Does the mandatory adoption of outside directors improve firm performance?

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Abstract

This paper examines the economic consequences of the introduction of regulations that mandate listed firms adopt outside directors. The Japanese Companies Act was revised in June 2014, and this revision required listed firms to adopt at least one outside director. Although half of the listed firms had no outside directors before the revision of this act, almost all listed firms now have outside directors. I find that mandatory adopters experience a significant increase in profitability and corporate governance quality relative to voluntary adopters after the act was revised. This evidence suggests that the adoption of outside directors enhances firm performance in mandatory adopters. Moreover, this study reveals that the adoption of independent outside directors improves firm performance more than adopting affiliated outside directors.

JEL classification: G34, G38, K22

Keywords: Corporate Governance, Outside Director, Regulation, Governance Reform, Companies Act Revision

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1. Introduction

Outside directors are thought to play a monitoring role and increase the firm performance. Conventional wisdom and theoretical research both emphasize that outside directors can potentially facilitate corporate governance, increase performance, and enhance corporate value. However, a substantial number of empirical studies examine the relationship between the proportion of outside directors on the board and firm performance, but they do not find evidence that supports these theories. These empirical studies conduct their analysis using firms that voluntarily adopted outside directors, and with a majority of outside directors. A few studies also document that firms appoint new outside directors when the firm exhibits lower performance. These studies only examine the marginal effect of outside directors on firm performance and suffer from an endogeneity of outside director adoption. Thus, there is an ongoing debate about the effect of outside director adoption on firm performance.

This paper analyzes the effects of outside director adoption using a treatment sample that has been mandated to adopt outside directors. The Japanese Companies Act was revised in June 2014, and mandated that listing firms either adopt at least one outside director or disclose the reason for non-adoption if outside directors are not appointed. Currently, nearly all listed firms have at least one outside director, although at most 60% of firms had outside directors before 2014.

In Japan, board compositions differ from those in Western countries as well as some Asian countries in several respects, including the characteristics of directors and the board committee system. In 2010, over half of Japanese listed companies had no outside directors. In fact, most Japanese-listed firms still have a majority of inside directors and one or two outside directors; consequently, their director boards are inside director-dominated because most Japanese firms do not have board committees, but corporate auditor systems ("*kansayakukai*").

In contrast, US firms in particular have a majority of outside directors, and only one or two insiders. Linck, Netter, and Yang (2008) indicate that the mean outside director ratio is 65.7% in the United States. Dehaene, Vuyst, and Ooghe (2001) show that on average in Belgium, the number of outside directors is 5.59 and the number of inside directors is 2.78. Mak and Li (2001) report the mean proportion of outside directors is 57% in Singapore. Moreover, Japanese firms used to have few inside directors that were affiliated with main banks, the parent companies, and major trading partners. Some mandatory adopters appointed affiliated outside directors to fulfill the criteria of the revised Companies Act, on the other hand, other mandatory adopters appointed independent outside directors.

Therefore, the Japanese context provides suitable opportunities to investigate whether the outside director adoption affects the profitability, firm value, and corporate governance quality. I use the difference-in-differences analysis to mitigate the endogeneity of outside director adoption. While a lot of prior research experience an endogeneity issue, some studies attempt to correct for such endogeneity using simultaneous-equation methods. However, they do not find that outside directors have a significantly positive effect on firm performance.

This paper aims to clarify the effect of outside director adoption on profitability, firm value, and corporate governance quality. I begin a set of analyses with a simple difference-in-differences analysis. The mandatory adopters are identified as firms that first adopted outside directors in the fiscal year ending between June 2014 and May 2015: when the Companies Act was revised and implemented, respectively. The voluntary adopters are identified as firms that have already adopted outside directors prior to June 2014. I compare the mandatory adopters to the voluntary adopters and control firms that are selected from the voluntary adopters, following Lie (2001) and Barber and Lyon (1997). Moreover, this paper investigates the effect of adopting affiliated outside directors and independent outside directors on firm performance.

My main findings are as follows. Mandatory adopters experience a significant increase in profitability and corporate governance quality after the adoption of outside directors becomes mandatory, relative to voluntary adopters. Moreover, this study finds that the adoption of independent outside directors improves profitability and corporate governance quality more than adopting affiliated outside directors. This study contributes to existing literature in several important aspects. First, I provide a novel evidence to the mixed observation that outside directors do not improve firm performance. This is the first study to detangle the effect of outside director adoption and empirically indicate that outside director adoption improves firm performance. Second, my results indicate that the adoption of independent outside directors further improves firm performance.

The rest of this paper is organized as follows. Section 2 reviews related literature. Section 3 describes the data and provides a statistical summary, then describes the research design. Section 4 presents empirical results, and section 5 concludes.

2. Prior literature and hypothesis development

Theoretical research suggests that outside directors play an important role inside boards. Fama (1980) and Fama and Jensen (1983) emphasize that outside directors mitigate the conflict between managers and shareholders, and discipline internal managers.

However, empirical research does not support this belief. Some research examines the effect of outside directors on firm performance. Hermalin and Weibach (1991), Mehran (1995), Klein (1998), and Bhagat and Black (2002) do not find evidence that the proportion of outside directors on the board positively relates to firm performance. On the other hand, Hermalin and Weibach (1991) and Bhagat and Black (2002) find that poorly performing firms adopt more outside directors.

Other research investigates the relationship between outside directors and firm value. Agrawal and Knoeber (1996), Mak and Li (2001), and Bhagat and Black (2002) find a negative relationship between the proportion of outside directors on the board and firm value by controlling for endogeneity. On the other hand, Rosenstein and Wyatt (1990) find significantly positive announcement return, in that outside directors will be added, but the positive returns is small. Rosenstein and Wyatt (1990) imply that the adoption of new outside directors leads to positive benefits.

These empirical studies are conducted in countries with a majority of outside directors on the board, and they examine the marginal effect of outside director on firm performance. In Japan, the board composition differs from those in Western countries. Specifically, most Japanese listed firms still adopt one or two outside directors, thus the proportion of outside directors on the board is approximately 20%, on average. Moreover, half of listed firms did not adopt outside directors prior to 2014.

Since 2014, the Japanese government has reinforced the corporate governance mechanism. She reformed the Companies Act in June 2014 and introduced some non-binding regulations, such as stewardship code and corporate governance codes.[1] The revised Companies Act mandates that listed firms adopt at least one outside director or disclose the reason for non-adoption if outside directors are not appointed. The Japanese version of governance code also requests that firms adopt two or more outside directors.

[1] The stewardship code was introduced in February 2014, and requests that institutional investors, such as asset owners and asset managers, discharge their stewardship responsibility through their engagement with investee firms and the exercising of voting rights. The corporate governance code was introduced in June 2015, and requests that the listed firms ensure that shareholders exercise their rights and enhance their rights.

Therefore, it is possible to directly investigate the benefit of outside director adoption. I expect that performance in mandatory adopter increases more than that in voluntary adopters, since governance quality in mandatory adopter becomes as high as that in voluntary adopter through the mandatory adoption of outside directors.

H1: Mandatory adopters improve firm performance more than voluntary adopters.

Independent outside directors are thought to play an important role in decision-making and disciplining managers, as they have incentives to exercise judgement both independently and free of management influence (Fama, 1980; Fama and Jensen, 1983). Additionally, independent outside directors are expected to have incentives to maintain and improve their reputation and competence in directorial markets. Brickley, Lease, and Smith (1988) indicate that, on the one hand, pressure-resistant shareholders with no business relationships with their investee firms voted against the contested proposals that arise in conflicts between shareholders and managements. On the other hand, pressure-sensitive shareholders with business relationships with their investee firms vote in line with management.

In fact, most Japanese firms used to appoint affiliated inside directors from their financial institutions or affiliated firms. Currently, some Japanese firms appoint affiliated outside directors to fulfill the criteria of the revised Companies Act, as these directors might be less likely to discipline managers. There is an example that Mitsubishi Motors has four affiliated outside directors who are sent from Mitsubishi Heavy Industries, Mitsubishi Corporation, and Nissan.

Thus, I expect that independent directors are more likely to arbitrage the conflict between shareholders and managers than affiliated outside directors with a previous or current occupation in business related banks or firms.

H2: Mandatory adopters that appoint independent directors improve firm performance more than others.

3. Research design

I conduct the difference-in-differences analysis. As the Japanese Companies Act was revised on June 20, 2014, and was implemented on May 1, 2015, I divide the sample into three groups: mandatory adopters, voluntary adopters, and non-adopters. Mandatory adopters include firms that first adopted outside directors in the fiscal year ending between June 2014 and May 2015. Voluntary adopters include firms that have already adopted outside directors prior to June 2014.[2] Non-adopters contain firms that did not have outside directors prior to May 2015. I also divide the sample into two time periods: the pre-revision period prior to June 2014, and the post-revision period after June 2014.

This paper tests whether profitability, firm value, and corporate governance quality in mandatory adopter significantly improve after the Companies Act was revised, relative to others. First, the *ROA* (ordinary income[3]/total assets) and *ROE* (net earnings/equity) are used as profitability proxies. Second, *Tobin's q* ((market value + book debt) /total assets,) and *MV*

[2] When I identify the voluntary adopters as firms that have already adopted outside directors prior to June 2013, I get the same results. This is because over 350 firms adopted outside directors in the fiscal year preceding the revision of the Companies Act.
[3] Ordinary income stands for earnings before tax and extraordinary income and loss.

(market value) are used as proxies for firm value. Finally, 15 governance attributes are selected and the corporate governance quality is calculated following Aman and Nguyen (2008), Chernobai and Yasuda (2013), and Mian and Nagata (2013). These studies categorize governance attributes into three groups: board structure attributes, ownership attributes, and disclosure attributes. In this paper, the board structure attributes include the board size (*BRN_NUM*), the number of executive directors (*J_NUM*), the proportion of outside directors not affiliated with a bank, parent company, or trading partner, and that are not currently on other companies' board of directors (*IDORTO*), the ease of board renewal (*TNEED*), and the proportion of auditors on the board (*ADTRTO*). Ownership attributes include foreign ownership (*FRGN*), cross-shareholdings (*CROSS*), stable shareholdings (*ANTEI*), directors' ownership (*LN_OWN*), and the adoption of stock options (*SO*). Disclosure attributes include the number of auditors' opinions over the past three fiscal years (*AOP3*), the number of changes in accounting policy over the past three fiscal years (*APCHG3*), the timelines of earnings announcements (*ATRM*), the ratio of shareholder meetings' concentration (*AGMV*), and the adequacy of information on the firm's website (*WEBEVL*). Each governance attribute is evaluated using five grades by NIKKEI NEEDs CGES; a high score indicates high corporate governance qualities. The *Gov-score* is obtained by averaging the above governance attributes, and the *Gov EX-board score* is obtained by averaging the above governance attributes, except for board structure attributes.

The effect of mandatory outside director adoption are tested by estimating the following regression equation (1):

$$Performance_{i,t+1} = \alpha + \beta_1 Mandatory_i * Post_t + \beta_2 Mandatry_i + \beta_3 Post_t + \sum \beta_j Controls + \varepsilon_{i,t} \quad (1)$$

where *performance* represents profitability (*ROA* and *ROE*), firm value (Tobin's *q* and *MV*), and corporate governance quality (*Gov-score* and *Gov-score ex board*) for firm *i*, and year *t*.

The interaction term is defined as a mandatory adopter dummy (*Mandatory*) × post-revision dummy (*Post*). This term captures the effect of mandatory outside director adoption on *performance*. *Mandatory* is an indicator variable that takes the value of one for a firm that first adopted outside directors from June 2014 to May 2015. *Post* is an indicator variable that takes the value of one for the fiscal year ends after June 2014.

Controls are identified by prior studies as the factors that potentially affect firm performance: i) $Performance_t$, ii) Shareholdings by directors (director ownership), foreign shareholders (foreign ownership), and financial institutions (financial ownership), as well as the natural logarithm of total assets (*AST*), and the debt to assets (*LEV*). In this study, all regressions include both firm- and year-fixed effects, and standard errors are clustered at the firm level.

This study tests Hypothesis 2 by estimating Equation (2):

$$
\begin{aligned}
Performance_{i,t+1} \\
&= \alpha + \beta_1 Mandatory\ with\ independent_i * Post_t \\
&+ \beta_2 Mandatory\ with\ independent_i \\
&+ \beta_3 Mandatory\ with\ affiliated_i * Post_t \\
&+ \beta_4 Mandatory\ with\ affiliated_i + \beta_5 Post_t \\
&+ \sum \beta_j Controls \quad + \varepsilon_{i,t}
\end{aligned}
\tag{2}
$$

Mandatory with independent is an indicator variable that equals one for a mandatory adopter that appointed independent outside directors. *Mandatory with affiliated* is an indicator that equals one for a mandatory adopter that appointed affiliated outside directors. Independent and affiliated outside directors are distinguished by using the number of outside directors unaffiliated with firms' major trading partners, shareholders, creditors, and director's personal relationships (*IFO_NUM*) as provided by NIKKEI NEEDs CGES.[4]

4. Data and summary statistics

Board composition data, financial data, ownership data, and governance data are obtained from the NIKKEI NEEDs Financial Quest. Governance data is taken from NIKKEI NEEDs CGES. The sample is restricted to all non-financial firms with March fiscal year-end and for which data is available from 2012 to 2017. Further, firms are excluded that have negative shareholder equity. Japanese firms subject to mandatory outside director adoption

[4] In my sample, mandatory adopters that appointed only independent outside directors consist of 527 firms and 2,627 firm-year observations. Mandatory adopters that appointed only affiliated outside directors consist of 30 firms and 156 firm-year observations. Mandatory adopters that appointed independent outside directors and affiliated outside directors consist of 30 firms and 149 firm-year observations.

were required to appoint at least one outside director for fiscal years beginning between June 2014 and May 2015. As this paper aims to study changes in firm profitability, firm value, and corporate governance quality after mandatory outside director adoption, the sample period is divided into two time periods: the pre-revision period prior to June 2014; and the post-revision period after June 2014. In other words, the pre-revision period includes the fiscal periods of March 2012 through March 2014, and the post-revision periods include the fiscal periods of March 2015 through March 2017. The final sample consists of 2,107 firms and 10,494 firm-year observations. The top and bottom 1% values of all continuous variables are then winsorized.

As mentioned above, I classify the listed firms into three categories: mandatory adopters, voluntary adopters, and non-adopters. Mandatory adopters are firms that first appointed outside directors between June 2014 and May 2015. Voluntary adopters are firms that have already appointed outside directors prior to June 2014. Non-adopters are firms that did not appoint prior to May 2015. Mandatory adopters, voluntary adopters, and non-adopters consist of 587 firms, 1,401 firms, and 119 firms, respectively.

Panel A in Table 1 provides summary statistics of firm characteristics. Mandatory adopters have significantly smaller firm sizes than voluntary adopters. Director shareholdings in mandatory adopters are significantly higher than those in voluntary adopters. In contrast, shareholdings by foreign investors and financial institutions were significantly lower in mandatory adopters than in voluntary adopters.

First, the univariate comparisons of profitability, firm value, and corporate governance quality is set around the revision of the Companies Act using difference-in-differences analysis. This simple method accounts for the unobserved differences between mandatory and voluntary adopters. Table 2 reports the mean values of firm performance measures across mandatory and

voluntary adopters in both pre- and post-revision periods. The mandatory adopters exhibit significantly greater improvements to *ROA* and *ROE* than voluntary adopters. Further, the improvement in *Gov-score* and *Gove EX board-score* are also significantly higher for mandatory adopters than for voluntary adopters. These results suggest that the adoption of outside directors improves firm profitability and corporate governance quality. However, mandatory adopters displayed a significantly lower change in *Tobin's q* and *MV* than voluntary adopters. As the Japanese stock market has increased since 2013, large firms' stock prices have rapidly increased. Thus, the next section estimates the multivariable OLS regressions and selects the control firms to control for firm characteristics.

5. Empirical results

Tables 3 through 8 report the OLS regression results from Equations (1) and (2). I tabulate ordinary least squares (OLS) coefficient estimates and, in square brackets, t-statistics based on robust standard errors that are clustered at the firm level. This paper estimates separate regressions in different samples to compare mandatory adopters with others. Column (1) compares the mandatory adopters with other firms that contain voluntary adopters and non-adopters. Column (2) compares the mandatory adopters with voluntary adopters. Column (3) compares the mandatory adopters with control firms, selected from voluntary adopters. Tables 3, 4, 7, and 8 match a mandatory adopter to a control firm within the same industry, and with similar ROA_t and ΔROA_t in the fiscal year ending in March 2015 from voluntary adopters, following Lie (2001). Tables 5 and 6 match a mandatory adopter to a control firm with similar *MV* and book-to-market value in the fiscal year ending in March 2015 from voluntary adopters, following Barber and Lyon (1997). Column 4 compares the mandatory adopters with non-adopters.

5.1. The effect of mandatory outside director adoption on profitability

Table 3 presents the effect of mandatory outside director adoption on profitability. Panels A and B in Table 3 report the regression results in Equation (1) by using *ROA* and *ROE* as dependent variables, respectively. Columns (1) through (3) demonstrate that the coefficient of *Mandatory * Post* is positive and significant in both Panels A and B. These results indicate that firm profitability in mandatory adopters significantly improves after the revision of the Companies Act, relative to voluntary adopters and control firms. In contrast, column (4) shows that the coefficients of *Mandatory * Post* are positive but not significant. This result is due to a small non-adopter sample, and half of these became appointed outside directors after May 2015.

Table 4 reports the OLS regression results in Equation (2) to distinguish the effect of independent outside director adoption on profitability from those of affiliated outside director adoption. In Panel A in Table 4, columns (1) and (2) show that the coefficients of *Mandatory with independent * Post* are positive and significant, and indicate that mandatory adopters that appointed independent outside directors experience a significant increase in *ROA* after the revision of the Companies Act, relative to voluntary adopters. On the other hand, the coefficients of *Mandatory with affiliated * Post* are positive but not significant, and the coefficients of *Mandatory with affiliated* are negative and significant. Panel B in Table 4 reports the regression results in Equation (2), which substitutes *ROE* for the dependent variable, and nearly similar results to Panel A are obtained. Columns (1) through (3) show that the coefficients of *Mandatory with independent * Post* are positive and significant. These results suggest that mandatory adopters that appointed affiliated outside directors exhibit significantly

lower profitability relative to voluntary adopters, and the adoption of affiliated outside directors does not enhance profitability after the revision of the Companies Act.

These results suggest that the adoption of outside directors significantly improve profitability in mandatory adopters. Further, these results suggest that the adoption of independent outside directors enhances profitability more than adopting affiliated outside directors.

5.2. The effect of outside director adoption on firm value

Table 5 presents the effect of mandatory outside director adoption on firm value. Panels A and B in Table 5 report the regression results in Equation (1) using *Tobin's q* and *MV* as the dependent variables, respectively. The coefficients of *Mandatory * Post* are not significant in all columns of both Panels A and B. These results suggest that the adoption of mandatory outside directors does not significantly affect firm value.

Table 6 provides the results of the OLS regression in Equation (2) using *Tobin's q* and *MV* as the dependent variable in Panels A and B, respectively. The coefficients of *Mandatory with independent * Post* are not significant in all columns of both Panels A and B. These results suggest that the adoption of mandatory outside directors does not affect firm value, even when the mandatory adopters appoint independent outside directors.

5.3. The effect of mandatory adoption of outside directors on corporate governance quality

Table 7 presents the effect of mandatory outside director adoption on corporate governance quality. Panels A and B in Table 7 report the regression results in Equation (1) using *Gov-score* and *Gov EX board-score* as the dependent variables, respectively. The

coefficients of *Mandatory * Post* are positive and significant in all columns in Panel A, as well as in columns (1) through (3) in Panel B. These results indicate that mandatory adopters experience a significant increase in corporate governance quality after the revision of the Companies Act, relative to voluntary adopters and control firms.

Table 8 presents the effect of independent director and affiliated director adoption on corporate governance quality. Panels A and B in Table 8 report the regression results in Equation (2) using *Gov-score* and *Gov EX board-score* as the dependent variables, respectively. Panel A shows that the coefficients of *Mandatory with independent * Post* are positive and significant in columns (1) through (4). Panel B also shows that the coefficients of *Mandatory with independent * Post* are positive and significant in columns (1) through (3). On the other hand, the coefficients of *Mandatory with affiliated * Post* are not significant in all columns in both Panels A and B. I find that mandatory adopters that appointed independent outside directors experience a significant increase in corporate governance quality after the revision of the Companies Act.

These results suggest that the adoption of outside directors improves corporate governance quality. Moreover, these results suggest that the adoption of independent outside directors enhances corporate governance quality more than adopting affiliated outside directors.

6. Conclusion

This study examines whether the mandatory adoption of outside directors affects profitability, firm value, and corporate governance quality. The Japanese government revised its Companies Act in June 2014 to reinforce corporate governance mechanisms. This revised act mandated that listing firms either adopt at least one outside director, or disclose the reason for non-adoption if outside directors were not appointed. Currently, nearly 100% of listed firms

have at least one outside director, although half of listed firms had no outside directors before 2014. The revision of the Companies Act provides an opportunity to investigate the effect of outside director adoption on profitability, firm value, and corporate governance quality.

Outside directors are thought to play a monitoring role and increase firm performance. Conventional wisdom and theoretical research both emphasize that outside director has the potential to facilitate corporate governance, increase performance, and enhance corporate value. However, while a lot of empirical studies examine the relationship between the proportion of outside directors on the board and firm performance, they do not find evidence to support these theories. Thus, there is an ongoing debate regarding the effect of outside director adoption on firm performance.

This paper aims to clarify the effects of mandatory outside director adoption by using the difference-in-differences analysis. I find that mandatory adopters experience a statistically significant increase in profitability and corporate governance quality after the revision of the Companies Act. These results suggest that the adoption of outside directors promotes both profitability and corporate governance quality. Moreover, I find that the adoption of independent outside directors improves profitability and corporate governance quality more than adopting affiliated outside directors.

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Table 1. Summary Statistics

	Mandatory adopters		Voluntary adopters	
	Mean	Median	Mean	Median
AST	11.191***	10.197***	12.752	10.906
LEV	0.489	0.501	0.485	0.478
Director ownership	6.855***	2.867***	4.621	0.663
Financial ownership	15.639***	14.000***	19.455	17.766
Foreign ownership	6.079***	2.450***	12.265	8.321
ROA	4.920***	4.386***	5.587	4.763
ROE	6.539***	6.294***	7.202	6.944
Tobin's q	1.017***	0.755***	1.348	0.988
MV	9.348***	9.182***	10.391	10.201
Gov-score	3.180***	3.200***	3.307	3.333
Gov EX board-score	2.958***	3.000***	3.041	3.000

I identify mandatory adopters as firms that first adopted outside directors between June 2014 and May 2015, and voluntary adopters as firms that have already adopted outside directors prior to June 2014. *AST* is the natural logarithm of total assets and *LEV* is the ratio of debt to total assets. *Director ownership*, *financial ownership,* and *foreign ownership* represent shareholdings by directors, financial institutions, and foreign shareholders, respectively. *ROA* (ordinary income / total assets) and *ROE* (net earnings / equity) are identified as profitability, while *Tobin's q* ((market value + book debt) / total assets), and *MV* (market value) represent firm value. *Gov-score* is obtained by averaging 15 governance attributes (board structure, ownership, and disclosure attributes), and the *Gov Ex board score* is obtained by averaging above governance attributes, except for board structure attributes. The means and medians are compared with that of voluntary adopters using a two-tailed *t*-test and Wilcoxon tests. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2. Difference-in-differences analysis of performance around the mandatory outside director adoption

Panel A: Difference-in-differences analysis of profitability around the mandatory outside director adoption

		ROA			*ROE*		
		Pre-revision	Post-revision		Pre-revision	Post-revision	
		(a)	(b)	(b) - (a)	(a)	(b)	(b) - (a)
Mandatory adopters	(i)	4.999	5.464	0.465***	6.122	7.161	1.040***
Voluntary adopters	(ii)	5.789	5.841	0.051	7.196	7.196	0.000
	(i)-(ii)	-0.790***	-0.376*	0.414***	-1.075***	-0.035	1.040***

Panel B: Difference-in-differences analysis of firm performance around the mandatory outside director adoption

		Tobin's q			*MV*		
		Pre-revision	Post-revision		Pre-revision	Post-revision	
		(a)	(b)	(b) - (a)	(a)	(b)	(b) - (a)
Mandatory adopters	(i)	0.997	1.056	0.059**	9.272	9.457	0.185***
Voluntary adopters	(ii)	1.299	1.422	0.123***	10.316	10.531	0.216***
	(i)-(ii)	-0.303***	-0.366***	-0.063***	-1.044***	-1.074***	-0.030***

Panel C: Difference-in-difference analysis of governance around the mandatory outside director adoption

		Gov-score			*Gov EX board-score*		
		Pre-revision	Post-revision		Pre-revision	Post-revision	
		(a)	(b)	(b) - (a)	(a)	(b)	(b) - (a)
Mandatory adopters	(i)	3.094	3.310	0.217***	2.928	3.002	0.074***
Voluntary adopters	(ii)	3.267	3.375	0.108***	3.030	3.057	0.027***
	(i)-(ii)	-0.173***	-0.065***	0.109***	-0.102***	-0.055***	0.047***

This table presents the results of the difference-in-differences analyses based on all mandatory and voluntary adopters from 2012 to 2017. I identify mandatory adopters as firms that first adopted outside directors between June 2014 and May 2015, and voluntary adopters as firms that have already adopted outside directors prior to June 2014. The pre-revision period is prior to June 2014, while the post-revision period is after June 2014. As I examine the effect of mandatory outside director adoption on performance for the next fiscal year, performance in the pre-revision period is obtained by averaging each firm's mean performance in the fiscal periods of March 2013 through March 2015, and performance in the post-revision period is obtained by averaging each firm's mean performance in the fiscal periods of March 2016 through March 2017. Performance is defined as each measure of profitability, firm value, and corporate governance quality. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3. Effect of the mandatory adoption of outside directors on profitability

Panel A: Effect of the mandatory adoption of outside directors on ROA

Dependent variable	ROA_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
*Mandatory * Post*	0.244*	0.243*	0.239*	0.253
	[1.911]	[1.865]	[1.659]	[0.896]
Mandatory	0.406	0.833	1.304	4.729***
	[0.408]	[0.819]	[1.240]	[3.733]
Post	1.765***	1.778***	1.920***	2.034***
	[11.389]	[11.107]	[11.098]	[6.559]
ROA_t	0.304***	0.306***	0.349***	0.315***
	[12.143]	[11.603]	[15.041]	[10.344]
Director ownership	0.016	0.021	0.012	-0.002
	[1.089]	[1.381]	[0.792]	[-0.092]
Foreign ownership	0.047**	0.048**	0.036	0.000
	[2.234]	[2.234]	[1.519]	[-0.008]
Financial ownership	0.061***	0.058***	0.060***	0.092***
	[3.726]	[3.524]	[3.251]	[2.905]
AST	-5.030***	-5.206***	-5.760***	-4.992***
	[-8.514]	[-8.546]	[-9.413]	[-5.661]
LEV	7.117***	7.067***	8.532***	8.920***
	[4.927]	[4.742]	[4.904]	[3.591]
Adj. R^2	0.757	0.756	0.767	0.763
N	10,494	9,899	5,853	3,521

Panel B: Effect of the mandatory adoption of outside directors on ROE

Dependent variable	ROE_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
*Mandatory * Post*	0.851**	0.868**	1.206***	0.867
	[2.296]	[2.308]	[2.651]	[1.082]
Mandatory	0.937	1.088	3.303	22.287***
	[0.340]	[0.384]	[0.944]	[5.679]
Post	4.897***	4.831***	5.116***	6.493***
	[9.308]	[8.783]	[7.342]	[6.215]
ROE_t	0.116***	0.122***	0.147***	0.100**
	[4.927]	[5.033]	[4.606]	[2.366]
Director ownership	0.031	0.047	0.044	0.007
	[1.184]	[1.642]	[1.361]	[0.202]
Foreign ownership	0.143***	0.151***	0.144**	0.101
	[2.642]	[2.732]	[2.212]	[1.308]
Financial ownership	0.160***	0.157***	0.219***	0.241***
	[3.584]	[3.445]	[3.959]	[3.000]
AST	-13.050***	-13.026***	-16.025***	-17.409***
	[-6.917]	[-6.652]	[-6.441]	[-5.793]
LEV	47.392***	47.772***	51.659***	58.144***
	[10.421]	[10.192]	[8.016]	[7.135]
Adj. R^2	0.467	0.465	0.428	0.448
N	10,494	9,899	5,853	3,521

This table reports the results of the OLS regression in Equation (1) to investigate whether the mandatory adoption of outside directors affects firm profitability. Column (1) combines mandatory adopters with voluntary adopters and non-adopters. Column (2) combines the mandatory adopters with voluntary adopters. Column (3) combines the mandatory adopters with control firms selected from voluntary adopters based on industry, ROA_t, and ΔROA_t in the fiscal year ending in March 2015, following to Lie (2001). Model (4) combines mandatory adopters with non-adopters. The dependent variables are *ROA* and *ROE* in Panels A and B, respectively. *Mandatory* is an indicator variable that takes the value of one for a firm that first adopted outside directors between June 2014 and May 2015. *Post* is an indicator variable that takes the value of one for years after June 2014. All regressions include firm- and year-fixed effects. Robust standard

errors are clustered at the firm level, and *t*-statistics are noted in square brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4. Effect of independent and affiliated outside director adoption on profitability

Panel A: Effect of adopting independent and affiliated outside directors on ROA

Dependent variable	ROA_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
Mandatory with independent	0.228*	0.227*	0.224	0.277
** Post*	[1.755]	[1.717]	[1.561]	[1.076]
Mandatory with independent	0.412	0.839	1.313	4.743***
	[0.414]	[0.824]	[1.247]	[3.722]
Mandatory with affiliated	0.415	0.416	0.451	0.478
** Post*	[1.417]	[1.418]	[1.550]	[1.487]
Mandatory with affiliated	-5.911***	-6.501***	-6.856***	-4.176**
	[-4.893]	[-5.268]	[-5.762]	[-2.156]
Post	1.762***	1.775***	1.913***	1.992***
	[11.374]	[11.094]	[11.074]	[6.647]
ROA_t	0.304***	0.306***	0.349***	0.315***
	[12.142]	[11.602]	[15.039]	[10.351]
Director ownership	0.015	0.021	0.012	-0.002
	[1.085]	[1.377]	[0.783]	[-0.107]
Foreign ownership	0.047**	0.048**	0.036	-0.001
	[2.235]	[2.235]	[1.520]	[-0.031]
Financial ownership	0.061***	0.058***	0.060***	0.092***
	[3.721]	[3.518]	[3.240]	[2.898]
AST	-5.032***	-5.209***	-5.770***	-5.009***
	[-8.511]	[-8.542]	[-9.406]	[-5.667]
LEV	7.135***	7.087***	8.582***	8.999***
	[4.936]	[4.751]	[4.926]	[3.616]
Adj. R^2	0.757	0.756	0.767	0.763
N	10,494	9,899	5,853	3,521

Panel B: Effect of adopting independent and affiliated outside directors on ROE

Dependent variable	ROE_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
Mandatory with independent	0.870**	0.887**	1.200***	0.921
** Post*	[2.317]	[2.332]	[2.664]	[1.233]
Mandatory with independent	0.919	1.069	3.287	22.273***
	[0.333]	[0.377]	[0.938]	[5.649]
Mandatory with affiliated	0.514	0.522	0.826	0.804
** Post*	[0.532]	[0.543]	[0.853]	[0.760]
Mandatory with affiliated	-14.402***	-14.649***	-17.919***	-17.505***
	[-4.322]	[-4.265]	[-4.360]	[-3.352]
Post	4.889***	4.822***	5.109***	6.425***
	[9.284]	[8.760]	[7.325]	[6.246]
ROE_t	0.116***	0.122***	0.147***	0.100**
	[4.924]	[5.029]	[4.600]	[2.365]
Director ownership	0.031	0.047	0.044	0.007
	[1.185]	[1.645]	[1.361]	[0.193]
Foreign ownership	0.143***	0.151***	0.143**	0.099
	[2.641]	[2.731]	[2.205]	[1.287]
Financial ownership	0.160***	0.157***	0.219***	0.241***
	[3.581]	[3.442]	[3.951]	[2.997]
AST	-13.043***	-13.018***	-16.016***	-17.412***
	[-6.908]	[-6.643]	[-6.427]	[-5.785]
LEV	47.394***	47.774***	51.679***	58.217***
	[10.411]	[10.181]	[8.003]	[7.117]
Adj. R^2	0.467	0.465	0.428	0.448
N	10,494	9,899	5,853	3,521

This table presents OLS specifications testing the effect of mandatory adoption of independent and affiliated outside directors on profitability. Column (1) combines mandatory adopters with voluntary adopters and non-adopters. Column (2) combines mandatory adopters with voluntary adopters. Column (3)

combines the mandatory adopters with control firms selected from voluntary adopters based on industry, ROA_t, and ΔROA_t in the fiscal year ending in March 2015, following to Lie (2001). Column (4) combines mandatory adopters with non-adopters. The dependent variables are *ROA* and *ROE* in Panels A and B, respectively. *Mandatory with independent* is an indicator variable for a mandatory adopter that first adopted independent directors as outside directors between June 2014 and May 2015. *Mandatory with affiliated* is an indicator variable for a mandatory adopter that first adopted affiliated directors as outside directors between June 2014 and May 2015. *Post* is an indicator variable that takes the value of one for years after June 2014. All regressions include firm- and year-fixed effects. Robust standard errors are clustered at the firm level, and *t*-statistics are noted in square brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5. Effect of the Mandatory Adoption of Outside Directors on Firm Value

Panel A: Effect of the mandatory adoption of outside directors on Tobin's *q*

Dependent variable	*Tobin's* q_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
*Mandatory * Post*	-0.037	-0.031	-0.049	-0.120
	[-1.397]	[-1.148]	[-1.488]	[-1.517]
Mandatory	-0.553**	-0.478*	-0.507*	0.466
	[-2.276]	[-1.945]	[-1.826]	[1.355]
Post	0.294***	0.299***	0.307***	0.351***
	[9.956]	[9.855]	[7.660]	[4.315]
Tobin's q_t	0.215***	0.209***	0.229***	0.281***
	[6.616]	[6.202]	[4.355]	[3.768]
Director ownership	0.005	0.006*	0.005	0.002
	[1.561]	[1.666]	[1.547]	[0.598]
Foreign ownership	0.011***	0.011***	0.012**	0.010
	[2.931]	[2.835]	[2.420]	[1.389]
Financial ownership	0.008**	0.007*	0.007	0.008
	[2.053]	[1.919]	[1.616]	[1.005]
AST	-0.222*	-0.252*	-0.263*	-0.087
	[-1.699]	[-1.920]	[-1.841]	[-0.384]
LEV	1.967***	1.944***	2.228***	2.188***
	[5.870]	[5.696]	[5.235]	[3.654]
Adj. R^2	0.782	0.775	0.764	0.796
N	10,494	9,899	5,849	3,521

Panel B: Effect of the mandatory adoption of outside directors on market value

Dependent variable	MV_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
*Mandatory * Post*	-0.006	-0.004	-0.018	-0.030
	[-0.384]	[-0.226]	[-0.838]	[-0.752]
Mandatory	-0.304*	-0.280	-0.400*	1.113***
	[-1.740]	[-1.539]	[-1.769]	[6.858]
Post	0.383***	0.384***	0.415***	0.404***
	[17.937]	[17.320]	[12.965]	[8.169]
Tobin's q_t	0.112***	0.114***	0.121***	0.164***
	[3.320]	[3.181]	[3.374]	[3.456]
Director ownership	0.008***	0.008***	0.009***	0.006*
	[3.064]	[3.049]	[3.236]	[1.835]
Foreign ownership	0.009***	0.008***	0.006**	0.005
	[3.146]	[3.037]	[2.073]	[1.134]
Financial ownership	0.011***	0.010***	0.013***	0.012**
	[3.939]	[3.911]	[3.858]	[1.990]
AST	0.344***	0.335***	0.333**	0.344***
	[3.222]	[2.984]	[2.549]	[2.951]
LEV	0.317*	0.352**	0.591***	0.405*
	[1.901]	[2.022]	[3.081]	[1.674]
Adj. R^2	0.964	0.964	0.941	0.951
N	10,494	9,899	5,849	3,521

This table reports the results of the OLS regression in Equation (1) to investigate whether the mandatory adoption of outside directors affects firm value. Column (1) combines mandatory adopters with voluntary adopters and non-adopters. Column (2) combines mandatory adopters with voluntary adopters. Column (3) combines the mandatory adopters with the control firms selected from voluntary adopters, based on the MV and book-to-market in the fiscal year ending in March 2015, following Barber and Lyon (1997). Column (4) combines mandatory adopters with non-adopters. The dependent variables are *Tobin's q* and *MV* in Panels A and B, respectively. *Mandatory* is an indicator variable that takes the value of one for a firm that first adopted outside directors between June 2014 and May 2015. *Post* is an indicator variable that takes the value of one for years after June 2014. All regressions include firm- and year-fixed effects. Robust

standard errors are clustered at the firm level, and *t*-statistics are noted in square brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6. Effect of adopting independent and affiliated outside directors on firm value

Panel A: Effect of adopting independent and affiliated outside directors on Tobin's *q*

Dependent variables	*Tobin's* q_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
Mandatory with independent	-0.032	-0.026	-0.044	-0.102
** Post*	[-1.186]	[-0.954]	[-1.341]	[-1.459]
Mandatory with independent	-0.556**	-0.480*	-0.509*	0.458
	[-2.283]	[-1.952]	[-1.831]	[1.324]
Mandatory with affiliated	-0.056	-0.053	-0.056	-0.086
** Post*	[-1.366]	[-1.283]	[-1.349]	[-1.621]
Mandatory with affiliated	-0.248	-0.369	-0.270	0.222
	[-0.818]	[-1.198]	[-0.799]	[0.403]
Post	0.294***	0.298***	0.306***	0.339***
	[9.949]	[9.851]	[7.667]	[4.483]
Tobin's q_t	0.215***	0.209***	0.229***	0.281***
	[6.615]	[6.202]	[4.354]	[3.769]
Director ownership	0.005	0.006*	0.005	0.002
	[1.565]	[1.669]	[1.552]	[0.605]
Foreign ownership	0.011***	0.011***	0.012**	0.010
	[2.935]	[2.839]	[2.425]	[1.392]
Financial ownership	0.009**	0.007*	0.007	0.008
	[2.055]	[1.921]	[1.620]	[1.015]
AST	-0.221*	-0.251*	-0.262*	-0.088
	[-1.694]	[-1.914]	[-1.833]	[-0.385]
LEV	1.965***	1.942***	2.225***	2.184***
	[5.863]	[5.689]	[5.225]	[3.638]
Adj. R^2	0.782	0.775	0.764	0.796
N	10,494	9,899	5,849	3,521

Panel B: Effect of adopting independent and affiliated outside directors on Tobin's *q*

Dependent variable	MV_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
Mandatory with independent	-0.003	-0.001	-0.014	-0.021
** Post*	[-0.185]	[-0.040]	[-0.658]	[-0.581]
Mandatory with independent	-0.306*	-0.281	-0.402*	1.108***
	[-1.747]	[-1.546]	[-1.775]	[6.794]
Mandatory with affiliated	-0.023	-0.021	-0.026	-0.031
** Post*	[-0.629]	[-0.577]	[-0.679]	[-0.763]
Mandatory with affiliated	-0.871***	-0.913***	-0.797***	-0.681**
	[-4.107]	[-4.136]	[-2.983]	[-2.567]
Post	0.383***	0.384***	0.414***	0.398***
	[17.942]	[17.326]	[12.999]	[8.507]
MV_t	0.112***	0.114***	0.121***	0.164***
	[3.321]	[3.182]	[3.377]	[3.466]
Director ownership	0.008***	0.008***	0.009***	0.006*
	[3.067]	[3.052]	[3.240]	[1.840]
Foreign ownership	0.009***	0.008***	0.006**	0.005
	[3.147]	[3.039]	[2.075]	[1.128]
Financial ownership	0.011***	0.010***	0.013***	0.012**
	[3.939]	[3.911]	[3.860]	[1.992]
AST	0.345***	0.335***	0.334**	0.344***
	[3.225]	[2.986]	[2.550]	[2.945]
LEV	0.315*	0.350**	0.589***	0.402*
	[1.894]	[2.014]	[3.073]	[1.663]
Adj. R^2	0.964	0.964	0.941	0.951
N	10,494	9,899	5,849	3,521

This table presents the OLS specifications testing the effect of mandatory adoption of independent and affiliated outside directors on profitability. Column (1) combines mandatory adopters with voluntary adopters and non-adopters. Column (2) combines the mandatory adopters with voluntary adopters. Column (3)

combines the mandatory adopters with the control firms selected from voluntary adopters, based on the MV and book-to-market in the fiscal year ending in March 2015, following Barber and Lyon (1997). Column (4) combines mandatory adopters with non-adopters. The dependent variables are Tobin's *q* and MV in Panels A and B, respectively. *Mandatory with independent* is an indicator variable for a mandatory adopter that first adopted independent directors as outside directors between June 2014 and May 2015. *Mandatory with affiliated* is an indicator variable for a mandatory adopter that first adopted affiliated directors as outside directors between June 2014 and May 2015. *Post* is an indicator variable that takes the value of one for years after June 2014. All regressions include firm- and year-fixed effects. Robust standard errors are clustered at the firm level, and *t*-statistics are noted in square brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7. Effect of the mandatory adoption of outside directors on corporate governance quality

Panel A: Effect of the mandatory adoption of outside directors on governance score

Dependent variable	Gov_score_{t+1}			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
*Mandatory * Post*	0.098***	0.105***	0.106***	0.033*
	[10.448]	[11.010]	[9.266]	[1.716]
Mandatory	-0.215***	-0.216***	-0.151**	0.118*
	[-4.977]	[-4.795]	[-2.274]	[1.900]
Post	0.137***	0.129***	0.159***	0.250***
	[15.420]	[14.053]	[12.381]	[11.963]
Gov_score_t	0.112***	0.105***	0.092***	0.098***
	[8.231]	[7.551]	[5.069]	[4.165]
Director ownership	0.002***	0.002***	0.002***	0.003***
	[3.839]	[3.400]	[2.793]	[3.136]
Foreign ownership	-0.003***	-0.002***	-0.004***	-0.006***
	[-3.051]	[-2.657]	[-2.857]	[-2.852]
Financial ownership	-0.002**	-0.002**	-0.004**	-0.005**
	[-2.205]	[-2.311]	[-2.501]	[-2.505]
AST	-0.039	-0.039	-0.079**	-0.029
	[-1.625]	[-1.558]	[-2.032]	[-0.718]
LEV	-0.088	-0.086	-0.068	-0.015
	[-1.611]	[-1.512]	[-0.818]	[-0.154]
Adj. R^2	0.686	0.683	0.683	0.681
N	10,298	9,703	5,769	3,489

Panel B: Effect of the mandatory adoption of outside directors on governance score, excluding board structure attributes

Dependent variable	*Gov EX board-score*$_{t+1}$			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
*Mandatory * Post*	0.040***	0.043***	0.038***	0.010
	[3.939]	[4.143]	[3.049]	[0.509]
Mandatory	-0.088*	-0.083*	-0.045	0.122*
	[-1.898]	[-1.736]	[-0.652]	[1.900]
Post	0.017*	0.011	0.036**	0.074***
	[1.690]	[1.045]	[2.524]	[3.547]
Gov ex board-score$_t$	0.162***	0.166***	0.142***	0.128***
	[10.718]	[10.641]	[7.127]	[5.178]
Director ownership	0.001**	0.001*	0.002*	0.002*
	[2.137]	[1.736]	[1.914]	[1.946]
Foreign ownership	-0.004***	-0.003***	-0.004***	-0.006***
	[-3.780]	[-3.601]	[-2.877]	[-2.946]
Financial ownership	-0.002**	-0.003**	-0.002	-0.002
	[-2.225]	[-2.424]	[-1.527]	[-1.013]
AST	-0.006	-0.007	-0.053	-0.004
	[-0.230]	[-0.254]	[-1.392]	[-0.110]
LEV	-0.172***	-0.170**	-0.095	-0.137
	[-2.707]	[-2.559]	[-1.033]	[-1.336]
Adj. R^2	0.726	0.725	0.725	0.723
N	10,298	9,703	5,769	3,489

This table reports the results of the OLS regression in Equation (1) to investigate whether the mandatory adoption of outside directors affects corporate governance quality. Column (1) combines mandatory adopters with voluntary adopters and non-adopters. Column (2) combines the mandatory adopters with voluntary adopters. Model (3) combines the mandatory adopters with the control firms selected from voluntary adopters, based on industry, ROA_t, and ΔROA_t in the fiscal year ending in March 2015, following Lie (2001). Column (4) combines mandatory adopters with non-adopters. The dependent variables are the governance score (*Gov-score*) and a governance score that excludes board structure attributes (*Gov EX board-score*) in Panels A and B, respectively. *Mandatory* is an indicator variable that takes the value of one for a firm that first adopted outside directors between June 2014 and May 2015. *Post* is an indicator variable

that takes the value of one for years after June 2014. All regressions include firm- and year-fixed effects. Robust standard errors are clustered at the firm level, and *t*-statistics are noted in square brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8. Effect of adopting independent and affiliated outside directors on corporate governance quality

Panel A: Effect of the mandatory adoption of independent and affiliated directors on the governance score

Dependent variable	*Gov-score$_{t+1}$*			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs non-adopters
	(1)	(2)	(3)	(4)
Mandatory with independent	0.100***	0.107***	0.106***	0.033*
** Post*	[10.462]	[10.990]	[9.198]	[1.808]
Mandatory with independent	-0.217***	-0.218***	-0.155**	0.112*
	[-5.035]	[-4.852]	[-2.335]	[1.816]
Mandatory with affiliated	-0.006	-0.003	-0.004	-0.042
** Post*	[-0.219]	[-0.122]	[-0.152]	[-1.482]
Mandatory with affiliated	0.039	0.041	-0.058	0.038
	[0.721]	[0.717]	[-0.724]	[0.471]
Post	0.138***	0.131***	0.162***	0.254***
	[15.570]	[14.219]	[12.661]	[12.631]
Gov-score$_t$	0.110***	0.103***	0.088***	0.090***
	[8.020]	[7.335]	[4.780]	[3.760]
Director ownership	0.002***	0.002***	0.002***	0.003***
	[3.866]	[3.426]	[2.825]	[3.225]
Foreign ownership	-0.003***	-0.002***	-0.004***	-0.006***
	[-3.083]	[-2.697]	[-2.899]	[-2.825]
Financial ownership	-0.002**	-0.002**	-0.004**	-0.005**
	[-2.214]	[-2.320]	[-2.515]	[-2.525]
AST	-0.038	-0.038	-0.075*	-0.025
	[-1.573]	[-1.506]	[-1.947]	[-0.606]
LEV	-0.093*	-0.091	-0.081	-0.029
	[-1.702]	[-1.610]	[-0.969]	[-0.310]
Adj. R^2	0.685	0.683	0.683	0.681
N	10,298	9,703	5,769	3,489

Panel B: Effect of the mandatory adoption of independent and affiliated directors on governance score, excluding board structure attributes

Dependent variable	*Gov EX board-score*$_{t+1}$			
	Mandatory adopters vs. other adopter groups	Mandatory adopters vs. voluntary adopters	Mandatory adopters vs. control firms	Mandatory adopters vs. non-adopters
	(1)	(2)	(3)	(4)
Mandatory with independent	0.038***	0.040***	0.034***	-0.002
** Post*	[3.684]	[3.873]	[2.708]	[-0.090]
Mandatory with independent	-0.088*	-0.082*	-0.044	0.125*
	[-1.881]	[-1.717]	[-0.638]	[1.934]
Mandatory with affiliated	-0.006	-0.005	-0.006	-0.026
** Post*	[-0.219]	[-0.169]	[-0.217]	[-0.855]
Mandatory with affiliated	0.102*	0.099*	0.028	0.134
	[1.780]	[1.663]	[0.339]	[1.560]
Post	0.018*	0.012	0.039***	0.085***
	[1.819]	[1.183]	[2.749]	[4.129]
Gov EX board-score$_t$	0.162***	0.166***	0.142***	0.128***
	[10.727]	[10.651]	[7.139]	[5.178]
Director ownership	0.001**	0.001*	0.002*	0.002**
	[2.134]	[1.732]	[1.901]	[1.976]
Foreign ownership	-0.004***	-0.003***	-0.004***	-0.006***
	[-3.812]	[-3.638]	[-2.908]	[-2.905]
Financial ownership	-0.002**	-0.003**	-0.002	-0.002
	[-2.225]	[-2.423]	[-1.521]	[-1.036]
AST	-0.006	-0.006	-0.051	-0.002
	[-0.217]	[-0.243]	[-1.358]	[-0.06]
LEV	-0.175***	-0.173***	-0.102	-0.144
	[-2.745]	[-2.598]	[-1.105]	[-1.399]
Adj. R^2	0.726	0.725	0.725	0.723
N	10,298	9,703	5,769	3,489

This table presents OLS specifications testing the effect mandatory adoption of independent and affiliated outside directors on corporate governance quality. Column (1) combines the mandatory adopters with voluntary adopters and non-adopters. Column (2) combines the mandatory adopters with voluntary adopters.

Column (3) combines the mandatory adopters with the control firms selected from voluntary adopters, based on the industry, ROA_t, and ΔROA_t in the fiscal year ending in March 2015, following Lie (2001). Column (4) combines the mandatory adopters with non-adopters. The dependent variables are governance score (*Gov-score*) and governance score that excludes board structure attributes (*Gov EX board-score*) in Panels A and B, respectively. *Mandatory with independent* is an indicator variable for a mandatory adopter that first adopted independent directors as outside directors between June 2014 and May 2015. *Mandatory with affiliated* is an indicator variable for a mandatory adopter that first adopted affiliated directors as outside directors between June 2014 and May 2015. *Post* is an indicator variable that takes the value of one for years after June 2014. All regressions include firm- and year-fixed effects. Robust standard errors are clustered at the firm level, and *t*-statistics are noted in square brackets. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.