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Abstract

We show the corporate governance reforms introduced by the Japanese government since 2014 have not succeeded in increasing aggregate firm value. These policies, of which voluntary disclosure in the form of 'comply or explain' is a major element, have inadvertently led to overcompliance by target firms listed in the first section of the Tokyo Stock Exchange as well as a range of non-target firms. We argue this overcompliance behaviour is, inter alia, correlated with the cultural values of 'conformity', 'respect for authority' and 'power distance', which permeate the Japanese corporate culture. This results in smaller firms, which are typically not listed on the first section of the exchange, following the compliance behaviour of larger firms listed on the first section in the same industry sector. Importantly, this pressure to follow in the steps of leading firms is to the detriment of board effectiveness and shareholder value. We document a larger reduction in the market value of young and R&D intensive firms, and firms appointing outsider directors with lower advising quality. These findings highlight the risks in adopting corporate governance policies without due attention to cultural nuances.

JEL classifications: G34, M14

Keywords: Voluntary disclosure, National culture, Corporate governance, Compliance, Japan

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1. Introduction

Voluntary disclosure policies aimed at improving corporate governance outcomes have increasingly been adopted across the world (e.g., Zattoni and Cuomo, 2008). The general argument in favour of voluntary disclosure regimes such as 'comply or explain', as opposed to hard regulations such as the Sarbanes-Oxley Act of 2002, is that the former allows for a more dynamic and flexible approach to corporate governance. Comply or explain approaches are "formally nonbinding and voluntary in nature, issued by multi-actor committees, flexible in their application, built on the market mechanism for evaluation of deviations and evolutionary in nature" (Haxhi and Aguilera, 2014). Therefore, numerous countries have adopted voluntary corporate governance policies with the goal of enhancing firm value and improving the general governance environment of their corporate sectors.

Broadly speaking, however, empirical support for the comply or explain approach is mixed and inconclusive (see, e.g., Cuomo, Mallin, and Zattoni, 2016; Davies et al., 2011).[3] Firstly, research evidence shows that complying firms often do so more in 'form' than in 'substance' (Krenn, 2014), and non-complying firms use standard 'boilerplate' statements (Arcot, Bruno and Faure-Grimaud, 2010), possibly due to unenforceability of such regulations. Second and more closely related to our paper, recent studies point out that country-level factors can mitigate the effectiveness of voluntary codes (Cuomo, Mallin, and Zattoni, 2016; Price, Román, and Rountree, 2011). We extend this literature by introducing a so far underexplored factor: the socio-cultural pressures to 'conform' in the corporate sector.

This paper provides evidence from the recent corporate governance reforms in Japan to show that such soft governance approaches can be less effective in certain cultural environments. Primarily, we argue that due to specific attributes of the Japanese national culture such as very high levels of *conformity, respect for authority, power distance*, *uncertainty avoidance*, and *long-term orientation*, an unusually high proportion of Japanese firms comply with the voluntary code of governance and other related policies introduced since 2014 (hereafter referred to as the 'Code'). Importantly, we illustrate that even listed companies not subject to this regulation tend to 'overcomply'. In other words, there is robust evidence of overcompliance

[3] Some studies report that such approaches increase firm value. See, for example, Goncharov, Werner and Zimmermann (2006) in Germany; Fernández-Rodríguez, Gómez-Ansón and Cuervo-García (2004) in Spain; and Dahya and McConnell (2007) in the UK. In contrast, for example, Price, Román, and Rountree (2011) report no association between compliance to the voluntary governance code in Mexico and firm performance. The survey by Cuomo, Mallin, and Zattoni (2016) illustrates the range of mixed results in this literature.

to the Code across all listed firms in Japan and, crucially, this is associated with a marked decline in firm value following the introduction of the Code.

The overcompliance problem that we illustrate is theoretically related to the Japanese cultural preference for loyalty, deference and respect to regulatory authorities, to leading firms in the sector, and to what is regarded, implicitly or explicitly, as 'best practice'. While the traditional corporate governance research often draws on the classic agency problems between managers and shareholders (lack of loyalty and the principal-agent theory a la Jensen and Meckling, 1976), we argue that the Japanese evidence is more consistent with the agency problems discussed in Morck (2008). The latter suggests that too much loyalty between the agent and the principal may lead to similarly adverse effects. In the Japanese context, we argue this loyalty is fuelled by longstanding socio-cultural values that are unique to this country.

The corporate governance Code we study in this paper was finalized by the Japanese Financial Services Agency and the Tokyo Stock Exchange (hereinafter, TSE) in December 2014 and implemented in June 2015. According to the Code, firms have to comply with a set of principles or explain their reasons for non-compliance. One of the Code's key requirements is that firms need at least two outside directors on their board. This requirement, however, applies only to a subgroup of Japanese firms: those listed on the first section (T1 as in Tier-1) or the second section (T2 as in Tier 2) of the TSE – an overall group we refer to as T12. In our sample, T1 firms consist of 66% (64%) of TSE (all listed) firms. T2 firms consist of 16% (15%) of TSE (all listed) firms. Finally, firms listed in other sections of the TSE, which we refer to as non-T12, make up 19% (18%) of TSE (all listed) firms, respectively.

While the requirement to have two outside directors might appear inconsequential relative to many other countries, it has a considerable potential to influence corporate governance in Japan. Traditionally, boards in Japan have had far fewer outside directors than other countries. This, among other reasons, can be attributed to the distinct corporate structures historically prevalent in Japan such as the interlocking business relationships and shareholdings commonly referred to as the Keiretsu. To illustrate this, as of 2012, 45% of Japanese firms had no outside directors and 30% had only one outside director on their boards. Thus, only 25% of firms had two or more outside directors. Against this backdrop, the Code was introduced in 2014 and targeted

T12 companies with less than two outside directors which made up 54% of all listed firms in Japan.

Based on our findings, between 2013 and 2017, the mean number of outside directors increased at an accelerated pace from 1.3 to 2.7 for T1 firms and from 0.8 to 2.1 for T2 firms. This trend can be seen in Figure 1. The growth within a five-year period was much faster than the relatively static number of outside directors in the preceding decade from 2003 to 2013. Surprisingly, non-T12 firms also reacted to the Code. 18% of these firms had two or more outside directors in 2013 but this rose to 31% in 2014 and further to 52% in 2017. The Code affected non-T12 firms more than T12 firms in the sense that prior to the introduction of the Code, we observe virtually no change in the number of outside directors. This is in contrast to T12 firms that experienced a gradual rise. This suggests that the introduction of the Code had a spillover effect on firms that were not the direct target of the policy.

~ Figure 1 about here ~

Next, we examine the impact of the Code on firm value. Using an Instrumental Variable approach, we show that an increase in the number or the ratio of outside directors, induced by the Code, has an opposite effect and reduces firm value as measured by Tobin's Q. In addition, we observe this negative association among both T1 and non-T12 firms. This can mean that the potential signalling of competence by non-T12 firms, proxied by their compliance behaviour, is not positively interpreted by the market.

Further tests yield three sets of results. First, non-T1 firms comply with the Code following the compliance of their industry leaders. i.e., T1 firms. Our findings demonstrate that this compliance herding reduces the follower firms' market value. Second, market values of firms that cannot appoint sufficient outside directors declines among non-T1 firms more than T1 firms. These findings suggest that conformity pressures from industry leaders have a negative effect on these followers. Third, value of R&D intensive firms listed on the T1 section decreases. Given these firms are likely to be leaders among leaders, this finding suggests that leaders themselves also suffer possibly due to the respect for authority.

Finally, we examine the impact of the Code on board size. The implementation of the Code seems to have had an unintended consequence. Average board size increased because firms retained insiders on boards when appointing outsiders. We find these larger boards are associated with a reduction in firm value. Although this negative association is widely known from extensive studies since Yermack (1996), it can further illustrate how overcompliance to the Code has reduced shareholder value in our setting. Crucially, this negative effect is observed only among T1 firms. A policy recommendation based on this finding is that imposing a restriction on board size can mitigate problems in comply or explain governance regimes.

Our paper makes several contributions to the corporate governance literature. Firstly, we extend the body of work on the impact of voluntary corporate governance codes on board size, board independence and firm value (e.g., Cuomo, Mallin, and Zattoni, 2016). Our findings are in contrast to Fauver et al. (2017) who find that comply or explain increases firm value. Similarly, Luo and Salterio (2014) report that Canadian firms exploit the flexibility of the comply or explain regime strategically and thus increase their firm value. We posit that these differences in governance outcomes between Japan (with its highly homogenous culture) and countries such as Canada (with their diverse and fluid cultures) can be explained reasonably well in the context of socio-cultural differences.

Secondly, therefore, we contribute to the literature on the emerging role of culture in explaining corporate finance and governance outcomes.[4] Our findings are related to Li and Harrison (2008) who study how national culture affects board structures but do not examine the consequence of this on firm value. More closely, our results are in line with Frijins, Dodd and Cimerova (2016) who show the cultural diversity of board of directors can reduce firm value.

Thirdly, we illustrate that firms appointing other firms' current or former executives experience a smaller reduction in firm value. This contributes to the body of work on the positive valuation effects of CEO director appointments (e.g., Fahlenbrach, Minton, and Pan, 2011; Fich 2005, Fahlenbrach, Low, and Stulz, 2010).

[4] For example, there are studies on culture and merger and acquisitions (Ahern, Daminelli, and Fracassi, 2015), executive compensation (Bryan, Nash, and Patel, 2015), internal control disclosures (Hooghiemstra, Hermes and Emanuels, 2015), firm growth (Boubakri and Saffar, 2016), and international portfolio holdings (Karolyi, 2016). See Aggarwal et al. (2016) for a review.

The rest of this paper is organized as follows. Section 2 provides policy background on the Japanese corporate governance and the cultural attributes relevant to the study. Section 3 develops the hypotheses, presents the empirical design and introduces the data and descriptive statistics. Section 4 presents the main empirical findings and Section 5 concludes.

2. Background

2.1. The Japanese Corporate Governance Code

As in other countries, accounting and governance scandals in Japan have encouraged policy discussions on issues such as board independence. In 2011, Japan experienced two consecutive accounting scandals: the Olympus Corporation scandal in July and the Daio Paper Corporation scandal in September. These events led to widespread international concerns about the quality of Japanese corporate governance, which, in turn, stimulated a policy debate on board independence. At this time, still about half of Japanese firms had no outside directors. Following extensive legislative attempts in the following years, in August 2012, the Corporate Law subcommittee decided that it would not mandate companies to have an outside director. Instead, the proposal mandated firms to explain the reasons when they choose not to have an outside director. This was the first time in Japan that comply or explain requirements appeared in a series of policy discussions. The government accepted this proposal in November 2013, it passed into law (the Code) in June 2014 and came into force in June 2015.

In fact, the Code was part of a larger policy package introduced by Prime Minister Shinzo Abe since December 2012 including legal reforms and changes in macroeconomic policy (informally referred to as Abenomics). The code consists of five General Principles, 30 Principles, and 38 Supplementary Principles; thus 73 items in total. All publicly listed firms are mandated to comply, or explain their non-compliance, with all the five General Principles. In contrast, only firms listed on the first or second sections of the TSE are subject to the remaining 68 principles. Compliance or lack thereof must be reported in the corporate disclosures that firms file annually following their annual shareholder meetings.

In May 2015, a concurrent requirement came into force, which required firms to appoint at least one outside director. If firms chose not to make this appointment, they had to explain their reasons at the general shareholders' meetings. More precisely, the requirement applied only to 'large firms,' defined as having a stated capital of 500 million yen or liabilities of 20 billion yen.

97% of firms in our final sample are classified as 'large firms.' The law also introduced the audit and supervisory committee system. This is an elective framework. If a firm adopts it, the firm must place an audit and supervisory committee inside its board. At least three directors need to be on this committee and a half of them must be outside directors. These directors monitor other directors. Non-committee member directors can oversee decision making. Thus, the framework encourages firms to separate management and monitoring inside the board.

2.2. Culture in Corporate Governance

The finance literature has recently opened up to discussing and measuring the impact of culture in finance. A seminal study in this area is by Grinblatt and Keloharju (2001) who document that investors are more likely to hold, buy, and sell the stocks of Finnish firms that are geographically proximate to the investor, that communicate in the investor's native tongue, and that have CEOs of the same cultural background. Culture for their 97 publicly-traded Finnish firms is identified by the CEO's name and native tongue (Finnish or Swedish).

Similarly, Chui, Lloyd, and Kwok (2002) show that firms in countries with high scores on the cultural dimensions of conservatism and mastery – both adapted from Hofstede's construct by Schwartz (1994) – are associated with lower debt ratios. Shao, Kwok, and Guedhami (2010) associate these same values with higher dividend payouts. The propensity for corporate investment in longer-term, riskier projects or to employ excess cash for R&D expenditures is further associated with firms domiciled in countries with higher scores on Hofstede's individualism index (Shao, Kwok, and Zhang, 2013).

This trend has also spilled over to corporate governance research. Stulz and Williamson (2003) explore the link between national cultural and international differences in corporate governance. The authors measure cultural differences by religion and language and show that cultural differences can explain differences in investor protection for a set of countries with the same legal systems. For example, compared to Protestant countries, Catholic countries provide much weaker protection for creditors.

The Japanese culture provides an excellent setting for studying the impact of culture on corporate outcomes. By most measures, the Japanese culture has unique features which can be attributed, inter alia, to the historical and geographical seclusion of Japan prior to recent times.

Figure 2 provides a quick comparison of Hofstede cultural measures between Japan and the US, the latter providing the basis and data for most of corporate governance literature to date.

As Figure 2 shows, the Japanese culture score very highly on *Power Distance* (the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally), *Masculinity* (preference in society for achievement, heroism, assertiveness and material rewards for success), *Uncertainty Avoidance* (society's tolerance for ambiguity, the extent to which people embrace or avert an event of something unexpected, unknown, or away from the status quo), and *Long-term Orientation* (viewing adaptation and circumstantial, pragmatic problem-solving as a necessity).

~ Figures 2 about here ~

World Values Survey also supports our argument on the Japanese culture. Their fourth survey (WVS Wave 4) asks the following: 'People have different ideas about following instructions at work. Some say that one should follow one's superior's instructions even when one does not fully agree with them. Others say that one should follow one's superior's instructions only when one is convinced that they are right.' Only 9.2% of the 1362 Japanese respondents answer they must be convinced first. The average across all countries is 43.9%, and the ratio is at least 20% in any other country but Japan. Ahern et al. (2015) use the answer to this question to measure the degree of hierarchical culture.

Other studies on Japanese social behaviour (for example Benedict, 1946, Caudill and Scarr, 1962) have similarly emphasized the importance of 1) *Conformity,* 2) *Group membership*, and 3) *Respect for authority* in the Japanese culture. We will use these constructs in the rest of the paper to argue why smaller and younger Japanese companies have the tendency to comply with their leaders, and at a higher level, with government authority.

3. Research Design

3.1. Hypothesis Development

Our first two hypotheses are concerned with board composition and independence. The Code clearly stipulates the requirement to have at least two outside directors on the board. In the Japanese context where a majority of companies did not have any or had only one outside

director prior to the introduction of the Code, this can only mean that we should expect the board size, and the number/ratio of outside directors to increase following the introduction of the Code.[5] Of course, a voluntary code, by its very nature, may mean that a majority of companies may not choose to comply with it. However, given the Japanese institutional context and conformity pressures, we do not expect this to be the case ex ante.

Hypothesis 1: *The voluntary Code increases board size.*
Hypothesis 2: *Number and ratio of outside directors increases following adoption of the Code.*

As we expect the voluntary nature of the Code to lead to overcompliance, we should also observe a decline in firm value when the firm appoints outside directors in response to the introduction of the code. Any such decision by the firm is, by nature, a knee-jerk reaction to a regulatory change and not driven by company fundamentals. As such, it is not likely to increase shareholder value. In particular, this negative effect should be large among non-T1 firms because foreign investors, who care more about the quality of corporate governance relative to other investors, invest in such firms to a much lesser extent. Therefore, strictly speaking and apart from the cultural pressures, there is no good reason for these firms to comply with the Code en masse. Therefore:

Hypothesis 3: *Firm value decreases following overcompliance to the Code.*

In the next section, we lay out the empirical strategy for testing these hypotheses.

3.2. Empirical Design

Unlike general studies on voluntary disclosure that often face the problem of endogeneity, studies on regulatory settings can use changes in disclosure regulation as an exogenous shock to corporate information environment to avoid self-selection issues (e.g., Atanasov and Black, 2016). However, the regulatory approach faces challenges as new rules often arrive with changes in institutional settings, following an economic crisis or a major corporate scandal. For instance, the Asian crisis of 1997 was followed by introduction of a corporate governance code in Asian countries, namely, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South

[5] Board size can stay constant if firms replace insiders with outsiders. We will empirically investigate this point in Section 5.2.

Korea, Taiwan and Thailand (Nowland 2008). Having said that, we have no good reason to suspect similarly significant or systemic changes in the institutional settings of the Japanese corporate sector during the past few years prior to the introduction of the Code.

We use an Instrumental Variable (IV) approach in our empirical design. An IV approach can identify the Local Average Treatment Effect, i.e., the treatment effect for the subset of the sample that takes the treatment. This allows us to examine the link between appointment of outside directors, induced by the introduction of the code, and firm value. We first identify the effect of outside directors through a change in the introduction of the code and then regress Tobin's Q on the number/ratio of outsider directors in an IV setting.

Our instrument reflects policy pressure from the introduction of the code. To construct the instrument, we use two variables. The first is a treatment variable which takes the value of one if the number of the firm's outside directors is less than zero or one prior to the reform. We use one of the following three dummy variables that takes one if: i) the firm had no outside directors; ii) the firm had no outside directors and takes a missing value if the firm had one outside director; or iii) the firm had less than two outside directors. The second is a dummy variable that takes the value of one after the reform.

We choose March 2015 as the timing of the effective introduction of the code. Firms with fiscal year ending in March generally have their annual shareholder meeting in June, and this is the same timing as the implementation of the Code. The instrument is the intersection of the first and second variables. We thus employ three instruments to fully ensure the robustness of our findings. These instruments exhibit a cross-sectional variation, either zero or one, only after the effective introduction of the code. Given the prior observation that the code affected both T12 and non-T12 firms, we do not interact a T12 dummy with this instrument. We then estimate the parameters of the following two equations:

$$OutDirec_{it} = \alpha_i + \beta_1 Treat_i * After_t + \gamma X_{it} + \eta_t + \epsilon_{it}, \quad (1)$$

$$Q_{it} = \alpha_i' + \beta_2 \widehat{OutDirec}_{it} + \gamma' X_{it} + \eta_t' + \epsilon_{it}', \quad (2)$$

where indexes *i* and *t* respectively indicate firm and fiscal year, $OutDirec_{it}$ is the number/ratio of outsider directors, $Treat_i$ is one if the firm is in the treatment group, $After_t$ is one if after the reform, X_{it} includes control variables, Q_{it} is the Tobin's Q, $\widehat{OutDirec}_{it}$ is the fitted value of $OutDirec_{it}$ from regression (1), η_t is year dummies, α_i is firm-fixed effects, and ϵ_{it} is error terms. Standard errors are clustered at the firm level. We use the two stage least squares for estimation.

3.3. Data

We use data provided by Nikkei NEEDS FinancialQUEST and Executive Data respectively covering basic financial and governance information of Japanese public firms. The sample runs from 2010 to 2017 and we keep firms whose end of fiscal year is in March, which account for over 70% of Japanese firms. The sample includes those listed on the first section (T1) of the TSE, on the second section (T2), other sections of the TSE and finally those listed in other Japanese exchanges apart from the TSE such as Nagoya, Fukuoka, or Sapporo Stock Exchanges. We evaluate the section where the firm lists its stock as of 2014 when performing subsample analyses to use a within-firm variation across same firms. We winsorize the variables at the 1% level.

Table 1 shows the summary statistics, and Table 11 shows all variable definitions. The sample size of 14915 is considerably larger than that in many other countries with comply-or-explain rules: for example, it is 122 in Germany (Goncharov, Werner and Zimmermann, 2006); 57 in Spain (Fernández-Rodríguez, Gómez-Ansón and Cuervo-García, 2004); and 518 in Mexico (Price, Román, and Rountree, 2011). This large sample size enables various subsample analyses to understand the effect of such regulations better. The average firm in our sample has 1.6 outside directors which corresponds with a 18% ratio of outside directors to board size. It is also shown that the average firm in our sample is 367 billion JPY in size and about 51% levered.

~ Table 1 about here ~

4. Empirical Findings

4.1. Baseline Results

Table 2 presents the first stage estimation results. The results unambiguously show that following the introduction of the Code, both the number of outside directors and their

proportion in the board has increased significantly among the treated firms - at the 1% level in all specifications. In particular, Panels D and E show that non-T12 firms have also increased the number/ratio of outside directors. The magnitudes of the coefficient on $Treat_i * After_t$ are broadly comparable across firms in different sections. This finding suggests that the Code affected both target and non-target firms' board composition as suggested in Figure 1.

~ Table 2 about here ~

Next, we investigate the negative impact the rise in outside directors has on firm value, with results reported in Panel A of Table 3. Each column reports the second stage estimation result that corresponds to the first stage estimation in Table 2. For example, column (1) of Table 3 uses $Treat0_i * After_t$ as the instrument. We observe the negative impact at the 1% level in all specifications. The findings are economically significant. A change in outside directors from zero to two and one to two respectively reduces firm value by 78.5 billion and 31.2 billion Yen from columns (1) and (3) of Panel A. Bearing in mind Fauver et al. (2017)'s finding that introducing a comply or explain increases firm value by 0.18 of Tobin's Q, our results suggest that the negative cultural pressure in Japan is large enough to reverse the sign of the effect. Standard deviation of Tobin's Q is three times larger in Fauver et al. (2017) than in our paper. Considering this difference makes the negative economic significance of our paper even larger relative to their results. Among other variables, we notice that foreign ownership has a significant and positive impact on Tobin's Q.

~ Table 3 about here ~

These results are consistent with the empirical evidence in support of smaller boards (see, for example, Yermack, 1996) and may highlight the underlying problems of larger boards such as poor communication and ineffective decision making. In addition, we argue that any change in board composition in response to regulatory requirements is, by nature, a reactionary move rather than a proactive and organic decision made by the management for the sole benefit of the firm. Another possibility is that it is not clear to the market whether companies judge that they should comply with the Code or respond to conformity pressure.

4.2. Board Independence and Firm Value in Different Market Sections

Now we turn our attention to the different market sections present in the sample. Panels B to E of Table 3 shows these effects clustered by market section. While we notice a reduction in firm value across the board, this reduction is not statistically significant among T2 firms. Among non-T2 TSE firms, the negative effect is generally larger when we define the treated firms with no outside directors prior to the reform (i.e., specifications 1, 2, 4, and 5). In contrast, among non-TSE firms, firm value declines significantly when the number rises from one to two (i.e., specifications 3 and 6). This suggests that appointing two outside directors, under cultural influences we describe in this paper, has a markedly negative impact on these firms.

We provide further support for our hypothesis, exploiting differences between T1 and non-T1 firms. Most firms in the T1 section are industry leaders and those in non-T1 section are relatively small. We expect the former's decision leads to the latter's compliance. We construct an additional instrument: an interaction term of the lagged average compliance rate of T1 firms in the industry and $Treat_i * After_t$. Table 4 first shows that industry pressure measured by this variable encourages non-T1 firms' decision to appoint outside directors. It also reports that this decision reduces firm value. The magnitude is larger especially among non-T12 TSE firms. These findings are consistent with our hypothesis of overcompliance among non-T1 firms following the lead of T1 firms in complying with the code, and this mimicking is detrimental to firm value.

~ Table 4 about here ~

4.3. Firm Attributes, Value and Board Independence

Table 5 shows the effect clustered by firm age. We divide firms into young and mature clusters. We categorise firms in to these two groups based on comparison with fixed age thresholds (40, 45 and 50) suitable for the Japanese context. The findings suggest that value of young firms declined more than old firms on average (i.e., across all listed firms) in all specifications. This is consistent with our general finding that culture-induced governance compliance is most damaging to less established firms.

~ Table 5 about here ~

We also look at the level of R&D investment and divide firms into two groups compared to firm medians. Results are illustrated in Table 6.

~ Table 6 about here ~

Importantly, the reduction in firm value is larger when the firm is more R&D-intensive on average in Panel A. This finding suggests that the cultural pressure to conform and comply exerts a particularly large negative effect on firms in their growth phase. In other words, these are the firms that should not prioritise compliance with the voluntary code and instead should focus on their investments and attention on their complex growth journeys. Consequently, the firms which are more R&D intensive are not necessarily better off by recruiting outside directors in order to comply with the Code. This finding is also in line with Balsmeier, Fleming, and Manso (2017) reporting that outside directors discourage explorative innovation.

Table 6 provides further support for our cultural explanation. We observe the negative effect among R&D-intensive firms especially among T1 ones. Given that these firms should be industry leaders even among T1 firms, this finding supports our argument that these leaders react to the governmental policy due to respect for authority.

4.4. Director Attributes, Value and Board Independence

Prior literature measures the quality of board advice using the connections that a director has with other firms at any given time. The focus is often on such connections because they arise when a director has qualities that make them valuable to many firms as CEO directors (see, Coles, Daniel, and Naveen, 2012; Nguyen, Hagendorff and Eshraghi, 2017; Fich 2005).

Table 7 shows the results by director characteristics. We find that this reduction in firm value is larger when the firm appoints outside directors who are/were not managers of other firms. In other words, outside directors with more expertise, better information and contacts are a better investment for the firm, although not, in aggregate, sufficient to counteract the negative impact of overcompliance as previously discussed. On average and particularly for non-T1 firms, appointing outside directors with past experience or current positions is a better strategy than appointing non-experienced directors. This negative effect among non-T1 firms also suggests

that they were less successful in appointing qualified outside directors due to their scarce supply (Masulis and Mobbs, 2014).

~ Table 7 about here ~

5. Robustness tests

In this section, we conduct additional analysis to improve the robustness of our findings. First, we run the main test for firms that were listed on the Osaka Stock Exchange (OSE) and were forced to move to TSE as a result of a merger of OSE with TSE. In July 2012 a planned merger with the TSE was approved by the Japan Fair Trade Commission and it was implemented in the coming year. As a consequence, these firms became directly subject to the Code.

As Table 8 illustrates, the results remain qualitatively similar. We observe this pattern especially among firms in the first or second sections of OSE. This finding suggests that firm value declines among relatively mature firms that previously listed their stocks on Osaka Stock Exchange. It is important to note that the listing requirements of OSE and TSE are mainly similar.

~ Table 8 about here ~

We then turn our attention from the number of outside directors to board size, i.e., the total number of directors. A rise in the number of outside directors can increase board size so the two variables may be positively correlated. Alternatively, firms can replace outside directors with inside directors to hold board size constant.

~ Table 9 about here ~

In Table 9, we replace the number of outside directors to that of all directors in equations (1) and (2). This table demonstrates that the Code increases board size on average, which in turn has a negative impact on Tobin's Q. This is particularly true for T1 firms.

In addition, we run a placebo test to find the sensitivity of the results to the year the reforms were introduced. Using eight-year periods in each specification, we have four years both before

and after the reform. Therefore, we assume that the reforms were implemented in 2008 or 2009 to avoid including periods after the introduction of the Code. As expected, the results in Table 10 do not indicate any significant link between the number of outside directors and firm value. Further, the instruments do not have explanatory power on the appointment of outside directors.

~ Table 10 about here ~

6. Conclusions

Recent corporate governance scandals such as Petrobras in Brazil, Deutsche Bank and Volkswagen in Germany, and Toshiba in Japan continue to drive the debate on the best form of governance to mitigate corporate misconduct and increase firm value. Among the large family of corporate governance approaches, voluntary codes in the form of comply or explain have found increasing acceptance across the world. This comes with a challenge, however. While voluntary approaches can help reduce poor governance, they are less effective in promoting best governance practices (Haxhi and Aguilera, 2014).

This paper provides empirical evidence on the causal effects of disclosure regulation on market outcomes – an underexplored area of the literature as discussed in Leuz and Wysocki (2016). Unlike studies on voluntary disclosure that often face the problem of endogeneity, studies on regulatory settings can use changes in regulation as exogenous shock to the corporate information environment of the firm to avoid self-selection issues.

Drawing on the recent Japanese experience with voluntary codes of corporate governance, we identify another area where comply or explain regimes may fail to be effective, or in Japan's case, have a negative effect. That is when, due to institutional and cultural pressures, a majority of listed firms choose to comply, although they do not have to, and even though this comes at the cost of lower shareholder value.

While the concept of national culture may pose definitional and measurement challenges for large and diverse nations such as the US or China whose populations consist of many different ethnicities and immigrant backgrounds, it does not so for Japan. For much of its history, Japan remained uninvaded, and due to the isolationist foreign policy of the Japanese shogunate (known as *Sakoku* meaning 'closed country'), relations and trade with other countries were

severely limited for close to 250 years. This and several other reasons have resulted in a high degree of ethnic, religious and cultural homogeneity among the Japanese, and importantly for our research purposes, in the Japanese corporate sector and among its senior management.

Although we have not provided a clear channel through which compliance reduces firm value, we can provide some conjectures. Apart from our finding that the Code has increased board size, it may have also confused the shareholders. These regulations trust the companies to better judge whether they should or should not comply with the corporate governance principles stated in the code. However, it is not clear to the market whether their compliance is driven by corporate fundamentals or a knee-jerk reaction to a regulatory change. Future research in this area can usefully shed light on the nexus between national culture and institutional settings.

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Figure 1. Changes in Board Composition, Board Size and Compliance Rate

These figures show the change in the board composition, board size and compliance rate among all firms, firms that list their stocks on the first section of the Tokyo Stock Exchange (TSE-1st firms), TSE-2nd, TSE-other, and non-TSE firms between 2003 and 2017.

Figure 1A. Number of Outside Directors

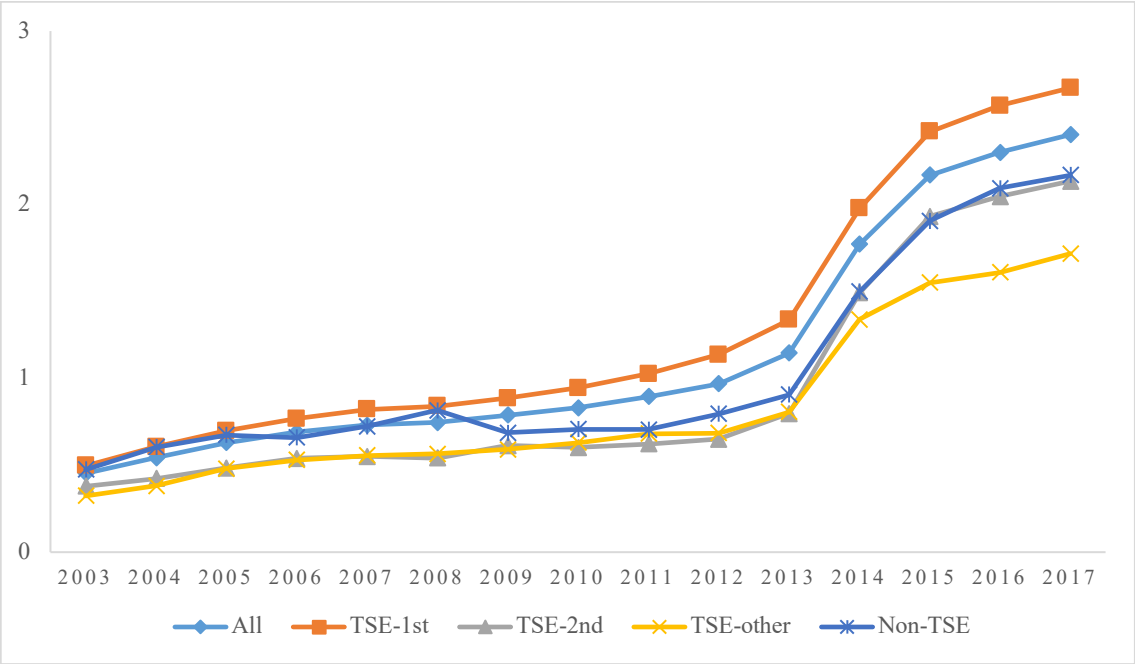

Figure 1B. Percentage of Outside Directors

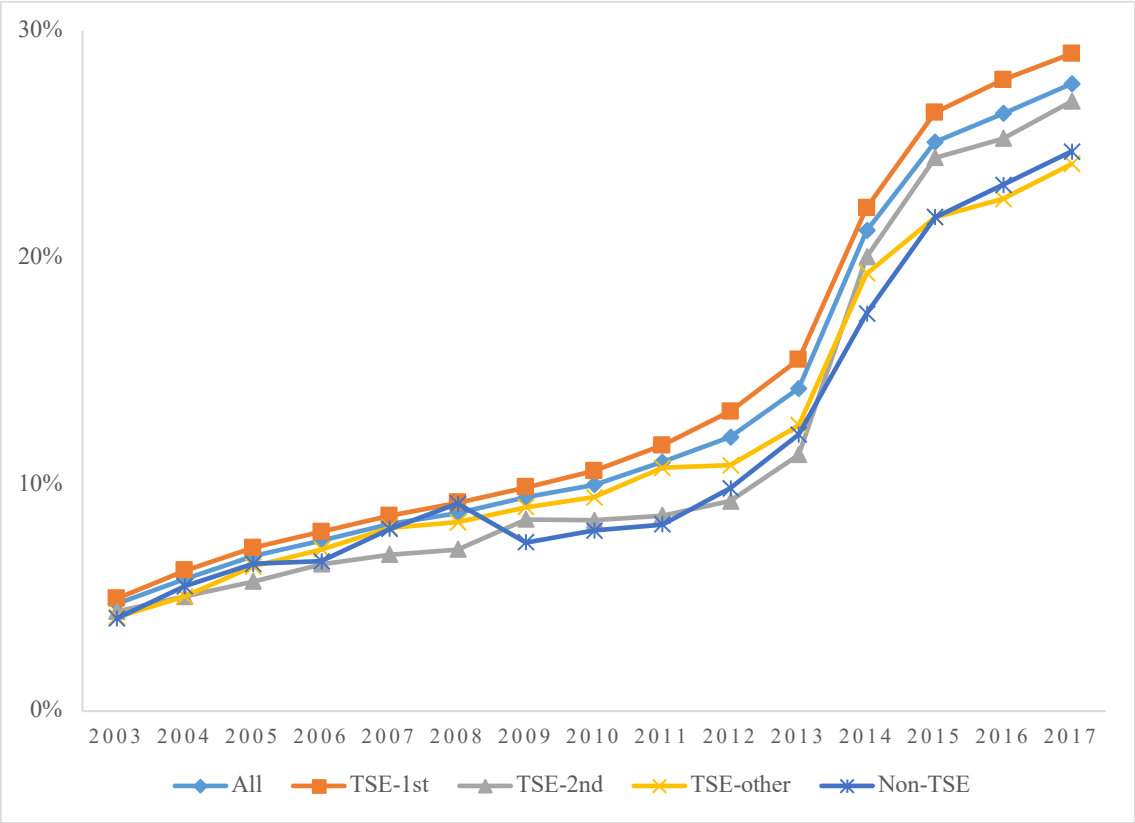

Figure 1C. Compliance Rate

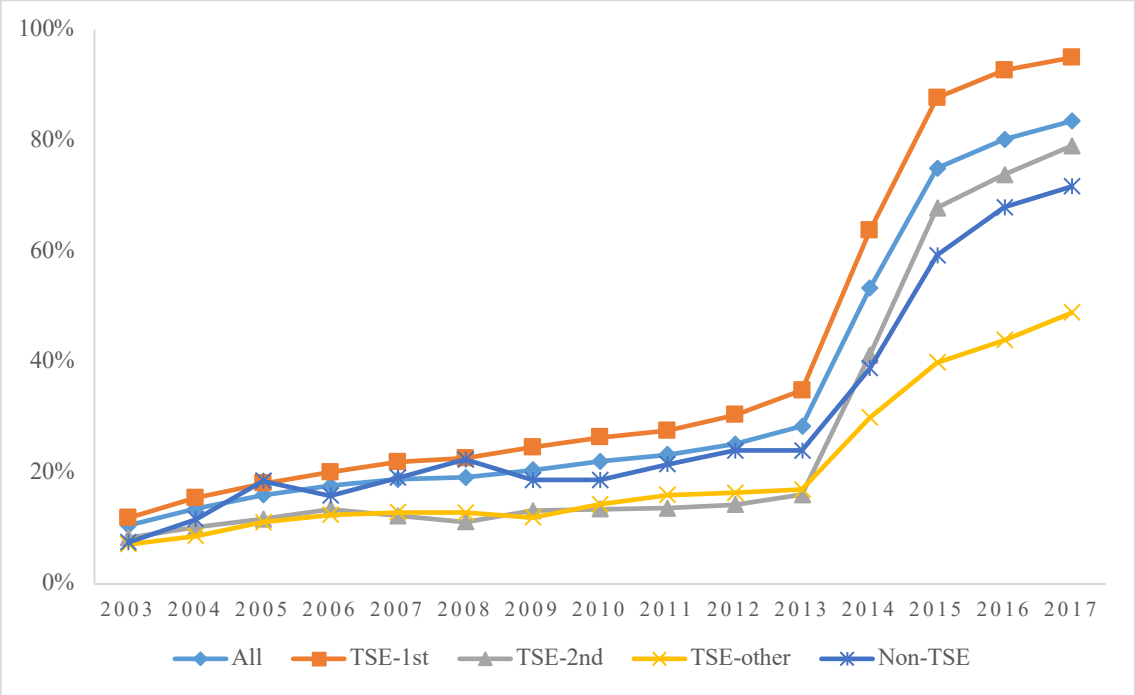

Figure 1D. Number of Total Directors

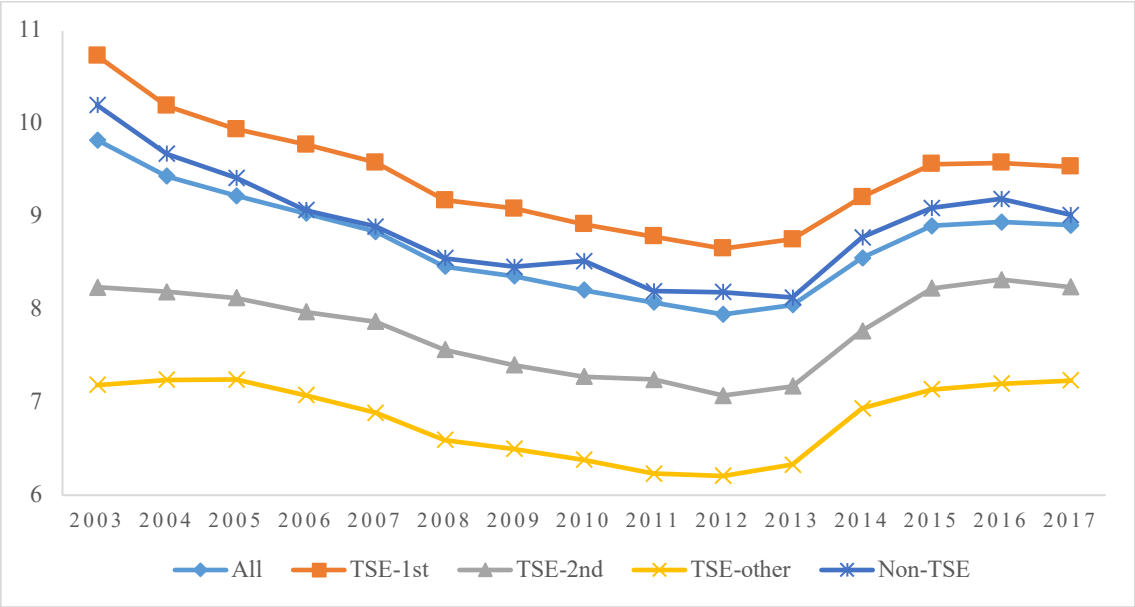

Figure 2. Cultural Comparison between Japan and the US

This figure provides a comparison of the six cultural measures of Hofstede between Japan and the United States.

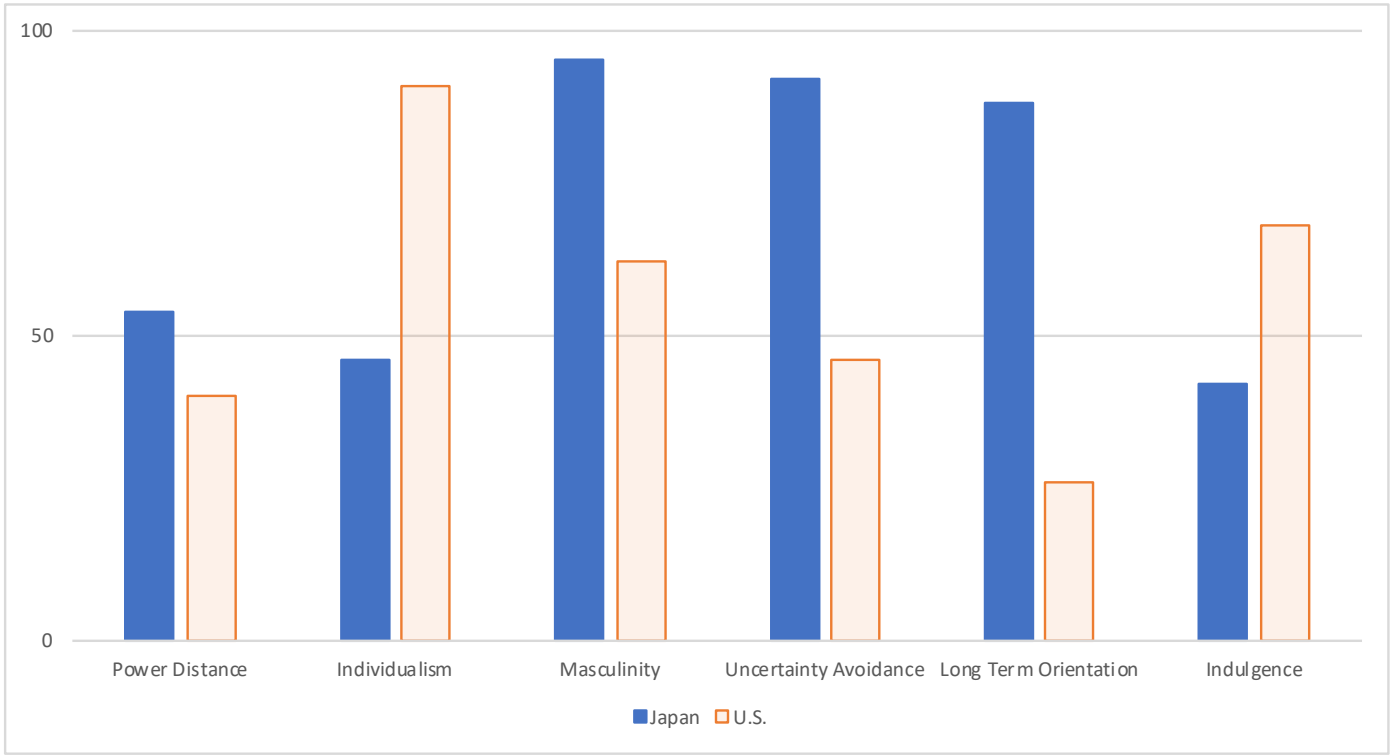

Table 1. Summary Statistics

This table reports summary statistics for the entire sample from 2010 to 2017.

Panel A. All firms

	Mean	SD	Min	Median	Max	Obs.
Tobin's Q	1.075	0.537	0.436	0.944	5.488	14915
Number of outside directors	1.560	1.288	0.000	1.000	6.000	14915
Percentage of outside directors	18.434	14.549	0.000	16.667	62.500	14915
Number of total directors	8.446	2.974	3.000	8.000	19.000	14915
Tangible assets/Assets	0.292	0.183	0.005	0.273	0.855	14915
Liabilities/Assets	0.511	0.207	0.098	0.507	1.151	14915
R&D expenses/Assets	0.014	0.021	0.000	0.005	0.112	14915
Payouts/Assets	0.013	0.015	0.000	0.008	0.111	14915
Cash flow/Assets	0.063	0.048	-0.141	0.060	0.260	14915
Ln(assets)	11.023	1.659	7.378	10.822	15.662	14915
Exports/Sales	0.182	0.260	0.000	0.000	1.175	14915
Foreign ownership (%)	11.506	11.947	0.000	7.335	50.147	14915
Financial institution ownership (%)	19.385	12.452	0.036	17.614	50.584	14915
Audit & supervisory committee	0.088	0.284	0.000	0.000	1.000	14915
Firm age	58.968	23.960	3.000	62.000	121.000	14915

Panel B. TSE 1st section

	Mean	SD	Min	Median	Max	Obs.
Tobin's Q	1.099	0.502	0.436	0.972	5.488	9504
Number of outside directors	1.758	1.316	0.000	2.000	6.000	9504
Percentage of outside directors	19.526	14.288	0.000	20.000	62.500	9504
Number of total directors	9.124	2.989	3.000	9.000	19.000	9504
Tangible assets/Assets	0.298	0.182	0.005	0.275	0.855	9504
Liabilities/Assets	0.517	0.201	0.098	0.511	1.151	9504
R&D expenses/Assets	0.016	0.022	0.000	0.007	0.112	9504
Payouts/Assets	0.014	0.016	0.000	0.010	0.111	9504
Cash flow/Assets	0.068	0.044	-0.141	0.064	0.260	9504
Ln(assets)	11.781	1.483	7.378	11.567	15.662	9504
Exports/Sales	0.221	0.277	0.000	0.079	1.175	9504
Foreign ownership (%)	15.638	12.054	0.000	13.162	50.147	9504
Financial institution ownership (%)	24.593	11.346	0.055	24.153	50.584	9504
Audit & supervisory committee	0.082	0.275	0.000	0.000	1.000	9504
Firm age	62.454	24.374	3.000	65.000	121.000	9504

Panel C. TSE 2nd section

	Mean	SD	Min	Median	Max	Obs.
Tobin's Q	0.919	0.418	0.436	0.834	5.488	2247
Number of outside directors	1.283	1.141	0.000	1.000	6.000	2247
Percentage of outside directors	16.756	14.142	0.000	16.667	60.000	2247
Number of total directors	7.664	2.574	3.000	7.000	19.000	2247
Tangible assets/Assets	0.309	0.178	0.005	0.293	0.855	2247
Liabilities/Assets	0.510	0.199	0.101	0.507	1.151	2247
R&D expenses/Assets	0.009	0.013	0.000	0.004	0.096	2247
Payouts/Assets	0.009	0.011	0.000	0.007	0.111	2247
Cash flow/Assets	0.054	0.047	-0.141	0.051	0.260	2247
Ln(assets)	9.914	0.797	7.378	9.931	13.369	2247
Exports/Sales	0.105	0.181	0.000	0.000	0.997	2247
Foreign ownership (%)	3.938	7.159	0.000	0.969	49.891	2247
Financial institution ownership (%)	11.883	8.628	0.036	10.289	50.584	2247
Audit & supervisory committee	0.106	0.308	0.000	0.000	1.000	2247
Firm age	62.902	19.462	3.000	65.000	121.000	2247

Panel D. TSE other sections

	Mean	SD	Min	Median	Max	Obs.
Tobin's Q	1.151	0.703	0.436	0.920	5.488	2743
Number of outside directors	1.128	1.139	0.000	1.000	6.000	2743
Percentage of outside directors	16.429	15.410	0.000	14.286	62.500	2743
Number of total directors	6.706	2.233	3.000	6.000	18.000	2743
Tangible assets/Assets	0.249	0.185	0.005	0.227	0.855	2743
Liabilities/Assets	0.488	0.224	0.098	0.491	1.151	2743
R&D expenses/Assets	0.012	0.022	0.000	0.001	0.112	2743
Payouts/Assets	0.012	0.016	0.000	0.007	0.111	2743
Cash flow/Assets	0.058	0.060	-0.141	0.055	0.260	2743
Ln(assets)	9.442	1.002	7.378	9.451	13.251	2743
Exports/Sales	0.132	0.244	0.000	0.000	1.175	2743
Foreign ownership (%)	4.757	7.943	0.000	1.244	50.147	2743
Financial institution ownership (%)	7.818	6.799	0.036	6.142	44.155	2743
Audit & supervisory committee	0.091	0.288	0.000	0.000	1.000	2743
Firm age	44.229	19.977	3.000	45.000	118.000	2743

Panel E. Non-TSE

	Mean	SD	Min	Median	Max	Obs.
Tobin's Q	0.873	0.409	0.436	0.799	3.995	421
Number of outside directors	1.359	1.297	0.000	1.000	6.000	421
Percentage of outside directors	15.800	14.224	0.000	15.385	62.500	421
Number of total directors	8.641	3.234	3.000	8.000	19.000	421
Tangible assets/Assets	0.334	0.164	0.006	0.323	0.855	421
Liabilities/Assets	0.544	0.244	0.098	0.523	1.151	421
R&D expenses/Assets	0.003	0.006	0.000	0.000	0.033	421
Payouts/Assets	0.007	0.009	0.000	0.005	0.111	421
Cash flow/Assets	0.053	0.039	-0.137	0.049	0.236	421
Ln(assets)	10.124	1.167	7.378	10.358	12.823	421
Exports/Sales	0.052	0.128	0.000	0.000	0.945	421
Foreign ownership (%)	2.567	4.912	0.000	0.217	28.225	421
Financial institution ownership (%)	17.234	10.017	0.036	17.394	36.153	421
Audit & supervisory committee	0.114	0.318	0.000	0.000	1.000	421
Firm age	55.316	22.874	3.000	62.000	111.000	421

Table 2. Change in Number and Percentage of Outside Directors

This table illustrates the change in the number and ratio of outside directors following the Japan's corporate governance reform.

Panel A. All firms

	Number of outside directors			Percentage of outside directors		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat0*After	0.437***			7.950***		
	(0.033)			(0.431)		
Treat0d*After		0.755***			12.507***	
		(0.046)			(0.566)	
Treat1*After			0.612***			9.702***
			(0.041)			(0.487)
Tangible assets/Assets	0.123	-0.094	0.049	-1.590	-3.461	-2.787
	(0.182)	(0.238)	(0.175)	(2.433)	(3.000)	(2.324)
Liabilities/Assets	-0.195*	-0.094	-0.171*	-1.160	0.324	-0.784
	(0.103)	(0.141)	(0.100)	(1.424)	(1.936)	(1.399)
R&D expenses/Assets	-0.508	-0.087	-1.197	18.264	25.246	8.360
	(1.590)	(1.910)	(1.550)	(21.628)	(25.913)	(21.336)
Payouts/Assets	1.144	1.497*	1.123*	8.934	16.255	7.277
	(0.717)	(0.902)	(0.681)	(9.154)	(10.890)	(8.746)
Cash flow/Assets	-0.299	-0.330	-0.152	-3.981	-4.181	-1.237
	(0.221)	(0.299)	(0.217)	(2.985)	(3.767)	(2.940)
Ln(assets)	0.151**	0.161*	0.128**	-0.270	-0.581	-0.732
	(0.067)	(0.089)	(0.065)	(0.941)	(1.214)	(0.916)
Exports/Sales	-0.021	0.024	0.001	-0.142	0.606	0.167
	(0.097)	(0.119)	(0.090)	(1.398)	(1.638)	(1.301)
Foreign ownership (%)	0.013***	0.012***	0.013***	0.132***	0.116**	0.122***
	(0.003)	(0.004)	(0.003)	(0.035)	(0.048)	(0.032)
Financial institution ownership (%)	0.001	0.002	0.001	-0.008	-0.022	-0.009
	(0.003)	(0.003)	(0.003)	(0.033)	(0.043)	(0.033)
Audit & supervisory committee	1.372***	1.269***	1.344***	10.675***	9.880***	10.385***
	(0.041)	(0.055)	(0.040)	(0.515)	(0.692)	(0.501)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F of the excluded instruments	175.43	270.93	223.02	339	486.11	395.92
Observations	14915	8937	14915	14915	8937	14915

Panel B. TSE 1st section

	Number of outside directors			Percentage of outside directors		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat0*After	0.546***			8.804***		
	(0.042)			(0.534)		
Treat0d*After		0.861***			13.154***	
		(0.054)			(0.645)	
Treat1*After			0.646***			9.444***
			(0.045)			(0.519)
Tangible assets/Assets	0.421*	0.033	0.367	2.529	-0.704	1.852
	(0.248)	(0.331)	(0.237)	(3.259)	(3.990)	(3.097)
Liabilities/Assets	-0.383***	-0.303	-0.314**	-3.718**	-2.719	-2.706
	(0.141)	(0.194)	(0.135)	(1.855)	(2.420)	(1.743)
R&D expenses/Assets	1.835	2.173	0.612	50.241**	51.585*	32.713
	(1.723)	(1.993)	(1.710)	(22.966)	(27.717)	(23.403)
Payouts/Assets	0.995	1.687*	1.046	13.132	23.173**	13.172
	(0.759)	(0.934)	(0.717)	(9.894)	(10.999)	(9.314)
Cash flow/Assets	-0.322	-0.322	-0.150	-2.897	-3.924	-0.188
	(0.299)	(0.400)	(0.298)	(3.998)	(5.342)	(3.954)
Ln(assets)	0.348***	0.359***	0.279***	1.919	0.806	0.858
	(0.094)	(0.130)	(0.091)	(1.253)	(1.703)	(1.172)
Exports/Sales	-0.098	-0.015	-0.083	-0.971	0.164	-0.797
	(0.108)	(0.131)	(0.103)	(1.558)	(1.904)	(1.512)
Foreign ownership (%)	0.004	0.003	0.003	0.045	0.034	0.032
	(0.004)	(0.005)	(0.003)	(0.039)	(0.050)	(0.036)
Financial institution ownership (%)	-0.003	0.000	-0.003	-0.051	-0.046	-0.050
	(0.003)	(0.004)	(0.003)	(0.039)	(0.056)	(0.038)
Audit & supervisory committee	1.329***	1.222***	1.296***	9.418***	8.161***	9.060***
	(0.054)	(0.080)	(0.053)	(0.661)	(0.957)	(0.644)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F of the excluded instruments	171.33	254.21	205.24	271.23	414.29	330.07
Observations	9504	5485	9504	9504	5485	9504

Panel C. TSE 2nd section

	Number of outside directors			Percentage of outside directors		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat0*After	0.562***			9.151***		
	(0.076)			(0.995)		
Treat0d*After		1.065***			15.537***	
		(0.126)			(1.573)	
Treat1*After			0.845***			12.136***
			(0.125)			(1.510)
Tangible assets/Assets	-0.341	-0.132	-0.355	-6.801	-2.428	-7.358
	(0.464)	(0.606)	(0.415)	(5.851)	(7.182)	(5.310)
Liabilities/Assets	0.134	0.089	0.138	3.381	2.425	3.449
	(0.200)	(0.251)	(0.186)	(2.714)	(3.365)	(2.569)
R&D expenses/Assets	-1.484	-0.898	-1.889	-38.282	-30.903	-41.692
	(4.952)	(7.163)	(4.803)	(87.408)	(87.921)	(80.284)
Payouts/Assets	-0.528	-2.283	-1.064	-10.665	-34.216	-20.993
	(2.483)	(3.112)	(2.172)	(24.751)	(31.492)	(22.830)
Cash flow/Assets	0.117	-0.543	0.260	2.645	-2.538	5.413
	(0.580)	(0.754)	(0.550)	(6.820)	(9.036)	(6.731)
Ln(assets)	-0.033	0.053	-0.017	-2.411	0.241	-2.200
	(0.164)	(0.193)	(0.176)	(2.597)	(3.224)	(2.812)
Exports/Sales	0.214	0.101	0.289	6.095	2.290	7.254*
	(0.326)	(0.357)	(0.289)	(4.281)	(4.010)	(3.732)
Foreign ownership (%)	0.008	0.007	0.010	0.056	-0.076	0.087
	(0.008)	(0.013)	(0.008)	(0.096)	(0.154)	(0.096)
Financial institution ownership (%)	-0.009	-0.005	-0.009	-0.069	-0.056	-0.076
	(0.006)	(0.006)	(0.006)	(0.081)	(0.083)	(0.083)
Audit & supervisory committee	1.108***	0.891***	1.087***	8.121***	6.848***	7.966***
	(0.085)	(0.084)	(0.076)	(0.973)	(1.037)	(0.922)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F of the excluded instruments	54.44	70.05	45.45	83.69	95.82	63.91
Observations	2247	1392	2247	2247	1392	2247

Panel D. TSE other sections

	Number of outside directors			Percentage of outside directors		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat0*After	0.489***			8.247***		
	(0.074)			(1.135)		
Treat0d*After		0.920***			15.348***	
		(0.139)			(1.928)	
Treat1*After			0.793***			13.275***
			(0.135)			(1.807)
Tangible assets/Assets	0.137	-0.222	0.022	-4.892	-7.492	-6.823
	(0.282)	(0.371)	(0.297)	(4.572)	(5.949)	(4.699)
Liabilities/Assets	0.012	0.179	-0.057	1.314	4.512	0.156
	(0.171)	(0.248)	(0.176)	(2.883)	(4.363)	(3.010)
R&D expenses/Assets	-3.734	-2.710	-2.134	-45.074	-20.861	-18.262
	(2.594)	(3.245)	(2.322)	(41.560)	(46.972)	(39.731)
Payouts/Assets	1.263	0.435	0.851	-3.355	-4.100	-10.300
	(1.783)	(2.206)	(1.713)	(23.346)	(29.852)	(22.632)
Cash flow/Assets	-0.343	0.082	-0.157	-6.927	-1.660	-3.790
	(0.355)	(0.474)	(0.345)	(5.679)	(6.531)	(5.644)
Ln(assets)	-0.021	-0.006	0.001	-1.567	-1.680	-1.214
	(0.092)	(0.135)	(0.098)	(1.469)	(2.050)	(1.588)
Exports/Sales	-0.324*	-0.193	-0.227	-5.656*	-3.154	-4.017
	(0.187)	(0.232)	(0.174)	(2.938)	(2.917)	(2.590)
Foreign ownership (%)	0.016**	0.013	0.016***	0.212**	0.186	0.208***
	(0.006)	(0.008)	(0.006)	(0.087)	(0.113)	(0.075)
Financial institution ownership (%)	0.014**	0.009	0.015**	0.129	0.054	0.136
	(0.006)	(0.007)	(0.006)	(0.091)	(0.096)	(0.083)
Audit & supervisory committee	1.692***	1.649***	1.681***	16.157***	16.054***	15.975***
	(0.093)	(0.100)	(0.089)	(1.357)	(1.631)	(1.333)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F of the excluded instruments	43.24	43.17	34.41	52.33	62.46	53.51
Observations	2743	1757	2743	2743	1757	2743

Panel E. Non-TSE

	Number of outside directors			Percentage of outside directors		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat0*After	0.540***			7.576***		
	(0.140)			(1.699)		
Treat0d*After		0.899***			11.994***	
		(0.165)			(1.927)	
Treat1*After			0.736***			10.100***
			(0.151)			(1.989)
Tangible assets/Assets	-1.308**	-1.694**	-1.440**	-8.530	-15.509	-10.271
	(0.639)	(0.830)	(0.576)	(9.551)	(12.474)	(8.720)
Liabilities/Assets	0.602	0.696	0.691	9.881	11.495	11.072
	(0.518)	(0.549)	(0.429)	(8.162)	(10.171)	(7.924)
R&D expenses/Assets	-33.300	-3.541	-26.878	-334.820	-198.592	-249.278
	(24.618)	(35.282)	(28.127)	(293.540)	(473.261)	(340.700)
Payouts/Assets	-0.308	-2.695	-0.345	-16.061	-85.088	-16.577
	(4.046)	(6.362)	(4.018)	(65.975)	(132.577)	(64.939)
Cash flow/Assets	2.037	2.000	2.590	-22.644	-16.318	-15.152
	(1.865)	(1.909)	(1.669)	(27.686)	(27.785)	(24.360)
Ln(assets)	-0.185	0.049	-0.188	-6.735**	-2.565*	-6.782*
	(0.146)	(0.109)	(0.194)	(2.768)	(1.422)	(3.601)
Exports/Sales	0.191	-0.060	-0.008	-0.442	-2.638	-3.306
	(0.551)	(0.462)	(0.531)	(6.193)	(5.667)	(5.783)
Foreign ownership (%)	0.018	0.001	0.016	0.174	-0.122	0.135
	(0.022)	(0.025)	(0.022)	(0.234)	(0.168)	(0.223)
Financial institution ownership (%)	-0.006	-0.015	0.002	-0.022	-0.072	0.086
	(0.016)	(0.024)	(0.020)	(0.189)	(0.149)	(0.158)
Audit & supervisory committee	1.741***	1.538***	1.729***	15.642***	14.576***	15.529***
	(0.180)	(0.202)	(0.162)	(2.150)	(2.382)	(2.015)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
F of the excluded instruments	13.98	27.41	22.43	18.72	35.61	24.28
Observations	421	303	421	421	303	421

Table 3. Impact of Reforms on Firm Value

This table reports the impact of the rise in number and ratio of outside directors in firm value. Specifications 1 and 4 use Treat0*After, specifications 2 and 5 use Treat0d*After, and specifications 3 and 6 use Treat1*After instrument, respectively.

Panel A. All firms

	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.107***	-0.097***	-0.085***			
	(0.035)	(0.028)	(0.031)			
Percentage of outside directors				-0.006***	-0.006***	-0.005***
				(0.002)	(0.002)	(0.002)
Tangible assets/Assets	-0.620***	-0.582***	-0.623***	-0.643***	-0.593***	-0.642***
	(0.096)	(0.121)	(0.096)	(0.097)	(0.123)	(0.097)
Liabilities/Assets	0.412***	0.277***	0.416***	0.426***	0.288***	0.426***
	(0.083)	(0.102)	(0.084)	(0.084)	(0.103)	(0.084)
R&D expenses/Assets	-1.312*	-1.619*	-1.311*	-1.150	-1.463	-1.164
	(0.777)	(0.877)	(0.775)	(0.778)	(0.893)	(0.772)
Payouts/Assets	4.658***	4.471***	4.645***	4.588***	4.421***	4.589***
	(0.541)	(0.726)	(0.540)	(0.537)	(0.722)	(0.537)
Cash flow/Assets	1.170***	1.166***	1.173***	1.179***	1.174***	1.179***
	(0.175)	(0.222)	(0.174)	(0.175)	(0.222)	(0.175)
Ln(assets)	-0.008	-0.012	-0.010	-0.025	-0.031	-0.025
	(0.062)	(0.084)	(0.062)	(0.063)	(0.085)	(0.063)
Exports/Sales	0.050	0.047	0.051	0.051	0.048	0.052
	(0.052)	(0.072)	(0.052)	(0.052)	(0.072)	(0.052)
Foreign ownership (%)	0.010***	0.008***	0.010***	0.009***	0.007***	0.009***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)
Financial institution ownership (%)	0.017***	0.017***	0.017***	0.017***	0.017***	0.017***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Audit & supervisory committee	0.168***	0.152***	0.136***	0.084***	0.087**	0.078**
	(0.055)	(0.049)	(0.049)	(0.030)	(0.034)	(0.030)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14915	8937	14915	14915	8937	14915

Panel B. TSE 1st section

	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.079**	-0.076***	-0.069**			
	(0.036)	(0.026)	(0.029)			
Percentage of outside directors				-0.005**	-0.005***	-0.005**
				(0.002)	(0.002)	(0.002)
Tangible assets/Assets	-0.733***	-0.750***	-0.738***	-0.754***	-0.756***	-0.755***
	(0.128)	(0.164)	(0.129)	(0.130)	(0.168)	(0.131)
Liabilities/Assets	0.214**	0.093	0.218**	0.226**	0.103	0.227**
	(0.090)	(0.129)	(0.091)	(0.090)	(0.129)	(0.091)
R&D expenses/Assets	-2.194**	-2.662***	-2.216**	-2.093**	-2.571***	-2.105**
	(0.899)	(0.985)	(0.891)	(0.904)	(0.993)	(0.892)
Payouts/Assets	4.780***	4.590***	4.775***	4.766***	4.578***	4.765***
	(0.622)	(0.847)	(0.623)	(0.618)	(0.844)	(0.619)
Cash flow/Assets	1.332***	1.180***	1.334***	1.343***	1.185***	1.343***
	(0.238)	(0.331)	(0.238)	(0.238)	(0.331)	(0.238)
Ln(assets)	0.169***	0.110	0.165***	0.151***	0.087	0.150***
	(0.059)	(0.075)	(0.058)	(0.058)	(0.076)	(0.058)
Exports/Sales	0.117**	0.161***	0.118**	0.120**	0.163***	0.120**
	(0.047)	(0.060)	(0.047)	(0.048)	(0.061)	(0.048)
Foreign ownership (%)	0.009***	0.008***	0.009***	0.009***	0.008***	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Financial institution ownership (%)	0.014***	0.015***	0.014***	0.014***	0.015***	0.014***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)
Audit & supervisory committee	0.122**	0.123***	0.106**	0.063**	0.071**	0.060**
	(0.053)	(0.047)	(0.045)	(0.031)	(0.036)	(0.030)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9504	5485	9504	9504	5485	9504

Panel C. TSE 2nd section

	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.018	-0.055	-0.077			
	(0.042)	(0.041)	(0.051)			
Percentage of outside directors				-0.001	-0.004	-0.005
				(0.003)	(0.003)	(0.004)
Tangible assets/Assets	-0.279*	-0.160	-0.310*	-0.280*	-0.162	-0.322*
	(0.164)	(0.166)	(0.169)	(0.165)	(0.163)	(0.173)
Liabilities/Assets	0.522***	0.445***	0.531***	0.524***	0.449***	0.539***
	(0.100)	(0.107)	(0.100)	(0.101)	(0.111)	(0.103)
R&D expenses/Assets	1.069	3.531	1.056	1.053	3.464	0.978
	(1.400)	(2.579)	(1.489)	(1.390)	(2.584)	(1.469)
Payouts/Assets	2.642**	3.628**	2.530**	2.640**	3.625**	2.500**
	(1.146)	(1.737)	(1.126)	(1.147)	(1.735)	(1.116)
Cash flow/Assets	0.922***	0.908***	0.950***	0.923***	0.928***	0.959***
	(0.257)	(0.268)	(0.271)	(0.257)	(0.271)	(0.273)
Ln(assets)	-0.213***	-0.157*	-0.215***	-0.215***	-0.159*	-0.226***
	(0.066)	(0.092)	(0.064)	(0.065)	(0.089)	(0.061)
Exports/Sales	0.022	-0.066	0.038	0.025	-0.063	0.054
	(0.103)	(0.136)	(0.114)	(0.101)	(0.131)	(0.111)
Foreign ownership (%)	0.011***	0.012**	0.011***	0.011***	0.012*	0.011***
	(0.003)	(0.006)	(0.004)	(0.003)	(0.006)	(0.003)
Financial institution ownership (%)	0.018***	0.018***	0.018***	0.018***	0.018***	0.018***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)	(0.004)
Audit & supervisory committee	0.010	0.056	0.080	-0.001	0.033	0.039
	(0.046)	(0.049)	(0.061)	(0.027)	(0.038)	(0.037)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2247	1392	2247	2247	1392	2247

Panel D. TSE other sections

	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.361***	-0.282**	-0.256**			
	(0.117)	(0.115)	(0.124)			
Percentage of outside directors				-0.021***	-0.017**	-0.015**
				(0.007)	(0.007)	(0.007)
Tangible assets/Assets	-0.459*	-0.443*	-0.461**	-0.613***	-0.508*	-0.571***
	(0.236)	(0.265)	(0.227)	(0.236)	(0.268)	(0.220)
Liabilities/Assets	0.667***	0.599**	0.667***	0.691***	0.625**	0.684***
	(0.203)	(0.241)	(0.199)	(0.205)	(0.250)	(0.200)
R&D expenses/Assets	-0.002	-0.275	0.342	0.381	0.136	0.609
	(2.109)	(2.843)	(2.078)	(2.188)	(3.003)	(2.122)
Payouts/Assets	5.810***	5.256***	5.724***	5.282***	5.065***	5.348***
	(1.490)	(1.881)	(1.413)	(1.444)	(1.865)	(1.406)
Cash flow/Assets	0.806**	1.061**	0.821**	0.781**	1.010**	0.803**
	(0.364)	(0.432)	(0.352)	(0.371)	(0.444)	(0.358)
Ln(assets)	-0.278*	-0.248	-0.269*	-0.304**	-0.275	-0.288*
	(0.148)	(0.195)	(0.147)	(0.150)	(0.199)	(0.150)
Exports/Sales	-0.152	-0.215	-0.123	-0.156	-0.214	-0.127
	(0.196)	(0.286)	(0.192)	(0.189)	(0.272)	(0.186)
Foreign ownership (%)	0.014**	0.008	0.012**	0.012**	0.007	0.011**
	(0.005)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
Financial institution ownership (%)	0.032***	0.029***	0.031***	0.030***	0.027***	0.029***
	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)
Audit & supervisory committee	0.686***	0.527**	0.502**	0.421***	0.333**	0.316**
	(0.227)	(0.238)	(0.236)	(0.149)	(0.166)	(0.151)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2743	1757	2743	2743	1757	2743

Panel E. Non-TSE

	Tobin's Q					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.081	-0.121*	-0.203**			
	(0.075)	(0.067)	(0.098)			
Percentage of outside directors				-0.006	-0.009*	-0.015**
				(0.006)	(0.005)	(0.007)
Tangible assets/Assets	-1.173***	-1.619***	-1.304***	-1.116**	-1.555***	-1.164**
	(0.454)	(0.538)	(0.499)	(0.446)	(0.539)	(0.491)
Liabilities/Assets	0.454	0.530*	0.511*	0.462	0.550	0.535*
	(0.292)	(0.313)	(0.270)	(0.311)	(0.348)	(0.323)
R&D expenses/Assets	8.015	16.555**	2.955	8.777	15.178**	4.718
	(5.754)	(8.117)	(6.295)	(5.725)	(7.559)	(5.698)
Payouts/Assets	2.599	3.949	2.555	2.532	3.503	2.379
	(2.222)	(3.178)	(2.162)	(2.209)	(3.252)	(2.194)
Cash flow/Assets	2.576***	2.571***	2.791***	2.281***	2.180***	2.042***
	(0.882)	(0.940)	(0.900)	(0.720)	(0.793)	(0.634)
Ln(assets)	0.368***	0.551***	0.345**	0.344***	0.522***	0.283*
	(0.127)	(0.088)	(0.148)	(0.126)	(0.077)	(0.170)
Exports/Sales	-0.184	-0.031	-0.212	-0.202	-0.047	-0.259
	(0.147)	(0.173)	(0.143)	(0.168)	(0.186)	(0.189)
Foreign ownership (%)	0.005	-0.006	0.008	0.005	-0.007	0.007
	(0.010)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
Financial institution ownership (%)	0.024**	0.026	0.023*	0.025**	0.028	0.024*
	(0.012)	(0.018)	(0.013)	(0.012)	(0.018)	(0.013)
Audit & supervisory committee	0.177	0.208	0.409**	0.126	0.154	0.288**
	(0.147)	(0.130)	(0.186)	(0.111)	(0.103)	(0.133)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	421	303	421	421	303	421

Table 4. Industry Instrument

We calculate the compliance rate of firms on the TSE 1st section and use the lagged variable as an additional instrument. Results suggest that firms in a particular industry comply with their industry leaders listed on the 1st section of TSE. Specifications 1 and 4 use Treat0*After, specifications 2 and 5 use Treat0d*After and specifications 3 and 6 use Treat1*After instrument, respectively.

Panel A. All but the TSE 1st section and the TSE 2nd section

	Tobin's Q					
	All but the TSE-1st			TSE-2nd		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.167***	-0.158***	-0.159**	-0.019	-0.041	-0.058
	(0.054)	(0.058)	(0.067)	(0.041)	(0.035)	(0.043)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	49.83	52.38	37.49	26.84	31.91	20.06
Observations	5557	3512	5557	2184	1352	2184
	First stage: Number of outside directors					
Treat*After	0.464***	0.697***	0.570***	0.522***	0.828***	0.624***
	(0.063)	(0.099)	(0.095)	(0.092)	(0.128)	(0.127)
Treat*After*TSE 1st compliance	0.092	0.401***	0.325***	0.052	0.310***	0.269**
	(0.078)	(0.115)	(0.102)	(0.102)	(0.118)	(0.112)

Panel B. TSE other sections and non-TSE

	Tobin's Q					
	TSE-other			Non-TSE		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.334***	-0.257**	-0.236*	-0.024	-0.084	-0.170
	(0.109)	(0.110)	(0.122)	(0.082)	(0.081)	(0.122)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	23.69	22.09	16.82	7.08	11.35	9.28
Observations	2660	1714	2660	410	294	410
	First stage: Number of outside directors					
Treat*After	0.395***	0.543***	0.508***	0.543***	0.697***	0.500**
	(0.090)	(0.163)	(0.154)	(0.186)	(0.241)	(0.197)
Treat*After*TSE 1st compliance	0.177	0.609***	0.439**	-0.028	0.294	0.301
	(0.119)	(0.201)	(0.181)	(0.251)	(0.333)	(0.267)

Table 5. Firm Age

This Table illustrates the impact of corporate governance reforms on firm value clustered by age. Young and Mature are defined in relation fixed thresholds (40, 45, 50) suitable for the Japanese context. Specifications 1 and 2 use Treat0*After, specifications 3 and 4 use Treat0d*After and specifications 5 and 6 use Treat1*After instrument, respectively.

Panel A. Young: Age 50 or below; 31.5% of firms are young

	Tobin's Q					
	Young	Mature	Young	Mature	Young	Mature
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.197**	-0.077***	-0.157**	-0.068***	-0.121*	-0.067**
	(0.083)	(0.029)	(0.063)	(0.022)	(0.065)	(0.027)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	51.26	132.56	92.73	183.28	86.48	139.88
Observations	4691	10224	2865	6072	4691	10224

Panel B. Young: Age 45 or below; 26.5% of firms are young

	Tobin's Q					
	Young	Mature	Young	Mature	Young	Mature
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.237**	-0.063**	-0.182**	-0.055**	-0.130*	-0.054**
	(0.097)	(0.031)	(0.075)	(0.023)	(0.074)	(0.026)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	36.03	146.27	66.55	201.06	68.6	151.97
Observations	3948	10967	2432	6505	3948	10967

Panel C. Young: Age 40 or below; 21.1% of firms are young

	Tobin's Q					
	Young	Mature	Young	Mature	Young	Mature
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.238**	-0.075**	-0.182**	-0.061***	-0.133	-0.054**
	(0.110)	(0.032)	(0.086)	(0.023)	(0.084)	(0.027)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	29.08	154.18	54.58	215.28	58.93	162.55
Observations	3139	11776	1965	6972	3139	11776

Table 6. Level of R&D Investment

This Table illustrates the impact of corporate governance reforms on firm value clustered by the level of R&D investment. High and low R&D are defined in relation to firm medians. Specifications 1 and 2 use Treat0, specifications 3 and 4 use Treat0d, and specifications 5 and 6 use Treat1 instrument, respectively.

Panel A. All firms

	Tobin's Q					
	Low R&D	High R&D	Low R&D	High R&D	Low R&D	High R&D
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.099	-0.106***	-0.079*	-0.106***	-0.057	-0.104***
	(0.062)	(0.039)	(0.047)	(0.032)	(0.049)	(0.038)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	64.14	121.28	103.64	179.69	88.98	141.21
Observations	7462	7453	4525	4412	7462	7453

Panel B. TSE 1st section

	Tobin's Q					
	Low R&D	High R&D	Low R&D	High R&D	Low R&D	High R&D
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.033	-0.125***	-0.026	-0.124***	-0.001	-0.126***
	(0.055)	(0.047)	(0.038)	(0.038)	(0.040)	(0.043)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	83.23	83.07	116.56	129.44	88.13	118
Observations	4752	4752	2706	2779	4752	4752

Table 7. Director Attributes

We divide firms into three groups. The first group of firms are those that did not appoint an outside director as of 2017 with a current or past management position. The second are those that appointed an outside director with a current or past management position. The third are those that appointed an outside director with a current management position. Specifications 1, 4, and 7 use Treat0*After, specifications 2, 5, and 8 use Treat0d*After, and specifications 3, 6, and 9 use Treat1*After instrument, respectively.

Panel A. All firms

					Tobin's Q				
	No	Past/Current	Current	No	Past/Current	Current	No	Past/Current	Current
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Number of outside directors	-0.120**	-0.062	-0.050	-0.117***	-0.063**	-0.050	-0.113**	-0.065**	-0.040
	(0.052)	(0.042)	(0.039)	(0.044)	(0.032)	(0.034)	(0.053)	(0.032)	(0.057)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	78.71	151.89	48.29	103.11	226.28	58.47	79.57	182.05	40.52
Observations	8076	6225	1999	4672	3864	1363	8076	6225	1999

Panel B. TSE 1st section

					Tobin's Q				
	No	Past/Current	Current	No	Past/Current	Current	No	Past/Current	Current
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Number of outside directors	-0.090*	-0.059	-0.090***	-0.073*	-0.066*	-0.086***	-0.067	-0.069**	-0.072
	(0.050)	(0.053)	(0.030)	(0.042)	(0.036)	(0.028)	(0.052)	(0.034)	(0.074)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	80.60	102.88	25.12	92.16	164.87	34.99	67.64	148.67	25.30
Observations	4337	4813	1485	2325	2934	1007	4337	4813	1485

Panel C. Non-TSE 1st section

	Tobin's Q								
	No	Past/Current	Current	No	Past/Current	Current	No	Past/Current	Current
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Number of outside directors	-0.172**	-0.128**	-0.010	-0.195**	-0.103*	-0.029	-0.225**	-0.102	0.024
	(0.082)	(0.060)	(0.044)	(0.085)	(0.063)	(0.035)	(0.105)	(0.074)	(0.070)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	41.80	76.12	34.14	41.81	90.05	37.85	29.43	57.46	21.94
Observations	3739	1412	514	2347	930	356	3739	1412	514

Table 8. Osaka Stock Exchange

This table tests the relationship between the number of outside directors and firm value for the Osaka Stock Exchange. The main findings remain robust. Specifications 1 and 4 use Treat0*After, specifications 2 and 5 use Treat0d*After, and specifications 3 and 6 use Treat1*After instrument, respectively.

Panel A. All OSE firms

	Tobin's Q All OSE		
	(1)	(2)	(3)
Number of outside directors	-0.149**	-0.112*	-0.097
	(0.074)	(0.066)	(0.075)
Other control variables	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
First stage F-value	75.74	118.08	95.10
Observations	3351	2130	3351

Panel B. OSE 1st or 2nd section and OSE other section

	Tobin's Q					
	OSE-1st or OSE-2nd			OSE-other		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.080**	-0.092**	-0.111**	-0.721	-1.205	-1.585
	(0.039)	(0.036)	(0.054)	(0.604)	(1.195)	(2.191)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	59.32	80.92	44.62	41.64	73.18	62.41
Observations	851	559	851	2500	1571	2500

Table 9. Board Size

This table tests the relationship between the total number of directors (board size) and firm value. The main findings remain robust. Specifications 1 and 4 use Treat0*After, specifications 2 and 5 use Treat0d*After, and specifications 3 and 6 use Treat1*After instrument, respectively.

Panel A. All firms

	Tobin's Q All firms		
	(1)	(2)	(3)
Board size	-0.122***	-0.140***	-0.153**
	(0.046)	(0.048)	(0.065)
Other control variables	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
First stage F-value	23.97	29.81	19.06
Observations	14915	8937	14915

Panel B. TSE 1st section or non-TSE 1st section

	Tobin's Q					
	TSE-1st			Non-TSE-1st		
	(1)	(2)	(3)	(4)	(5)	(6)
Board size	-0.080**	-0.092**	-0.111**	-0.721	-1.205	-1.585
	(0.039)	(0.036)	(0.054)	(0.604)	(1.195)	(2.191)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	19.38	25.24	15.93	1.69	1.20	0.59
Observations	9504	5485	9504	5628	3551	5628

Table 10. Placebo Test

This table uses 2008 and 2009 as the hypothetical (placebo) year of the reform. We use eight-year periods in each specification so that we have four years both before and after the reform. We do not find any significant relation between the number of outside directors and firm value. Specifications 1 and 4 use Treat0*After, specifications 2 and 5 use Treat0d*After, and specifications 3 and 6 use Treat1*After instrument, respectively.

	Tobin's Q					
Hypothetical year of the reform	2008			2009		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of outside directors	-0.710	-0.538	-0.537	0.350	0.516	0.657
	(0.489)	(0.426)	(0.548)	(0.283)	(0.519)	(0.862)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
First stage F-value	2.84	2.45	1.44	2.83	1.33	0.70
Observations	13906	10836	13906	14186	10889	14186

Table 11. Definition and Data Sources

	Definition	Data source
Tobin's Q	Market capitalization plus total liabilities divided by book value of total assets	FinancialQUEST
Number of outside directors	The total number of outside directors	NEEDS Executive Data
Percentage of outside directors	The ratio of outside directors to total directors in percentage	NEEDS Executive Data
Number of total directors	The total number of directors	NEEDS Executive Data
Tangible assets/Assets	Tangible assets divided by lagged total assets	FinancialQUEST
Liabilities/Assets	Total liabilities divided by lagged total assets	FinancialQUEST
R&D expenses/Assets	R&D expenses divided by lagged total assets	FinancialQUEST
Payouts/Assets	Dividends plus share repurchases divided by lagged total assets	FinancialQUEST
Cash flow/Assets	Operating earnings plus depreciation divided by total assets	FinancialQUEST
Ln(assets)	Natural Logarithm of total assets	FinancialQUEST
Exports/Sales	Exports divided by lagged sales	FinancialQUEST
Foreign ownership (%)	The share of stocks held by foreign investors in percentage	FinancialQUEST
Financial institution ownership (%)	The share of stocks held by financial institutions in percentage	FinancialQUEST
Audit & supervisory committee	Dummy variable that takes one if the firm adopts the audit & supervisory committee system	NEEDS Executive Data
Firm age	Years since the establishment	FinancialQUEST
Treat0	Dummy variable that takes one if the firm had no outside directors in FY2013 (i.e., March 2014)	
Treat0d	Dummy variable that takes one if the firm had no outside directors in FY2013 and takes a missing value if the firm had one outside director in FY2013	
Treat1	Takes one if the firm had less than two outside directors in FY 2013	
After	Dummy variable that takes one from FY2014 (i.e., March 2015) onwards	
TSE-1st compliance	Compliance rate of the Code among firms on the 1st section of the TSE in a certain industry	