and ratio of independent directors.

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[7] MAND is a dummy variable that takes on the value one if firm *i*'s announcement of independent directors is mandatory, and zero otherwise.

Table 7. Regression analysis on the CARs for the firms around the announcements of independent director appointments

Variables		(1)		(2)
INTERCEPT		7.576 (7.298)		9.727 (7.483)
VOL		2.447 (1.591)		
PROP		-4.602* (2.392)		-5.116** (2.365)
PROP^2		7.312* (4.102)		8.472** (4.063)
EXP		3.215* (1.652)		2.929* (1.641)
IND		2.693** (1.364)		2.933** (1.363)
LEVG		1.298 (3.576)		0.799 (3.605)
GROW		0.542 (0.991)		0.493 (0.980)
ROE		-0.064* (0.036)		
AGE		-1.582** (0.763)		
SIZE		-0.202 (0.443)		-0.214 (0.461)
VOL*ROE				-0.076 (0.062)
VOL*AGE				-0.921 (0.879)
MAND*ROE				-0.121*** (0.044)
MAND*AGE				-2.062** (0.821)
Sample size		235		235
Adj. R sq		0.149		0.163
F statistic		2.59***		2.75***

The estimated coefficients are listed in each column with standard errors in the parentheses based on White's (1980) heteroskedasticity-consistent covariance matrix.

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

4. Conclusion

Our paper uses a unique natural experimental setting to examine the market value of the voluntary and mandatory independent director appointments, using data on Taiwanese listed firms covering the years 2002 to 2011. Several features of our study highlight the valuable services of independent directors to shareholders. First, we find a significantly positive stock price reaction when a firm announces the appointment of independent directors to its board. Second, although the stock market positively responds to independent director announcements, this response is nonlinear with respect to the proportion of independent directors on the board. Third, investors expect that independent directors with industry expertise may bring in diversified management skills and knowledge that improves firm performance. Fourth, an electronics firm benefits more from the appointment of independent directors among the Taiwan listed firms. Fifth, investors expect that board independence can increase monitoring power, improve firm performance, and enhance information transparency. Finally, within a firm, poor corporate performance and a higher degree of information

asymmetry benefit more from the mandatory announcement of independent director appointment, which suggests that the mandatory announcement effect dominates the voluntary announcement effect.

Given these findings, it appears that the mandatory regulation for Taiwan listed firms to have a minimum number and ratio of independent directors on the boards is welcomed by investors. We thus expect that our findings will be useful to authorities in other emerging markets who are mulling similar changes to their regulatory regimes.

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