

## HOW DOES CORPORATE GOVERNANCE STRUCTURE AFFECT RISK-TAKING ACTIVITIES IN JAPANESE FIRMS?

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### *Abstract*

This paper examines whether changes in corporate governance structure affect risk-taking activities in Japanese firms. New corporate governance systems have been imported into Japanese firms from the US since the late 1990s. However, Japanese firms have not necessarily been able to improve their financial performance. We analyze the effects of reforms of boards of directors on risk-taking activities because Japanese firms are too risk averse and this may lead to lower firm performance. Firstly, we analyze whether outside directors and non-executive directors affect risk-taking activities in Japanese firms. The results show that firms with more outside or non-executive directors promote risk-taking activities more aggressively. Secondly, we examine the differences in the effects on risk-taking activities between firms with outside directors and those with more than one outside director. The result shows that firms with more than one outside director invest in long-term capital more actively, while those with one outside director invest in more passively. Thirdly, we focus on two situations in which firms need to undertake riskier projects. The first is firms with business opportunities and the second is older firms. The result shows that firms with higher potential for growth and more than one outside director promote risk-taking activities, but that firms with higher potential for growth and only one outside director do not. Then, focusing on firm age, the result shows that older firms with one outside director undertake relatively less risky activities. Finally, we calculate the trends of sales and operating income after investment. The results show that firms with more than one outside director have a higher sales growth ratio than those with no outside directors or only one outside director. The facts suggest that risk-taking activities have economic effects on firms.

*Topics:* Corporate Governance

*Keywords:* outside director, investment behavior, international comparison

*JEL descriptors:* G31, M42, M48, G38, K22

*Data availability:* Data used in this study are based on a commercial database.

### I. *Introduction*

This study examines whether reforms of the structure of boards of directors in Japan affect corporate investment behavior. Reforms of corporate governance have been conducted since the

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late 1990s in Japan. For example, regulations on stock options, stock repurchase, or stock warrant were mitigated in Japanese commercial law, and Japanese firms can utilize their stock to compensate for top executives and employees and to restructure business structures more easily. In addition, some corporate governance systems, like nominating, compensation, and auditing committees or outside directors, or separation between execution and monitoring, have been introduced into Japanese firms from the US and other countries. In particular, we focus on the issue of how reforms of boards of directors affect risk-taking activities in Japanese firms. We have three reasons for shedding further light on this issue.

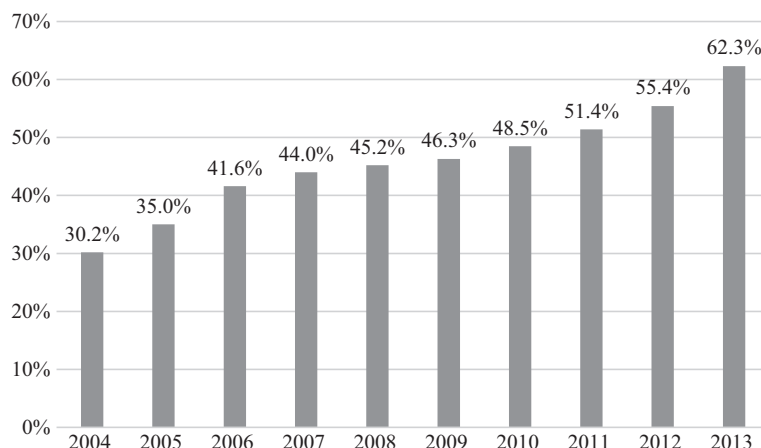
Firstly, boards of directors have recently changed dramatically in Japan. For example, the ratio of outside directors to the total has been gradually increasing. We show changes in the ratio of firms with outside directors to the total in Figure 1. The figure illustrates that the ratio has increased from 30.2% to 62.3% in the past 10 years. In addition, the mean ratio of non-executive directors to the total in Japanese firms has increased from 18.2% to 31.0% in the past 10 years. We can posit the idea that the introduction of outside directors and the separation of roles of directors between execution and monitoring is one area that has dramatically changed through the reforms of corporate governance structure in Japan. However, we have not been able to accumulate sufficient results of how these reforms have certain economic effects.

Secondly, some people or organizations have recommended the introduction of outside directors or the separation of roles of directors between execution and monitoring although we cannot confirm the economic effects of the reforms. For example, Gordon (2007) explains that more independent directors can contribute to the creation of corporate value by improving the function of monitoring of firms from a shareholder perspective. Meanwhile, Bhagat and Black (2002) insist that there is no correlation between board independence and long-term firm performance. Although whether reforms of boards of directors have economic effects is an open problem, some organizations or governments recommend an increase in board independence or a separation of roles of directors between execution and monitoring. For example, proxy advisory firms, like the Institutional Shareholder Services (ISS), have recommended refusing a firm's proposal to elect representative directors in the voting of shareholders' meetings if firms have not appointed an outside independent director. Some other organizations have recommended board independence or the separation of roles of directors between execution and monitoring. However, there is no strong evidence that these reform recommendations necessarily contribute to the creation of shareholder value.

Thirdly, we need to consider what type of corporate governance would suit Japanese firms. Some studies show that there are major differences in corporate governance among countries (e.g., Rasheed and Yoshikawa 2012). Therefore, we should examine whether reforms of corporate governance structure suit the countries adopting them. Recently, some researchers or intellectuals insist that we need to focus on the objectives of introducing new corporate governance structures. For example, Kagono (2014) points out that new corporate governance systems, like the shareholders' lawsuit system, quarterly financial reporting system, and internal control auditing system, have worsened the competitive advantage in Japanese firms because of negative impacts on risk-taking activities. If reforms of corporate governance structure, which are based on the US model, do not necessarily suit Japanese firms, we need to accumulate empirical results that are based on the cultural and institutional context of Japan.

Prior literature has examined the relationship between the structure of boards of directors and a firm's performance, although it does not analyze how changes or differences in the

FIGURE 1. RATIO OF FIRMS WITH OUTSIDE DIRECTORS ON THE BOARD



structure of boards of directors affect corporate behavior. This research investigates the relationship between differences in the structure of boards of directors and risk-taking activities in Japanese firms because some researchers or practitioners point out that a more conservative attitude towards long-term investment creates a situation where Japanese firms cannot create shareholder value. In particular, we focus on the relationship between the ratio of outside or non-executive directors and risk-taking activities in Japanese firms. Firstly, we analyze whether outside directors and non-executive directors affect long-term investment in Japanese firms. Secondly, we examine the differences in effects on risk-taking activities between firms with one outside director and those with more than one outside director, because some firms introduce an outside director due to pressure from regulators or proxy advisory firms and they tend to appoint only one outside director, which is the minimum requirement in appointing an outsider. These firms cannot undertake the riskier projects required by shareholders, or lose opportunities due to the advice of outside directors that they can grow in the future. Thirdly, we focus on two situations in which Japanese firms need to undertake riskier projects. The first is being an older firm and the second is being a firm with business opportunities. We investigate how the relationship between appointment of outside directors and risk-taking activities changes with different firm age or business opportunities.

The results of this paper show that firms with a higher ratio of outside or non-executive directors invest in long-term capital more actively. In addition, this paper shows that the relative length of the term served by top management has a greater effect on risk-taking activities than the president ownership ratio. We then analyze the differences in effects between firms with one outside director and those with more than one outside director. The results show that firms with more than one outside director promote risk-taking activities more actively, but those with one outside director do not. Also, we examine the relationship between outside directors and risk-taking activities under different situations (a firm's age and a firm's business opportunities). The results show that firms of older age or with higher business opportunities with only one outside director do not invest in long-term capital more aggressively, while firms with higher business opportunities with more than one outside director promote risk-taking

activities. Finally, we calculate the trends of sales and operating income in the consequent five years to examine the effects of risk-taking activities. The results show that firms with more than one outside director have a higher growth ratio than those with no outside director or only one outside director.

The objective of this paper is to examine whether outside or non-executive directors affect risk-taking activities in Japanese firms. Section II illustrates that fewer risk-taking activities in Japanese firms may lead to a situation where they have been unable to attain more profit and growth in the past decades. Section III explains the theoretical settings and proposes the hypotheses of this study. Section IV shows the data sample and research design. Section V presents the results and implications. Section VI concludes.

## II. *Critical Factors in the Performance of Japanese Firms in Past Decades*

Before analyzing the relationship between corporate governance structure and risk-taking activities in Japanese firms, we investigate changes in the performance of Japanese firms in the past decades when reforms of corporate governance structure have developed dramatically, as well as differences in performance between Japanese and other countries' firms.

Firstly, we focus on the trends of return on operating assets (ROA) and the price book-value ratio (PBR) of Japanese firms in the past 25 years. We think that this ratio is appropriate for measuring the relative scale of intangibles or invisible assets that contribute to the creation of corporate value in the long term (e.g., Ito and Kagaya 2001; Nakano 2009). We calculate this ratio by using NEEDS Financial QUEST. We collect data that satisfy the requirements below. We select 56,509 firm-year observations.

1. Listed firms
2. Fiscal term of 12 months
3. Non-financial firms

We calculate ROA (operating income divided by operating assets (total assets minus cash and cash equivalents)) and PBR (total capitalization divided by the book-value of net assets) and show the median of those ratios in each year in Figure 2. Figure 2 shows that both ratios have dramatically decreased in the past 25 years. In particular, PBR, which may reflect the expectation of shareholders of the future of the firm, has decreased very dramatically. This suggests that the ability to create future cash flows has been decreasing although reforms of the corporate governance system have been ongoing in the past decades.

Secondly, we investigate firm performance between Japan and other countries. We focus on the ratio of profitability and growth. We collect data from Compustat Global Vantage and calculate the ratio of return on equity (ROE) in each firm. We choose those firms whose data can be collected between 2000 and 2010 and show the distribution of the median of each firm in each country in Figure 3. We focus on 16 countries where we can collect over 200 data (Australia, Brazil, Canada, China, Germany, France, the United Kingdom, India, Japan, South Korea, Malaysia, Singapore, Sweden, Thailand, Taiwan, and the United States of America). This figure shows that there are more firms with low profitability in Japan than in other countries and fewer firms making a loss.

In addition, we calculate the growth ratio of total assets and revenues between 2000 and

FIGURE 2. TRENDS OF PBR AND ROA IN JAPANESE FIRMS

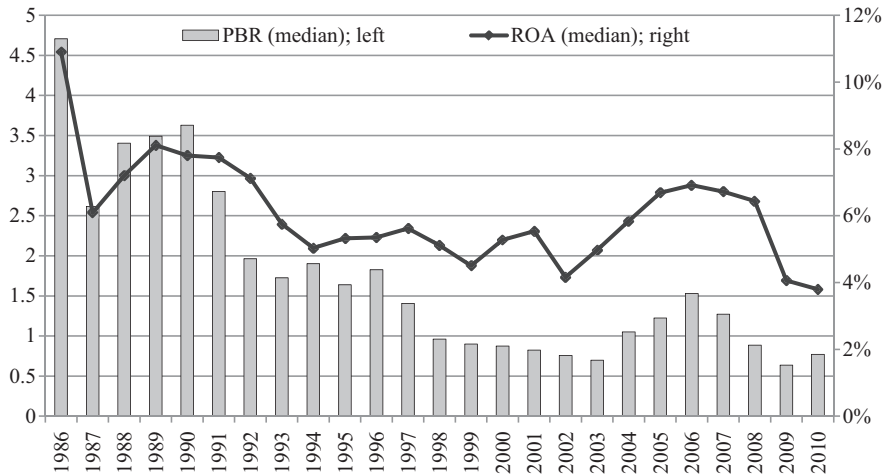
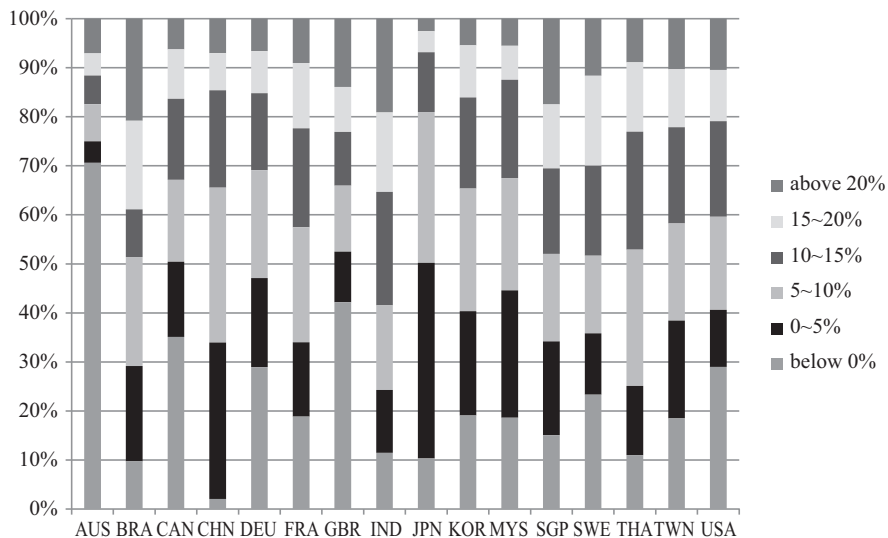


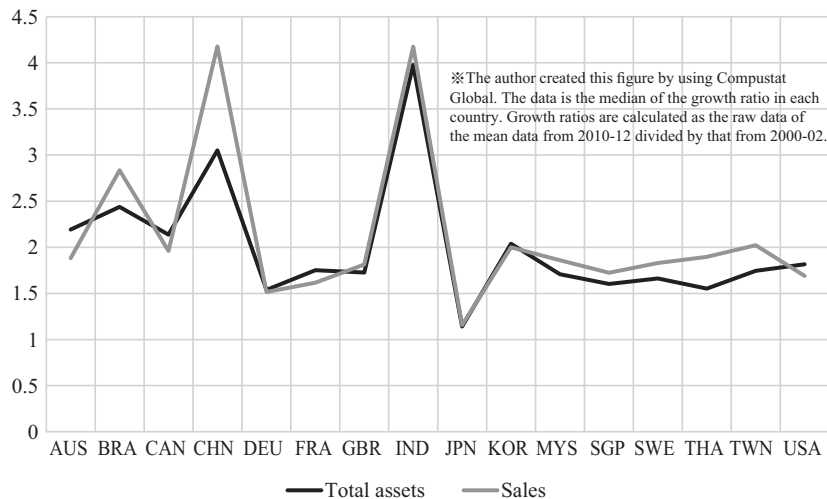
FIGURE 3. ROE AROUND THE WORLD



2012. We show the mean and median of each year in each country in Figure 4. This figure shows that Japanese firms have not grown in the last decades.

Why has the financial performance of Japanese firms worsened despite reforms of the corporate governance system in the past 15 years? For example, Kagono (2014) explains that reforms of corporate governance in Japan, like shareholder lawsuits, internal control auditing, and the quarterly financial reporting system, may become obstacles to risk-taking activities in Japanese firms.

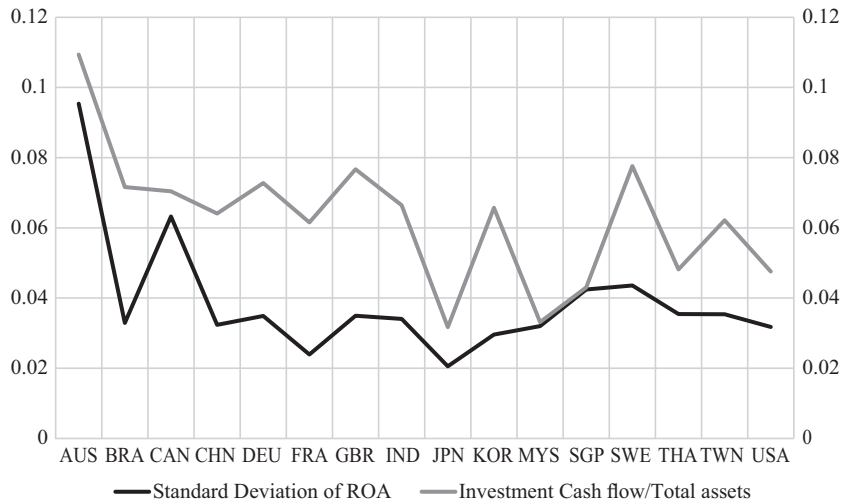
FIGURE 4. GROWTH RATIOS OF FIRMS AROUND THE WORLD



Then, we investigate the differences in risk-taking activities among countries. We focus on two measures of risk-taking activities. The first measure is the standard deviation of return on operating assets (ROA) in each firm, and the second is cash outflow of investment divided by total assets. We calculate the median of each measure in each country and show it in Figure 5. This figure shows that Japanese firms have undertaken risk-taking activities less than in other countries.

If the attitudes to risk-taking activities of Japanese firms lead to lower firm performance than firms in other countries, we need to link reforms of the corporate governance system with promoting risk-taking activities of Japanese firms. For example, Mr. Kawamura, the past chair of the board of directors at Hitachi Corporation, which has actively reformed the structure of its board of directors, clearly states that the reason that Hitachi Corporation increased the number of outside directors dramatically was to induce executive officers to undertake more risk-taking activities. If risk-averse attitudes led to lower profitability and growth in Japanese firms in the past decades, it is more effective to examine the relationship between risk-taking activities and reforms of boards of directors in Japanese firms in order to identify a model of a board of directors that suits Japanese firms.

FIGURE 5. RISK-TAKING ACTIVITIES AROUND THE WORLD



### III. *Prior Literature and Theoretical Background*

#### 1. **Prior Literature on the Relationship between Risk-taking Activities and the Structure of Corporate Governance**

Many researchers examine how reforms of corporate governance structure in Japan have economic effects. For example, Miyajima and Nitta (2006) show that firms with a higher ratio of outside directors to the total can improve their firm performance. Uchida (2009) shows that firms that appointed outside directors in 2003 and 2004 increased their Tobin's Q ratio. Then, Saito (2010) focuses on firms in the NIKKEI 500 and presents evidence that firms with outside independent directors improve their firm performance more than firms that have no outside directors.

Recently, some researchers have put more emphasis on the fact that corporate governance has two functions: advisory and monitoring. And they explain that the economic effects of adopting a new system of corporate governance depend on the functions. For example, Miyajima and Ogawa (2012) examine the fact that firms with a complex business structure can improve their firm performance by appointment of outside independent directors because outside directors have many opportunities to advise their firms. In addition, the appointment of outside independent directors can decrease agency costs if top management has the opportunity to gain higher compensation or longer tenure in the firm. If a firm depends on specific activities, skills, and knowledge to increase its corporate value, it is more difficult for outside independent directors to advise the firm. They then show evidence that the determinants of a firm selecting outside independent directors are the complexity of business structure, agency cost, difficulty in acquiring inherent information, and negotiation power with shareholders in the firm. On the other hand, there is no evidence that outside independent directors improve firm

performance if they control factors that affect the determinants of selecting outside independent directors.

These studies suggest that we need to consider the differences in the functions of boards of directors so as to analyze the economic effects of introducing new types of corporate governance system. In addition, we need to analyze economic effects in the context of the history of Japanese firms.

## **2. Relationship between Two Functions and Risk-taking Activities**

How do the advisory and monitoring functions of boards of directors affect risk-taking activities in Japanese firms? We explain the relationship based on the agency relationship between management and shareholders, advisory function, and monitoring function (e.g., Raheja 2005; Adams and Ferreira 2007; Harris and Raviv 2007).

Firstly, a firm undertakes riskier activities if it appoints outside directors or separates the functions of execution and monitoring of boards of directors, because top management cannot pursue their private benefit if a firm appoints them under an agency setting. Because there is no pressure from outside or from independent stakeholders, like outside directors or non-executive directors, top management tends to avoid undertaking more risk-taking activities because of their career concerns (e.g., Amihud and Lev 1981; Holmstrom and Ricart i Costa 1986; Hirshleifer and Thakor 1992). In addition, if stakeholders who hope for a long-term relationship with a firm, like banks or employees, have a stronger position in the firm, it is more difficult for top management to undertake riskier activities more aggressively (e.g., Morck and Nakamura 1999; Roe 2003; Faleye, Mehrotra, and Morck 2006). However, if introduction of outside directors or separation between execution and monitoring of boards of directors creates stronger pressure from their shareholders, this leads to a firm undertaking more risk-taking activities.

Secondly, firms can gain new business opportunities or networks by appointing outside directors, if we focus on the advisory function of directors. Outside directors have different networks and different perspectives from internal directors; therefore, they can advise on other opportunities or propose other networks for creating new businesses.

Thirdly, from a monitoring perspective, introduction of outside directors may hinder the decision to undertake risky activities or they may be undertaken later because it is difficult for them to share or understand inherent information or skills with insiders because of physical and psychological distance from insiders (e.g., Inoue 2003; Kagono 2014). Outside directors may over-monitor the firms or insiders because of lack of inherent information or knowledge of the firm. The separation between execution and monitoring of boards of directors may lead to a lack of risk-taking activities because of the difficulty in sharing information between directors for monitoring and officers for execution.

In addition, adoption of new corporate governance required due to pressure from regulators or advice from proxy advisory firms may promote window-dressing activities in responding to such pressure (e.g., Bhagat and Black 2002; Romano 2005).

## **3. Development of Hypotheses**

These studies suggest that the private benefit of top management, relationship between



firms and their stakeholders, volume and depth of information, knowledge, and networks of outside directors, and strength of conflict between outside directors and insiders or executive officers and directors may affect risk-taking activities in Japanese firms.

If the appointment of outside directors or separation between execution and monitoring of boards of directors increases the motivation of top management to follow the incentives of their shareholders or acquire new business opportunities because of broader information or networks of outside directors, undertaking of more risk-taking activities of firms is promoted. On the other hand, appointment of outside directors or separation between execution and monitoring of boards of directors promotes the undertaking of fewer risk-taking activities if this causes conflict between outside directors and insiders or executive officers and directors. We propose hypotheses regarding the effects of appointing outside directors or separating the functions of directors between execution and monitoring under the assumption that motivation or information effects are larger than over-monitoring effects.

H1a: *Ceteris paribus*, firms with a higher outside director ratio invest in long-term capital more aggressively.

H1b: *Ceteris paribus*, firms with a higher non-executive director ratio invest in long-term capital more aggressively.

On the other hand, we deduce that some Japanese firms have appointed outside directors or separated the functions of directors between execution and monitoring from a window-dressing perspective. Stated differently, some of them believe that it is sufficient to appoint only one outside director to satisfy the minimum requirement recommended by certain regulations or proxy advisory firms. We assume that it is more difficult for them to achieve sufficient benefits from reforms of corporate governance structure because of conflict or information gap between outside directors and insiders (window-dressing hypothesis). Therefore, we propose the hypothesis that firms with one outside director invest in long-term capital less aggressively.

H2: *Ceteris paribus*, firms with one outside director do not invest in long-term capital more than firms with the same outside director ratio.

In addition, we focus on two situations in which Japanese firms are required to grow further: firms with higher potential for growth and older firms. We presume the reason that Japanese firms undertake less risky activities is that they cannot invest in long-term capital in quick response to business opportunities. If outside directors promote investment in response to changes in the business environment via monitoring and advisory functions, the appointment of outside directors leads to firms with higher business opportunities increasing their long-term investment. However, there is no increase in long-term investment if firms appoint only one outside director under the window-dressing hypothesis.

On the other hand, we conjecture that the reason that Japanese firms undertake less risky activities is that there are more older firms than in other countries (e.g., Ito and Nakano 2014). Loderer et al. (2013) show evidence that older firms invest less in long-term capital. We surmise that outside directors may act as a trigger for firms to undertake risky projects more aggressively because they can provide information, knowledge, and networks concerning new business opportunities to the management team and put pressure to achieve growth more effectively. If some older firms appoint one outside director for window-dressing purposes, they may lose opportunities to grow by investing more in long-term capital.

- H3a: Ceteris paribus, if firms with more potential for growth appoint more than one outside director, they increase their long-term capital more than other firms.
- H3b: Ceteris paribus, firms with more potential for growth do not invest in long-term capital more than firms of the same age and with the same outside director ratio.
- H3c: Ceteris paribus, older firms do not invest in long-term capital more than firms of the same age even if they appoint only one outside director.

#### IV. *Research Design and Sample Data*

##### 1. **Research Design**

Firstly, we examine whether appointment of outside and non-executive directors promotes the undertaking of risk-taking activities more aggressively. We use investment cash outflows from cash flow statements to measure aggressiveness in undertaking risk-taking activities. Investment cash outflows are composed of expenditure on fixed assets, investment in equities and debts, and investment in subsidiary firms. We divide investment cash outflows in the next fiscal year by total assets in the current fiscal year. We use an estimation of general linear statistics with fixed effects on year and industry.

We need to include some control variables to examine the effects of outside and non-executive directors. For example, prior literature shows that the level of investment behavior is closely related to business opportunities (e.g., Tobin 1969; Hayashi 1982), the level of cash flow and profit (e.g., Meyur and Kuh 1957; Gilchrist and Himmelberg 1995), and financial position and firm scale (e.g., Jensen 1986; Fazzari et al. 1988). We focus on the price book-value ratio, diversification ratio, and overseas sales ratio as measures of business opportunity, operating income as a measure of the level of cash flow and profit, and the leverage ratio and total assets as measures of financial position and firm scale. In addition, we include some variables of corporate governance structure that affect firm performance and behavior: firm age (e.g., Loderer et al. 2013), foreign investor ratio (e.g., Miyajima and Ogawa 2013), president ownership ratio (e.g., Miyajima and Ogawa 2013), and board size (e.g., Yermack 1996; Coles et al. 2008). We add relative management tenure because management compensation or ownership ratio in Japanese firms is relatively lower than in other countries and management tenure reflects the strength of top management's leadership. We control the above variables and examine the relationship between risk-taking activities and the ratio of outside or non-executive directors. We show the specific definition in Table 1.

We predict that firms with a higher price book-value ratio (PBR), diversification of business (Diversification), and overseas sales (Overseas) invest in long-term capital more aggressively because there are many business opportunities. The level of cash flow, stability of financial position, or business position promotes long-term investment; therefore, firms with a higher ratio of operating income divided by operating assets (Profitability), lower total debts divided by total assets (Leverage), and larger total assets of the firm (Scale) invest in long-term capital more aggressively. If a firm has more cash, it can invest in business opportunities more easily. However, larger cash in a firm means larger agency costs between top management and shareholders; therefore, it may have a negative correlation with long-term

TABLE 1. DEFINITIONS OF VARIABLES

Variables	Definition	Method of calculation	Predictive sign
Investment <sub>t+1</sub>	Investment cash outflows	Expenditure on fixed assets, investment in equities or debts, and investment in subsidiary and affiliate equities or debts, divided by total assets at the beginning of the fiscal year	
PBR <sub>t</sub>	Price book-value ratio	Total capitalization divided by net assets	+
Profitability <sub>t</sub>	Return on assets	Operating income divided by total assets at the beginning of the fiscal year	+
Leverage <sub>t</sub>	Leverage	Total liabilities divided by total assets	—
Scale <sub>t</sub>	Firm scale	Log of total assets	+ / —
Cash <sub>t</sub>	Cash and cash equivalents	Cash and cash equivalents divided by total assets	+ / —
C_Age <sub>t</sub>	Firm age	Numbers of month from foundation	—
Diversification <sub>t</sub>	Extent of business diversification	Sum of squares of each segment sales ratio	—
Overseas <sub>t</sub>	Overseas sales ratio	Data from NEEDS Financial QUEST	+
Foreign <sub>t</sub>	Foreign investor ownership ratio	Data from NEEDS Financial QUEST	+
P_hold <sub>t</sub>	President ownership ratio	Data from NEEDS CGES	+
BODscale <sub>t</sub>	Number of directors	Data from NEEDS CGES	+ / —
M_term <sub>t</sub>	Length of management tenure	Lead directors' tenure divided by firm age	+
D_Age <sub>t</sub>	Average age of directors	Data from NEEDS CGES	—
OutsideD <sub>t</sub>	Outside director ratio	Outside directors divided by total directors	+
N_execD <sub>t</sub>	Non-executive director ratio	Non-executive directors divided by total directors	+
D_OutsideD1	Dummy variables of firms with an outside director	1 if firms have one outside director, otherwise 0.	
D_outsideD2	Dummy variables of firms with more than 2 outside directors	1 if firms have more than one outside director, otherwise 0.	

investment. Meanwhile, complexity of organization or business structure may hinder long-term investment because it produces conflict among some organizations or business units. Therefore, Scale, Diversification, and Overseas have a negative impact on aggressiveness in undertaking risk-taking activities. We guess that older firms (C\_Age) or older boards of directors (D\_Age) tend to undertake less risky projects because of complexity of business or organization, conservative attitude toward future business, and business life cycle. Firms with a higher foreign investor ratio (Foreign) and president ownership ratio (P\_hold) tend to undertake more risky projects because top management in the firms consider the incentives of shareholders who are higher risk takers than other stakeholders in decision making for the future. Firms with longer management tenure (M\_term) invest in long-term capital more aggressively because such management has much power in the firm. Contrarily, it is more difficult for firms with larger board size to undertake more risky projects because of the necessity of coordination among many directors. We examine whether the ratio of outside or non-executive directors affects the level of long-term investment under the situation of the controlled variables above.

$$\begin{aligned}
Investment_{i+1} = & \alpha + \beta_1 PBR_i + \beta_2 Profitability_i + \beta_3 Leverage_i + \beta_4 Scale_i \\
& + \beta_5 Cash_i + \beta_6 C\_Ages_i + \beta_7 Diversification_i + \beta_8 Overseas_i \\
& + \beta_9 Foreign_i + \beta_{10} P\_hold_i + \beta_{11} BODscale_i + \beta_{12} M\_term_i \\
& + \beta_{13} D\_Ages_i + \beta_{14} OutsideD_i + \beta_{15} N\_ExecD_i + \varepsilon \quad \dots(1)
\end{aligned}$$

Secondly, we examine the window-dressing hypothesis in Japanese firms. Most Japanese firms have been under pressure to reform the structure of their boards of directors, like increasing the number of outside independent or non-executive directors, from regulators or proxy advisory firms since the end of the 1990s. Some firms respond to the pressure by appointing only one outside director, but this hinders the undertaking of more risk-taking activities because firms with only one outside director do not necessarily have the incentive to build a shareholder perspective into their decision making and it may cause a lack of information sharing or communication between the outside director and insiders. We divide the outside director ratio into two groups: One is firms with only one outside director and other is firms with more than one outside director. We create a dummy variable for each group: D\_OutsideD1 is firms with only one outside director, and D\_OutsideD2 is firms with more than one outside director. We then set Model 2.

$$\begin{aligned}
Investment_{i+1} = & \alpha + \beta_1 PBR_i + \beta_2 Profitability_i + \beta_3 Leverage_i + \beta_4 Scale_i \\
& + \beta_5 Cash_i + \beta_6 C\_Ages_i + \beta_7 Diversification_i + \beta_8 Overseas_i \\
& + \beta_9 Foreign_i + \beta_{10} P\_hold_i + \beta_{11} BODscale_i + \beta_{12} M\_term_i \\
& + \beta_{13} D\_Ages_i + \beta_{14} OutsideD_i \cdot D\_OutsideD1_i \\
& + \beta_{15} OutsideD_i \cdot D\_OutsideD2_i + \beta_{16} N\_ExecD_i + \varepsilon \quad \dots(2)
\end{aligned}$$

Thirdly, we focus on business opportunities to examine whether outside directors promote risk-taking activities in response to them. We add the crossing term of the price book-value ratio (PBR) and outside director ratio (OutsideD) to analyze it (Model 3a). In addition, we divide the crossing term into two groups (firms with only one outside director (D\_OutsideD1) and firms with more than one outside director (D\_OutsideD2)) to examine the window-dressing hypothesis (Model 3b).

$$\begin{aligned}
Investment_{i+1} = & \alpha + \beta_1 PBR_i + \beta_2 Profitability_i + \beta_3 Leverage_i + \beta_4 Scale_i \\
& + \beta_5 Cash_i + \beta_6 C\_Ages_i + \beta_7 Diversification_i + \beta_8 Overseas_i \\
& + \beta_9 Foreign_i + \beta_{10} P\_hold_i + \beta_{11} BODscale_i + \beta_{12} M\_term_i \\
& + \beta_{13} D\_Ages_i + \beta_{14} OutsideD_i + \beta_{15} N\_ExecD_i \\
& + \beta_{16} PBR_i \cdot OutsideD_i + \varepsilon \quad \dots(3a)
\end{aligned}$$

$$\begin{aligned}
Investment_{i+1} = & \alpha + \beta_1 PBR_i + \beta_2 Profitability_i + \beta_3 Leverage_i + \beta_4 Scale_i \\
& + \beta_5 Cash_i + \beta_6 C\_Ages_i + \beta_7 Diversification_i + \beta_8 Overseas_i \\
& + \beta_9 Foreign_i + \beta_{10} P\_hold_i + \beta_{11} BODscale_i + \beta_{12} M\_term_i \\
& + \beta_{13} D\_Ages_i + \beta_{14} OutsideD_i + \beta_{15} N\_ExecD_i \\
& + \beta_{16} PBR_i \cdot OutsideD_i \cdot D\_OutsideD1_i + \\
& + \beta_{17} PBR_i \cdot OutsideD_i \cdot D\_OutsideD2_i + \varepsilon \quad \dots(3b)
\end{aligned}$$

Fourthly, we consider firm age because firm age is an inherent factor hindering risk-taking activities of Japanese firms. As we explained before, Japanese firms are older than firms in other countries. We investigate whether appointment of outside directors would overcome the

obstacles to undertaking more risky projects in Japanese firms by adding the crossing term of firm age ( $C\_Age$ ) and outside director ratio ( $OutsideD$ ) (Model 4a). In addition, we divide the crossing term into two group (firms with only one outside director ( $D\_OutsideD1$ ) and firms with more than one outside director ( $D\_OutsideD2$ )) to examine the window-dressing hypothesis (Model 4b).

$$\begin{aligned}
 Investment_{i,t+1} = & \alpha + \beta_1 PBR_i + \beta_2 Profitability_i + \beta_3 Leverage_i + \beta_4 Scale_i \\
 & + \beta_5 Cash_i + \beta_6 C\_Ages_i + \beta_7 Diversification_i + \beta_8 Overseas_i \\
 & + \beta_9 Foreign_i + \beta_{10} P\_hold_i + \beta_{11} BODscale_i + \beta_{12} M\_term_i \\
 & + \beta_{13} D\_Ages_i + \beta_{14} OutsideD_i + \beta_{15} N\_ExecD_i \\
 & + \beta_{16} C\_Ages_i \cdot OutsideD_i + \varepsilon
 \end{aligned}
 \quad \dots(4a)$$

$$\begin{aligned}
 Investment_{i,t+1} = & \alpha + \beta_1 PBR_i + \beta_2 Profitability_i + \beta_3 Leverage_i + \beta_4 Scale_i \\
 & + \beta_5 Cash_i + \beta_6 C\_Ages_i + \beta_7 Diversification_i + \beta_8 Overseas_i \\
 & + \beta_9 Foreign_i + \beta_{10} P\_hold_i + \beta_{11} BODscale_i + \beta_{12} M\_term_i \\
 & + \beta_{13} D\_Ages_i + \beta_{14} OutsideD_i + \beta_{15} N\_ExecD_i \\
 & + \beta_{16} C\_Ages_i \cdot OutsideD_i \cdot D\_OutsideD1_i + \\
 & + \beta_{17} C\_Ages_i \cdot OutsideD_i \cdot D\_OutsideD2_i + \varepsilon
 \end{aligned}
 \quad \dots(4b)$$

In addition, we analyze firm performance five years from an investment decision. In particular, we divide all samples into three groups: the first is firms with no outside directors, the second is firms with only one outside director, and the third firms with more than one outside director. We analyze the differences in the trends of sales and operating income among the groups for five years.

## 2. Sample and Data

This paper examines the relationship between reforms of boards of directors and risk-taking activities. We select a data sample that satisfies the five requirements below.

1. Financial information can be obtained from NEEDS Financial QUEST between 2005 and 2012.
2. The firm belongs to the non-bank, securities, and insurance industry in the database.
3. The accounting period of the firm is 12 months in the fiscal year.
4. Market capitalization can be obtained at the end of the fiscal year between 2005 and 2012.
5. Corporate governance information can be obtained from NEEDS CGES between 2005 and 2011.

We select 17,869 firm-year observations meeting these requirements. We show the basic statistics and correlation in Tables 2 and 3.

TABLE 2. BASIC STATISTICS

	Mean	Standard deviation	Skewness	Kurtosis	1Q	2Q	3Q
PBR <sub>t</sub>	1.258	3.339	60.254	4939.364	0.581	0.882	1.392
Profitability <sub>t</sub>	0.054	0.301	-47.931	3189.547	0.022	0.048	0.087
Leverage <sub>t</sub>	0.510	0.208	-0.088	-0.809	0.352	0.519	0.670
Scale <sub>t</sub>	10.614	1.671	0.540	0.519	9.472	10.438	11.560
Cash <sub>t</sub>	0.170	0.133	1.692	3.705	0.076	0.134	0.222
C_Age <sub>t</sub>	645.005	275.522	0.049	0.016	456.000	681.000	797.000
Diversification <sub>t</sub>	0.758	0.259	-0.535	-1.225	0.515	0.858	1.000
Overseas <sub>t</sub>	0.132	0.213	1.653	1.917	0.000	0.000	0.215
Foreign <sub>t</sub>	0.089	0.112	1.909	4.673	0.006	0.042	0.135
P_hold <sub>t</sub>	0.086	1.203	49.297	2705.346	0.001	0.005	0.060
BODscale <sub>t</sub>	8.140	3.371	1.420	3.470	6.000	7.000	10.000
M_term <sub>t</sub>	0.205	0.290	2.339	6.937	0.039	0.083	0.213
D_Age <sub>t</sub>	57.426	18.304	-53.823	3103.189	56.000	58.000	61.000
OutsideD <sub>t</sub>	0.092	0.138	1.718	3.116	0.000	0.000	0.167
N_execD <sub>t</sub>	0.280	0.374	1.038	-0.487	0.000	0.000	0.500

TABLE 3. CORRELATION

	PBR <sub>t</sub>	Profitability <sub>t</sub>	Leverage <sub>t</sub>	Scale <sub>t</sub>	Cash <sub>t</sub>	C_Age <sub>t</sub>	Diversification <sub>t</sub>	Overseas <sub>t</sub>	Foreign <sub>t</sub>	P_hold <sub>t</sub>	BODscale <sub>t</sub>	M_term <sub>t</sub>	D_Age <sub>t</sub>	OutsideD <sub>t</sub>	N_execD <sub>t</sub>
PBR <sub>t</sub>	1.000	-0.002	0.091	-0.030	0.022	-0.076	-0.008	0.009	0.062	0.006	-0.008	0.062	-0.023	0.053	-0.003
Profitability <sub>t</sub>	0.390	1.000	-0.045	0.062	0.005	-0.019	0.001	0.012	0.070	0.031	0.033	0.030	-0.004	-0.007	0.015
Leverage <sub>t</sub>	0.135	-0.310	1.000	0.187	-0.489	0.123	-0.145	-0.077	-0.139	-0.016	0.095	-0.051	0.024	0.017	0.029
Scale <sub>t</sub>	0.148	0.041	0.158	1.000	-0.336	0.355	-0.276	0.297	0.579	-0.054	0.570	-0.240	0.090	0.061	0.119
Cash <sub>t</sub>	0.002	0.281	-0.481	-0.310	1.000	-0.343	0.126	0.015	0.030	0.070	-0.224	0.238	-0.057	0.064	-0.006
C_Age <sub>t</sub>	-0.101	-0.182	0.131	0.368	-0.291	1.000	-0.222	0.168	0.081	-0.069	0.270	-0.539	0.112	-0.074	-0.017
Diversification <sub>t</sub>	-0.061	0.051	-0.161	-0.279	0.129	-0.230	1.000	-0.073	-0.139	0.017	-0.188	0.119	-0.006	-0.076	-0.028
Overseas <sub>t</sub>	0.127	0.080	-0.077	0.300	0.018	0.253	-0.107	1.000	0.365	-0.020	0.130	-0.111	0.040	0.032	0.032
Foreign <sub>t</sub>	0.263	0.265	-0.188	0.660	0.020	0.130	-0.162	0.373	1.000	-0.019	0.290	-0.070	0.017	0.176	0.095
P_hold <sub>t</sub>	-0.102	0.099	-0.122	-0.498	0.286	-0.406	0.226	-0.210	-0.299	1.000	-0.037	0.070	-0.012	-0.005	-0.004
BODscale <sub>t</sub>	0.120	0.060	0.092	0.574	-0.227	0.287	-0.194	0.147	0.342	-0.326	1.000	-0.193	0.059	0.000	-0.051
M_term <sub>t</sub>	0.020	0.128	-0.094	-0.259	0.211	-0.509	0.157	-0.151	-0.116	0.485	-0.206	1.000	-0.068	0.000	-0.022
D_Age <sub>t</sub>	-0.074	-0.112	0.086	0.378	-0.187	0.451	-0.183	0.216	0.164	-0.297	0.261	-0.247	1.000	-0.001	0.010
OutsideD <sub>t</sub>	0.135	0.011	0.025	0.076	-0.015	-0.029	-0.099	0.002	0.110	-0.191	0.083	-0.050	0.106	1.000	0.190
N_execD <sub>t</sub>	0.064	0.032	0.042	0.187	-0.018	0.026	-0.070	0.046	0.154	-0.081	-0.013	-0.089	0.138	0.209	1.000

Note: The upper right is Pearson's correlation and the lower left is Spearman's correlation.

## V. Research Results

### 1. Results of H1

We show the results of Hypothesis 1. We examine the relationship between the ratio of outside or non-executive directors to the total and the investment cash outflow ratio in the hypothesis. We show the results in Table 4. This table shows that a higher ratio of outside or non-executive leads to a higher investment cash outflow ratio. This suggests that outside

TABLE 4. RESULTS OF HYPOTHESIS 1

	Coefficient	t value	p value
Coefficient	0.056	10.431	0.000
PBR <sub>t</sub>	0.001	6.939	0.000
Profitability <sub>t</sub>	0.007	5.363	0.000
Leverage <sub>t</sub>	-0.030	-13.665	0.000
Scale <sub>t</sub>	0.002	4.010	0.000
Cash <sub>t</sub>	-0.012	-3.332	0.001
C_Age <sub>t</sub>	0.000	-6.261	0.000
Diversification <sub>t</sub>	-0.002	-1.163	0.245
Overseas <sub>t</sub>	0.020	8.529	0.000
Foreign <sub>t</sub>	0.028	6.034	0.000
P_hold <sub>t</sub>	0.000	0.478	0.633
BODscale <sub>t</sub>	0.000	3.444	0.001
M_term <sub>t</sub>	0.012	7.645	0.000
D_Age <sub>t</sub>	0.000	-3.670	0.000
OutsideD <sub>t</sub>	0.011	3.702	0.000
N_execD <sub>t</sub>	0.003	3.012	0.003
Industry		included	
Year		included	
Adjusted R2		0.148	

TABLE 5. RESULTS OF HYPOTHESIS 2

	Coefficient	t value	p value
Coefficient	0.057	10.601	0.000
PBR <sub>t</sub>	0.001	6.985	0.000
Profitability <sub>t</sub>	0.007	5.407	0.000
Leverage <sub>t</sub>	-0.030	-13.679	0.000
Scale <sub>t</sub>	0.001	3.898	0.000
Cash <sub>t</sub>	-0.012	-3.337	0.001
C_Age <sub>t</sub>	0.000	-6.232	0.000
Diversification <sub>t</sub>	-0.002	-1.152	0.249
Overseas <sub>t</sub>	0.020	8.554	0.000
Foreign <sub>t</sub>	0.027	5.958	0.000
P_hold <sub>t</sub>	0.000	0.472	0.637
BODscale <sub>t</sub>	0.000	3.168	0.002
M_term <sub>t</sub>	0.012	7.670	0.000
D_Age <sub>t</sub>	0.000	-3.670	0.000
OutsideD <sub>t</sub> , D_OutsideD1 <sub>t</sub>	-0.003	-0.456	0.649
OutsideD <sub>t</sub> , D_OutsideD2 <sub>t</sub>	0.013	4.233	0.000
N_execD <sub>t</sub>	0.003	2.929	0.003
Industry		included	
Year		included	
Adjusted R2		0.148	

directors or non-executive directors promote risk-taking activities in firms because they have the incentive to make investment decisions with a greater shareholder perspective and provide information or networks of business opportunities for growth.

TABLE 6. RESULTS OF HYPOTHESIS 3 OF MODEL 3a AND 3b

	Model 3a			Model 3b		
	Coefficient	t value	p value	Coefficient	t value	p value
Coefficient	0.056	10.479	0.000	0.056	10.541	0.000
PBR <sub>t</sub>	0.001	4.339	0.000	0.001	4.673	0.000
Profitability <sub>t</sub>	0.007	5.429	0.000	0.007	5.456	0.000
Leverage <sub>t</sub>	-0.031	-13.826	0.000	-0.031	-13.967	0.000
Scale <sub>t</sub>	0.002	4.145	0.000	0.002	4.213	0.000
Cash <sub>t</sub>	-0.012	-3.388	0.001	-0.013	-3.504	0.000
C_Age <sub>t</sub>	0.000	-6.339	0.000	0.000	-6.394	0.000
Diversification <sub>t</sub>	-0.002	-1.256	0.209	-0.002	-1.301	0.193
Overseas <sub>t</sub>	0.020	8.544	0.000	0.020	8.535	0.000
Foreign <sub>t</sub>	0.027	5.856	0.000	0.026	5.653	0.000
P_hold <sub>t</sub>	0.000	0.480	0.631	0.000	0.478	0.632
BODscale <sub>t</sub>	0.000	3.441	0.001	0.000	3.334	0.001
M_term <sub>t</sub>	0.012	7.569	0.000	0.012	7.546	0.000
D_Age <sub>t</sub>	0.000	-3.678	0.000	0.000	-3.678	0.000
OutsideD <sub>t</sub>	0.007	2.232	0.026	0.005	1.369	0.171
N_execD <sub>t</sub>	0.003	3.003	0.003	0.003	2.927	0.003
PBR <sub>t</sub> *OutsideD <sub>t</sub>	0.002	2.904	0.004			
PBR <sub>t</sub> *OutsideD <sub>t</sub> .D_OutsideD1 <sub>t</sub>				0.001	1.125	0.261
PBR <sub>t</sub> *OutsideD <sub>t</sub> .D_OutsideD2 <sub>t</sub>				0.004	3.717	0.000
Industry		included			included	
Year		included			included	
Adjusted R2		0.148			0.148	

## 2. Results of H2

Secondly, we present the results of Hypothesis 2. We analyze the differences in effects of outside directors on aggressiveness in undertaking risk-taking activities between firms with only one outside director and those with over two directors to examine the window-dressing hypothesis. We show the results in Table 5. This table shows that firms with one outside director invest in long-term capital less aggressively. We surmise that firms with only one outside director do not promote risk-taking activities because of a lack of information sharing or communication with investors, and they do not play a sufficient role in the growth of the firm. This is consistent with the window-dressing perspective.

## 3. Results of H3

We show the results of Hypothesis 3. We examine the differences in the effects of appointing outside or non-executive directors in focusing on business opportunities and firm age. First, we investigate the differences in effects of appointment of outside directors between firms with higher business opportunities and those with lower ones. We add the variable of the crossing term of the outside director ratio (OutsideD) and price book-value ratio (PBR) into Model 1. In addition, we divide the variable of the crossing term into two groups (firms with only one outside director, and firms with more than one outside director) to examine the



TABLE 7. RESULTS OF HYPOTHESIS 3 OF MODEL 4a AND 4b

	Model 4a			Model 4b		
	Coefficient	t value	p value	Coefficient	t value	p value
Coefficient	0.055	10.241	0.000	0.056	10.323	0.000
PBR <sub>t</sub>	0.001	6.946	0.000	0.001	6.947	0.000
Profitability <sub>t</sub>	0.007	5.369	0.000	0.007	5.389	0.000
Leverage <sub>t</sub>	-0.031	-13.680	0.000	-0.031	-13.699	0.000
Scale <sub>t</sub>	0.002	4.040	0.000	0.002	3.948	0.000
Cash <sub>t</sub>	-0.012	-3.358	0.001	-0.012	-3.404	0.001
C_Age <sub>t</sub>	0.000	-5.059	0.000	0.000	-4.799	0.000
Diversification <sub>t</sub>	-0.002	-1.170	0.242	-0.002	-1.136	0.256
Overseas <sub>t</sub>	0.020	8.545	0.000	0.020	8.560	0.000
Foreign <sub>t</sub>	0.028	6.011	0.000	0.027	5.956	0.000
P_hold <sub>t</sub>	0.000	0.487	0.626	0.000	0.483	0.629
BODscale <sub>t</sub>	0.000	3.398	0.001	0.000	3.193	0.001
M_term <sub>t</sub>	0.012	7.657	0.000	0.012	7.628	0.000
D_Age <sub>t</sub>	0.000	-3.676	0.000	0.000	-3.658	0.000
OutsideD <sub>t</sub>	0.014	2.323	0.020	0.015	2.431	0.015
N_execD <sub>t</sub>	0.003	3.020	0.003	0.003	2.986	0.003
C_Age <sub>t</sub> •OutsideD <sub>t</sub>	0.000	-0.666	0.505			
C_Age <sub>t</sub> •OutsideD <sub>t</sub> •D_OutsideD1 <sub>t</sub>				0.000	-1.910	0.056
C_Age <sub>t</sub> •OutsideD <sub>t</sub> •D_OutsideD2 <sub>t</sub>				0.000	-0.534	0.593
Industry		included			included	
Year		included			included	
Adjusted R2		0.148			0.148	

window-dressing hypothesis. We show the results in Table 6. This table shows that firms with higher potential for growth undertake more risky projects if they appoint outside directors. However, it shows that firms with only one outside director cannot achieve the effect of greater aggressiveness in undertaking risk-taking activities.

Then, we investigate how outside directors work for risk-taking activities by adding the crossing term of the outside director ratio (OutsideD) and firm age (C\_Age) into Model 1. In addition, we divide the variable of the crossing term into two groups (firms with only one outside director, and firms with more than one outside director) to examine the window-dressing hypothesis. We show the results in Table 7. This table shows that older firms do not undertake more risky projects if they appoint outside directors. Meanwhile, it shows that older firms with only one outside director invest more passively. As explained before, Japanese firms have been under pressure to introduce outside directors or separate functions between execution and monitoring from some regulators or proxy advisory firms; therefore, some firms have appointed only one outside director with the function of execution. However, the appointment of only one outside director may lead to fewer risk-taking activities. The result is consistent with the result of Model 3b.

#### 4. Additional Analyses

Finally, we calculate firm performance after the appointment of outside directors. We divide the sample into three groups: the first is firms with no outside directors, the second is

TABLE 8. TRENDS OF SALES AND OPERATING INCOME AFTER INVESTMENT

## Panel A Sales

Mean	t	t+1	t+2	t+3	t+4
Group1 No outside directors	1.000	0.990	0.981	0.962	0.963
Group2 One outside director	1.000	0.989	0.979	0.968	0.970
Group3 More than one outside director	1.000	0.996	0.992	0.982	0.999
t value (Group 1-2)	0.000	0.258	0.413	-0.784	-0.727
p value (Group 1-2)	1.000	0.754	0.680	0.433	0.467
t value (Group 1-3)	0.000	-1.250	-1.310	-2.239	-2.800
p value (Group 1-3)	1.000	0.211	0.190	0.025	0.005
t value (Group 2-3)	0.000	-0.982	-1.430	-1.280	-1.983
p value (Group 2-3)	1.000	0.326	0.153	0.201	0.047
Median	t	t+1	t+2	t+3	t+4
Group1 No outside directors	1.000	1.000	0.978	0.946	0.936
Group2 One outside director	1.000	0.993	0.972	0.946	0.925
Group3 More than one outside director	1.000	0.995	0.975	0.952	0.951
Z value (Group 1-2)	0.000	-1.626	-0.979	-0.079	-0.407
p value (Group 1-2)	1.000	0.104	0.328	0.937	0.684
Z value (Group 1-3)	0.000	-0.718	-0.487	-1.421	-3.019
p value (Group 1-3)	1.000	0.473	0.626	0.155	0.003
Z value (Group 2-3)	0.000	-0.730	-0.373	-1.251	-2.821
p value (Group 2-3)	1.000	0.465	0.709	0.211	0.005

## Panel B Operating Income

Mean	t	t+1	t+2	t+3	t+4
Group1 No outside directors	0.048	0.045	0.045	0.043	0.047
Group2 One outside director	0.047	0.045	0.047	0.045	0.048
Group3 More than one outside director	0.047	0.047	0.047	0.046	0.050
t value (Group 1-2)	0.893	-0.082	-1.259	-1.470	-0.366
p value (Group 1-2)	0.372	0.935	0.208	0.142	0.714
t value (Group 1-3)	0.601	-0.831	-1.222	-1.474	-1.456
p value (Group 1-3)	0.548	0.406	0.222	0.141	0.146
t value (Group 2-3)	0.028	-0.566	-0.030	-0.060	-1.058
p value (Group 2-3)	0.978	0.572	0.976	0.952	0.290
Median	t	t+1	t+2	t+3	t+4
Group1 No outside directors	0.044	0.038	0.035	0.033	0.036
Group2 One outside director	0.043	0.038	0.036	0.035	0.036
Group3 More than one outside director	0.045	0.039	0.037	0.036	0.038
Z value (Group1-2)	-0.649	-0.192	-0.976	-1.478	-0.686
p value (Group 1-2)	0.516	0.847	0.329	0.139	0.493
Z value (Group 1-3)	-1.145	-1.419	-2.367	-3.294	-3.399
p value (Group 1-3)	0.252	0.156	0.018	0.001	0.001
Z value (Group 2-3)	-1.466	-1.342	-1.216	-1.580	-2.353
p value (Group 2-3)	0.143	0.179	0.224	0.114	0.019

firms with one outside director, and the third is firms with more than one outside director. We then compare the trends of sales and operating income over five years. We calculate the ratio of sales in each year divided by the sales in the first year, and the ratio of operating income divided by operating assets at the end of the first fiscal year, to measure each trend. In addition, we analyze the differences in each group by using Student's t-test and Mann-Whitney's U-test. We show the trends of the mean and median of sales in Panel A of Table 8. Panel A shows that firms with more than one outside director achieve higher sales than other groups statistically significantly over five years by using Student's t-test and Mann-Whitney's U-test. In addition, we present the trends of the mean and median of operating income in Panel B of Table 8. Panel B shows that firms with more than one outside director tend to achieve higher operating income in five years than other groups, although it is statistically significantly only in Mann-Whitney's U-test.

## VI. *Conclusions*

This paper examines whether changes in corporate governance structure affect risk-taking activities in Japanese firms. New corporate governance systems have been imported into Japanese firms from the US since the late 1990s. However, Japanese firms have not necessarily been able to improve their financial performance. Rather, performance has worsened recently. Why are Japanese firms unable to recover their financial performance despite the reforms? We speculate that the reforms may affect risk-taking activities in Japanese firms. Therefore, we examine the relationship between changes in corporate governance structure and risk-taking activities in Japanese firms.

In general, outside directors are expected to play two roles for shareholders: advisory and monitoring. The separation of functions between execution and monitoring makes decision making on investment shareholder focused. Shareholders generally prefer more risk-taking activities than other stakeholders, including top management and insiders. Therefore, we can speculate that a higher ratio of outside or non-execution directors to the total leads to more risk-taking activities. On the other hand, some Japanese firms have appointed an outside director due to pressure from some regulators or proxy advisory firms. These firms tend to appoint only one outside director because it is a minimum requirement. We estimate that it is more difficult for these firms to have a shareholder perspective or acquire information or networks for higher growth or profitability. This is a window-dressing view, and not an advisory or monitoring view, of boards of directors. We examine whether the appointment of outside or non-executive directors affects risk-taking activities and how differences in adoption affect them.

Firstly, we analyze whether outside directors and non-executive directors affect risk-taking activities in Japanese firms. We focus on the level of investment cash outflows and examine the relationship between the level of investment and the ratio of outside or non-executive directors to the total. The results show that firms with more outside or non-executive directors promote risk-taking activities more aggressively.

Secondly, we examine the differences of effects on risk-taking activities between firms with one outside director and those with more than one outside director. The result shows that firms with more than one outside director invest in long-term capital more actively, while those

with only one outside director invest more passively. We conjecture that the results of firms with more than one outside director are consistent with advisory and monitoring views and that the results of those with only one outside director are consistent with a window-dressing view.

Thirdly, we focus on two situations in which firms need to undertake more risky projects. The first is firms with business opportunities, and the second is older firms. First, we shed more light on the issue of how the relationship between the outside director ratio and level of investment cash outflows changes in response to business opportunities. The result shows that firms with higher potential for growth and more than one outside director promote risk-taking activities, but that firms with higher potential for growth and only one outside director do not. These facts are consistent with prior views. Then, we focus on older firms. As we explained before, the ratio of older firms in Japan is higher than in other countries. We assume that this is one of the reasons that Japanese firms have been risk averse. We analyze how the relationship between the outside director ratio and level of investment cash outflows changes in response to firm age. The result shows that older firms with one outside director undertake relatively fewer risk-taking activities.

Finally, we calculate the trends of sales and operating income in the consequent five years to examine the effects of risk-taking activities. The results show that firms with more than one outside director can achieve a higher growth ratio than those with no outside director or only one outside director. These facts suggest that risk-taking activities have economic effects on firms.

In Japan, reforms of corporate governance structure have been conducted since the late 1990s. However, firm performance has not necessarily improved in the past 20 years. We need to clarify the reasons that these gaps have occurred and how to overcome them.

The results of this study suggest that appointment of outside directors or the separation of functions between execution and monitoring may increase their long-term investment by the improvement of advisory and monitoring functions in boards of directors, but the appointment of only one outside director due to pressure by some regulators or proxy advisory firms may have a negative impact on risk-taking activities and future firm performance. These facts imply that we need to promote the adoption based on an essential understanding of the advisory and monitoring functions of directors, not based on mandatory regulations or “one size fits all” recommendations.

This paper has some limitations. Firstly, we cannot identify the causal relation between the adoption of new corporate governance structures and risk-taking activities. The results show factors influencing firms’ adoption of new corporate governance structures, not what economic effects of risk-taking activities arise in adopting new structures. Secondly, we have not examined other reforms of corporate governance structure, like diversity or female ratio of boards of directors. These are issues to be tackled in the future.

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