CORPORATE OWNERSHIP STRUCTURE AND RISK-TAKING: EVIDENCE FROM JAPAN

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Abstract

We examine the relationship between ownership structure and corporate risk-taking in Japan over the sample periods of 2000~2010. Reflecting the ongoing changes in the ownership structure in Japan, we incorporate the various kinds of insider and outsider ownership in the analysis. Ownership such as concentrated ownership, ownership by closely related parties, financial institutions comprising banks and insurance companies and managers are categorized into inside ownership, while ownership by foreigners or financial institution such as investment trusts or pension funds are categorized into outside ownership. The ownership structure is found to have different impact on the firm's risk-taking behavior. The study shows that concentrated ownership or ownership by closely related parties affect the firm risks in a convex manner and encourages the firm management to take more risk when the firms have growth opportunities. On the other hand, ownership by financial institutions such as bank and insurance companies, does not seem to affect the firm risk level. This implies that the financial institutions fail to play their role of a shareholder monitor. When managerial ownership is allowed, it is found that Japanese managers' incentives are aligned with those of shareholders. Contrary to the conventional entrenchment hypothesis, however, managers seem to take more risk as the share of managerial ownership increases. Foreign investors are found to enhance corporate risk-taking in a monotonic manner and do not bias corporate investment in a conservative direction in pursuit of their short-term gains. Domestic institutions such as investment trusts or pension funds are found to neither affect the firm risk level nor enhance the firm value.

Keywords: Corporate Ownership Structure, Risk Taking, Managers' Incentives, Financial Institution Ownership

1. INTRODUCTION

Much of the previous studies on corporate governance and ownership structure examines the problem of separation between ownership and management (Berle and Means 1932, Jensen and Meckling 1976, Fama and Jensen 1983a 1983b). In particular, they compare the relationship between ownership concentration and other variables such as firm performance (Morck et al. 1988), value (Slovin and Sushka 1993), competitiveness (Gadhoum 1999), and its financial decisions and policies (Stulz 1988, Shleifer and Vishny 1997).

However, one critical issue remains largely unexamined - the influence of corporate ownership on the risk-taking behavior of firms. Berle and Means (1932) first evoked the link between ownership structure and firm risk-taking. They argue that ownership-management separation leaves room for conflicting goals to arise. In terms of risk-taking, owners derive greater incentives and rewards than the managers do and therefore favor riskier projects

to maximize the call option value embedded in their equity holding. On the other hand, managers often have both the discretion and incentive to pursue strategies and practices that benefit themselves at the expense of shareholders. Therefore, managers whose employment security and income are tied to one firm would behave risk-averse in the absence of monitoring and incentive alignment.

Wright et al. (1996) pointed out that shareholders with significant stakes in a company can shape the nature of its corporate risk-taking, which may affect a firm's ability to compete and eventually its survival. In this context, Whitley (2000) argues that differences in corporate governance have an important bearing on firms' risk-taking, therefore on the capacity to innovate.

We fill the hole in the corporate governance research by examining the relationship between ownership structures and corporate risk-taking in Japan. Japan is of particular interest since ownership structure in Japan is unique differing from that commonly found in Anglo American companies. For example, in the United States, the separation of ownership from control and the presence of atomistic shareholders have induced conflicts of interest between managers and shareholders. Since the exercise of ownership rights is dispersed due to the dispersed ownership in the U.S., managers are typically monitored through mechanisms such as managerial incentives (which includes stocks and options, performance-based compensation), hostile takeovers, managerial labor markets, active investors and boards of directors.

In contrast, the ownership structure of Japanese firms used to be relationship-based and relatively illiquid. Managers and foreigners owned limited stakes in companies and cross-shareholding between banks and corporations and among corporations were extensive. Japanese managers are monitored and intervened by large shareholders or creditors, typically banks.

Most of the empirical work on corporate governance implicitly assumes that shareholders are monolithic stakeholder groups whose interest are homogenous with a sole focus on the goal of maximizing returns on their equity investments. However, in many other economies, such as Japan, this assumption may be an oversimplification since a diverse group of shareholders owns shares for multiple purposes (Gedajlovic and Shapiro 2002, Gedajlovic et al. 2005).

The unique Japanese ownership system took root during the post-war period and was remarkably stable, lasting for almost three decades until it underwent dramatic changes in the early 1990s. For example, foreign investors began to increase their stakes in Japanese companies, especially in larger firms. The ratio of shares held by stable shareholders began to plummet from previous heights.

When we investigate ownership structure in Japan, we broadly classify them into insider and outsider ownership over the sample periods of 2000~2010. As a risk-taking measure, we use the stock market information. We also investigate the relationship between risk-taking behavior and firm performance to appraise whether the risk-taking behavior led to firms' enhanced performance. While this research is very similar in aims and methodology with Nguyen (2011) who studied the relationship between corporate governance and risk-taking in Japan, our research differs from Nguyen (2011) in two points. First, the ownership measure is more comprehensive in that we categorize ownership into the inside and outside ownership. Second, Nguyen (2011) used an older sample period, where ownership was still more concentrated and banks owned larger stakes and cross-holdings were still more prevalent, while our data set is more recent one.

The paper is organized as follows. Following the introduction, chapter 2 surveys the literature on the relationship between ownership structure and corporate risk-taking. Chapter 3 presents data and empirical estimation results and chapter 4 concludes the paper.

2. LITERATURE REVIEW

Agency cost is an economic concept concerning the fee to a 'principal' (an organization, person or group of persons) when the principal chooses or hires an 'agent' to act on its behalf. Because the two parties have different interests and the agent has more information, the principal cannot directly ensure that its agent is always acting in his (the principal's) best interests. Agency theory in the perspective of ownership structure and firm risk-taking is first developed by Berle and Means (1932) and then theorized by Monsen and Downs (1965) and Monsen et al. (1968). They argue that ownership-management separation leaves room for conflicting goals to arise. In terms of risk-taking, owners derive greater incentives and rewards than the managers do and therefore favor riskier projects to maximize the call option value embedded in their equity holding.

On the other hand, managers often have both the discretion and incentive to pursue strategies and practices that benefit themselves at the expense of shareholders. Managers may engage in short-run cost augmenting activities to enhance their nonsalary income and/or they may indulge their need for power, prestige, and status by attempting to maximize corporate size and growth rather than corporate profits. Naturally, managers will opt to invest in less risky projects to protect their invested non-diversifiable human capital in the firm. Consequently, managers may pursue non-value-maximizing strategies unless they have proper incentives or face appropriate pressure such as pressures from managerial labor markets (Fama 1980), the influence of capital market signals (Easterbrook 1984), or the threat of hostile takeovers (Martin and McConnell 1991).

Jensen and Meckling (1976) contended that agency costs decline as managerial ownership rises since the financial interests of corporate insiders (managers) and shareholders increasingly converge. Demsetz and Lehn (1985) argue that within firms facing more uncertain environments, insider's actions are less observable and thus the benefits of ownership are greater. For example, if information asymmetry is an increasing function of uncertainty, this would suggest a positive relationship between business risk-taking and managerial ownership. Amihud and Lev (1981) find that inside managers with large stakes of corporate capital are less

motivated by considerations of risk-aversion when evaluating merger opportunities.

Agency theory also provides a potential link between large but external shareholders, such as blockholders and institutional investors and corporate risk-taking. Contrary to the notion of dispersed ownership in modern corporations, outside the U.S., large shareholders are prevalent and exert control through having ownership in a large group of firms (Shleifer and Vishny 1986, La Porta et al. 1999, Claessens et al. 2000).

One argument that justifies a positive relationship between risk-taking and ownership is associated with monitoring. While dispersed atomistic shareholders do not have incentives to monitor the manager, which aggravates conflicts between shareholders and managers, shareholders with large equity stakes in the company have incentives to monitor the manager with the purpose of value maximization by taking riskier projects (Shleifer and Vishny 1986, Holderness 2009). Therefore, shareholders with incentives to monitor will end up taking more risks.

However, if blockholders have incentives and opportunities to consume corporate benefits to the exclusion of small shareholders, their preference of risk levels may conflict with that of other shareholders. For example, sophisticated institutional investors have been suggested to encourage strategies that provide consistent and predictable revenues, rather than high risk-high return investment. In addition, shareholders with significant ownership stakes might be reluctant to take more risk in order to secure their private benefits of control.[8]

While various studies have examined managerial ownership (Denis et al. 1997, Amihud and Lev 1981), the structure of CEO incentives (Coles et al. 2006) and legal protection of investors (John et al. 2008), the role of the largest shareholders on corporate risk-taking has received limited attention except a few research like Wright et. al. (1996). Hypothesizing the positive influence of institutional ownership on firms' risk-taking, Wright et al. (1996) considers the inside managers and blockholders' ownership simultaneously. However, Wright et al. (1996) do not find a significant relationship between the latter and risk-taking. Gadhoum and Ayadi (2003) test whether the ownership structure of Canadian firms is negatively related to firm risk. The authors find a nonlinear relationship between ownership and risk-taking, which is high at both low and high levels of ownership. John et al. (2008) argue that undiversified large shareholders assumed to be prevalent in countries with low investor protection, take less risky projects. Using a large cross-country sample, Paligorova (2009) finds a positive relationship between corporate risk-taking and equity ownership of the largest shareholders and finds that this result is entirely driven by investors with a diversified portfolio.

Regarding the research on corporate governance in Japan, many authors examined the relationship between ownership structure and firm performance from the mid-1980s to the late 1990s. Gedajlovic and Shapiro (2002) found a positive relationship between ownership concentration and financial performance, consistent with agency theory. Findings by Chen et al. (2003) suggest a greater alignment of managerial interests with those of stockholders. Hiraki et al. (2003) show that the cross shareholdings between the main bank and client firms are negatively related to firm value. After examining six distinct categories of Japanese shareholders, Gedajlovic et al. (2005) argued that the relationship between the equity stakes of a particular category of investors and a firm's financial performance and investment behavior is more complex than is depicted in simple principal-agent representations. Investigating the relationship between ownership structure and Japanese firms' risk-taking behavior, Nguyen (2011) confirms that the increased involvement of foreign investors motivated by shareholder value is likely to have triggered a major shift in their risk-taking behavior.

3. DATA AND EMPIRICAL ESTIMATION RESULTS

3.1 Evolution of corporate ownership structure in Japan

Miyajima and Kuroki (2010) extensively describe the ownership trends in Japan and this section is heavily indebted to Miyajima and Kuroki (2010). The ownership structure in Japan that took root during the post-war period had become well established by the late 1960s and was remarkably stable for almost three decades. If the ownership is categorized into insider and outsider ownership[9], insider ownership is dominant during the periods. As it enters the 21st century, however, it became more of an outsider system in the sense that outsider ownership became more prevalent.[10]

In the mid-1990s, when it became evident that the Japanese economy faced prolonged stagnation, the costs of Japan's unique ownership structure came under scrutiny. The faithful and stable cross-shareholding system had the potential to foster moral hazard among incumbent managers. As management became entrenched, this lowered performance due either to over-investment or low effort levels in relation to capital and labor input. It also appeared that banks failed to act as delegated monitors as they are supposed to do. This reflects the banks' conflicts of interest, which arise from the fact that banks have to act as shareholders and creditors at the same time.[11]

After the banking crisis, and particularly after 1999, banks reduced shareholdings mainly by selling

[8] A concentrated ownership structure has been suggested as one of the leading indicators of an agency problem between controlling and minority shareholders (La Porta et al. 2000; Shleifer & Vishny 1997), in which the controlling shareholders might take advantage of their control to expropriate minority shareholders wealth through activities such as tunneling.

[9] Insider includes ownership by financial institutions and business corporations, whereas outsider includes ownership by investment trusts, annuity trusts, securities companies, foreigners and individuals.

[10] For a comprehensive survey of the literature on the discussion of Japanese model of corporate governance, see Yafeh (2000) and Frank et. al. (2012)

[11] For a comprehensive survey of the literature on the discussion of Japanese model of corporate governance, see Yafeh (2000) and Frank et. al. (2012)

shares with higher liquidity and higher expected rates of return, while holding onto shares of firms with which they had long-term relationships. At the same time, financial market deregulation and the wider availability of equity and forms of non-mediated debt has lessened the dependence of large Japanese firms on banks for financial support.

Profitable firms with easy access to capital markets and high levels of foreign ownership prior to the banking crisis tended to wind down cross-shareholding, while low-profitability firms with difficulty accessing capital markets and low levels of foreign ownership in the early 1990s tended to maintain cross-shareholding arrangements with their banks. Additionally, tax code and accounting changes have compelled financial and non-financial firms to unwind their equity positions in affiliated companies (Fukao 1999, Yasui 2001) Miyajima and Kuroki (2010) notes that the power of outside investors is increasing in Japan. In particular, foreign investors began to increase their stakes in Japanese companies in the early 1990s, especially in larger firms. At the same time, the traditional stable shareholders appear to be diminishing.

3.2 Data and model

In order to investigate the effect of ownership structure on risk, we include 1479 Japanese firms listed on the Tokyo Stock Exchange in the sample over the period of 2000-2010.[12] Financial information (accounting data and stock returns) and data on ownership structure are obtained from the NEEDS database supplied by the Nikkei newsgroup.

The empirical model we use to estimate the relationship between ownership and risk-taking is represented in equation (1). We also investigate whether risk-taking enhances firm performance, as modeled in equation (2). All the explanatory variables are lagged by one period from the dependent variable to clarify the causality with risk or firm performance. We employ panel regression methodology in order to estimate equations.

$$\text{Risk}_{it} = \beta_1 * \text{Ownership}_{it-1} + \beta_2 * \text{Control}_{it-1} + \beta_3 * * \text{dummy} + \varepsilon_{it} \quad (1)$$

$$\text{Performance}_{it} = \beta_1 * \text{Ownership}_{it-1} + \beta_2 * \text{Control}_{it-1} + \beta_3 * \text{Risk}_{it-1} + \beta_4 * \text{dummy} + \varepsilon_{it} \quad (2)$$

where *i* and *t* represent particular firm and time.

Measurement of risk-taking

The decomposition of risk into systematic and firm-specific risk component seems particularly relevant in analyzing corporate risk-taking. Following Nguyen (2011), we use firm-specific idiosyncratic risk as a proxy for firms' risk. The large idiosyncratic component of stock volatility is likely to reflect the market power and other competitive advantages controlled by the firm.[13] Since competitive advantages also result in higher performance, the strategy perspective suggests a positive relation between firm performance and firm-specific risk.

Many studies highlight the role of firm-specific risk. Goyal and Santa-Clara (2003) claim that idiosyncratic risk contributes to predicting future stock returns. Campbell et al. (2001) suggest that the higher idiosyncratic risk displayed by US firms reflects their greater emphasis on growth strategies. Xu and Malkiel (2003) establish that idiosyncratic volatility is positively associated with expected earnings growth. Morck et al. (2000) argue that economies with better investor protection are characterized by higher firm-specific risk and higher performance because idiosyncratic volatility generates information that contributes to more efficient resource allocation. Ferreira and Laux (2007) confirm this implication by showing that fewer impediments to shareholder rights (i.e., better corporate governance) increase the incentive to collect firm-specific information and act upon it, which results in higher idiosyncratic volatility.

In order to estimate firm-specific risk, we use the three-factor model developed by Fama and French (1993). They find that firms that have high BE/ME (a low stock price relative to book value) tend to have low earnings on assets while low BE/ME (a high stock price relative to book value) is associated with persistently high earnings. Size is also related to profitability. Controlling for book-to-market equity, small firms tend to have lower earnings on assets than big firms do.

Their three-factor model is specified as follows to decompose the total return into systematic and idiosyncratic risk in equation (3),

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{m,j}(R_{M,t} - R_{f,t}) + \beta_{SMB,i}R_{SMB,t} + \beta_{HML,i}R_{HML,t+}\varepsilon_{i,t} \quad (3)$$

where $R_{SMB,t}$, $R_{HML,t}$ are the return proxies for the size variable and the book-to-market variables, respectively. In order to construct the two proxies for the size and book-to-market variables, we have followed the exact procedure of Fama and French (1993) and Nguyen (2011) by classifying firms in two size of small and large, and 3 B/M groups of low, medium and high ratios.

Market return ($R_{M,t}$) is the value-weighted return on a portfolio containing all stocks. The risk-free rate ($R_{f,t}$) is the 1-month repo rate reported by the Bank of Japan. The difference $R_{M,t} - R_{f,t}$ represents the monthly excess return on the market index. Idiosyncratic or firm-specific risk (SPEC) is computed as the root means square of residuals, $\varepsilon_{i,t}$, i.e., total variability not explained by the three-factor model. Total risk (TOTAL) is measured by the standard deviation of the firm's monthly stock return using 60 months.

[12] Financial institutions are excluded due to their particular performance and risk-taking metrics. Firms with negative equity are also excluded due to potentially excessive risk-taking behavior.

[13] Strategic management research emphasizes the importance of firm-specific risk in view of achieving competitive advantages. Rumelt (1974) and Porter (1980) advise firms to develop strategies to create entry barriers and build up market power, by way of product differentiation and/or economies of scale, which obviously increases firm specific risk. By gaining market power, firms become less exposed to market-wide fluctuations; hence their lower systematic risk and higher idiosyncratic risk.

Ownership variables

Ownership structure in Japan can be broadly classified into insider and outsider ownership. Here, insider investors[14] refer to those who derive 'private benefit', which may reflect the goal of other activities they are engaged in as corporations, the prospects of succession or inheritance of the family firms, as well as financial returns from their investments. Examples of insider investors are family, managers and stable investors. Stable shareholders (*antei kabunushi* or *seisaku toshika*) usually include banks and insurance companies and affiliated firms. As these firms are not only a corporation's shareholders but are also creditors, buyers, suppliers and business partners, they are well positioned to monitor the policies of firms within their network and to enforce group norms favoring growth and stability rather than profitability objectives.

On the other hand, outsider investor's sole interest is restricted to the financial returns of the companies they invest. They do not derive "private benefits" that may conflict with financial considerations. Outside investors include investors such as small individual investors, financial institutions such as securities houses, mutual funds, investment trusts or pension funds, and foreign investors.

The ownership variables such as 'Largest', 'Cross', 'Fininst', 'Manager' in this study are classified as insider investors, while variables such as 'Foreign' and 'Nbksh2' as outsider investors. The variables are defined in Table 1. Variable 'Largest' is the shares owned by the 10 largest shareholders. It is included in the estimation in order to test for the effect of concentrated ownership on the risk-taking behavior of the firms. In the absence of either capital market constraints or vigilant outside directors, the monitoring of managers by shareholders who hold large blocks of shares (blockholders) takes on heightened significance. Variable 'Cross' represents the shares owned by closely related parties such as affiliated firms). Variable 'Fininst' refers to the financial institutions such as banks and insurance companies, which are stable shareholders. Financial institutions in Japan are not only shareholder but also creditors of the firms. Since creditors have fixed claims, while shareholder has residual claims, creditors have to bear the downside of risk-taking but have nothing to gain beyond their fixed claim, which may lead to the risk aversion of the firm.

'Manager' represents the shares owned by the managers. From an agency perspective, many Japanese managers may have both the incentive and the discretion necessary to pursue their own interests at the expense of shareholders. The closer alignment of interest to that of shareholders induced by managerial share ownership is considered to change the risk-taking behavior of managers and hence improve firm performance.

Since the stakes of outsider investors are typically small, and because such investors are unencumbered by strong ties characterizing relations between stable investors and a focal organization, they can easily sell their shares if they are unsatisfied with the management of the firm. They can exert a disciplining influence by pricing the equities of firms, which do not follow policies consistent with their investment objectives at a discount.

Variable 'Foreign' represents the shares owned by foreigners while 'Nbksh2' represents shares owned by both the investment trusts and pension funds. Since the mid-1990s, foreign ownership of Japanese firms has been rising, climbing to over 18% of all listed Japanese shares at the end of March 2000[15]. Foreign investors might differ from domestic institutions with respect to risk-taking. Foreign investors who inherently lack close ties with domestic firms are likely to actively monitor business decisions by using their votes (Fukao 1999). If that is the case, foreign investors should be expected to be more effective in reducing managers' incentives to avoid risk relative to domestic institutional investors, which may lead to higher risk-taking behaviour. However, if foreign investors are only interested in short-term gains, they might cause corporate investment decisions to be more conservative than those of domestic institutional investors.

Firms wishing to access the capital of market investors must be attuned to the objective of outside investors. In this regard, the investment decision of high-profile money managers such as those in charge of large pension and investment funds are noteworthy insofar as their decision can strongly influence the investment decisions of other market investors (Prevost and Rao 2000). They are supposed to be independent investors with the sole incentive of profit-making influencing the management to act in a way to enhance the firm value by taking risk.

From the agency theory, we can hypothesize the effects of ownership on the risk-taking behavior in the following manner. Since the hypothesis does not predict the definite direction of risk taking behavior, we turn to the empirical estimation results part for the conclusion.

- *Hypothesis 1*: Ownership 'Largest' may increases firms' risk taking
- *Hypothesis 2*: Ownership 'Cross' may increases firms' risk taking
- *Hypothesis 3*: Ownership 'Fininst' may not increases firms' risk taking
- *Hypothesis 4*: Ownership 'Foreign' may increases firms' risk taking
- *Hypothesis 5*: Ownership 'Nbksh2' may or may not increases firms' risk taking

[14] Insider ownership often refers to ownership by management in literature.

[15] *Stock Distribution Survey 2001*

Table 1. Definition of variables

Variable	*Description*	
$Risk_{it}$	Total	Total risk
	Spec	Idiosyncratic risk
Inside $Ownership_{it}$	Largest	Sum of shares owned by 10 largest shareholders
	Cross	Shares owned by those in close relationship such as affiliated firms
	Fininst	Shares owned by financial institution such as banks and insurance companies
	Manager	Shares owned by manager
Outside $Ownership_{it}$	Foreign	Shares owned by foreign institution
	Nbksh2	Shares owned by investment trust and pension funds
Control Variables, X_{it}	SIZE	Log of firm's total asset
	LVG	Leverage, ratio of total debt to total assets
	Earnings	Ratio of EBITDA to total assets
	Liquid	Ratio of liquid assets to total assets
	Q ratio	Market to book value of assets
	ROA	Ratio of operating profits to total assets
	FIXED	Ratio of fixed asset to total assets
	FREQ	Amount of annual trading in the firm's stock scaled by the firm's market capitalization

Control variable

Our regression includes a number of control variables X_{it} that are considered to affect either the firm's risk-taking or the measurement of that risk. The firm's size (SIZE) is the natural logarithm of the firm's total assets. Large firms are expected to be less risky due to their greater ability to diversify risk across product lines. Leverage ratio (LVG) is a debt to asset ratio. Firms with abundant debt are likely to hesitate to take risks. The earnings of the firm (Earnings) represent the ratio of EBITDA to assets. The liquidity of the firm (Liquid) is represented by the liquid asset to total asset ratio. Firms with stable earning streams or sufficient amount of liquid assets can afford to take risks, and are, therefore, expected to act aggressively in terms of risk-taking.

The market-to-book value of assets (Q ratio) is included as a proxy for growth opportunities. Firms with more growth options (high Q ratio) are expected to present a higher risk profile. ROA is the ratio of operating profits to total assets. This variable is included on the presumption that risk-taking is associated with higher profitability.

To control for the risk involved with a higher operating leverage, we use the ratio of fixed to total assets (FIXED). We also control for the effect of equity turnover on volatility by including the amount of annual trading in the firm's stock scaled by the firm's market capitalization (FREQ). Year dummies are included in our estimation.

3.3 Descriptive Statistics

Table 2 presents the descriptive statistics for the study variables. The mean of the sum of shares owned by the 10 largest shareholders (Largest) is 47.2%. Compared to the US where the average reported by Demsetz and Lehn (1985) is 25%, the ownership concentration in Japan appears to be higher. The mean of shares owned by those in close relationship (Cross) is 44.9% similar to the variable 'Largest'. The mean of shares owned by the financial institution is 27.5%. The mean of shares held by managers (Managers) is 5.5%. The mean of foreign ownership (Foreign) is 11.1%, while the mean of shares owned by domestic institutions of the investment trust and pension fund combined (Nbksh2) is relatively small at 2.7%. The standard deviations of all the ownership variables exceed 10%, suggesting that the distribution provides sufficient variation to test for the effect of different ownership on risk-taking.

The mean of total risk is about 15.1% per month, while the mean of idiosyncratic risk is 3.2% per month. The idiosyncratic risk is significantly smaller than in the case of US firms (Campbell et al. 2001, Morck et al. 2000). For the control variables, the mean size of the firm (Size) is 4.896 in log term and the mean ratio of debt to the asset (LVG) is 0.497. The mean ratio of EBITDA to total asset (Earnings) is 0.082. The ratio of liquid asset to total asset (Liquid) is 0.334. The average profitability measured by ROA is 0.019. The fixed ratio is 0.518. Tobin's Q, which represents the growth opportunity, is 1.260 with a standard deviation of 0.021. Finally, the amount of annual trading in a firm's stock is about 0.000023 times the firm's market capitalization.

The pair wise correlations among the major variables are presented in Table 3. The correlations between risk-taking variables and ownership variables are all positive except for the case of ownership variable by financial institution (Fininst). The correlations between risk-taking and the variables which represent firm performance such as earnings or Q ratio are positive. The relationships between risk variables and ROA and Size are negative, which is puzzling, since they are regarded to have a positive relationship. Variables such as debt ratio, equity ratio, and liquid asset ratio have a positive relationship with risk variables.

Table 2. Descriptive statistics

	Mean	*Median*	*Max*	*Min*	*Std. Dev*	*N*
Ownership Variable						
Largest	0.472	0.450	1.000	0.000	0.145	14828
Cross	0.448	0.440	0.980	0.000	0.181	15243
Fininst	0.275	0.270	0.71-	0.000	0.133	14819
Manager	0.055	0.010	0.930	0.000	0.107	14811
Foreign	0.111	0.080	0.840	0.000	0.113	14761
NBKSH2	0.027	0.010	0.520	0.000	0.144	15251
Risk Variables						
Total	0.151	0.130	2.570	0.010	0.091	13986
Spec	0.032	0.030	0.650	0.010	0.021	13790
Control Variables						
Size	4.896	4.830	7.160	1.000	0.626	15251
LVG	0.497	0.500	0.990	0.000	0.216	15218
Equity	0.125	0.110	0.940	0.000	0.083	15208
Earnings	0.082	0.070	0.650	-1.470	0.069	15167
Liquid	0.334	0.310	7.670	0.000	0.188	15250
Diveqty	0.147	0.090	20.270	0.000	0.488	13514
Q ratio	1.260	1.030	102.300	0.000	1.615	15249
ROA	0.019	0.020	6.870	-9.020	0.121	15247
Fixed	0.518	0.520	1.000	0.010	0.201	15250
Age	61.207	62.000	130.000	3.000	23.401	15507
Freq	0.000023	0.000000	0.82000	0.0000	0.00802	13946

Note: *1479 Japanese firms listed on the Tokyo Stock Exchange in the sample over the period of 2000~2010 are included in the analysis and the last column under N represents the number of firms including in calculating descriptive statistics

Table 3. Pair wise correlations

	Total	*Spec*	*Largest*	*Cross*	*Fininst*	*Manager*	*Foreign*	*NBKSH2*
Total	1.00							
Spec	0.87	1.00						
Largest	0.09	0.14	1.00					
Cross	0.06	0.11	0.91	1.00				
Fininst	-0.10	-0.10	-0.44	-0.48	1.00			
Manager	0.13	0.18	0.31	0.31	-0.35	1.00		
Foreign	0.03	0.01	-0.03	-0.03	0.18	-0.08	1.00	
NBKSH2	0.02	0.00	-0.02	-0.04	0.19	0.00	0.16	1.00
Size	-0.11	-0.12	-0.25	-0.28	0.44	-0.34	0.45	0.06
LVG	0.12	0.08	-0.02	0.00	-0.13	0.07	-0.07	-0.11
EQTY	0.12	0.08	-0.02	0.00	-0.13	0.07	-0.07	0.00
Earnings	0.01	0.07	0.27	0.25	-0.08	0.24	0.21	0.08
Liquid	0.16	0.10	-0.02	-0.04	-0.07	-0.11	-0.23	-0.10
Q ratio	0.04	0.07	0.15	0.14	-0.01	0.14	0.27	0.07
ROA	-0.08	-0.04	0.13	0.13	-0.02	0.13	0.18	0.04
Fixed	-0.13	-0.09	-0.12	-0.11	0.13	-0.08	0.03	0.01
Age	-0.11	-0.16	-0.40	-0.40	0.41	-0.45	-0.03	-0.02
Freq	0.41	0.47	0.06	0.06	-0.05	0.07	0.00	0.01

3.4 Estimation results

Effect of ownership variables on risk

Table 4 presents the estimation results of panel regression of idiosyncratic risk (SPEC) on the various kinds of ownership variable along with control variables. Since the Hausman test rejects the validity of using the random effect model, only the estimation results of fixed effect models are presented. The three insider investor variables of 'Largest', 'Cross', and 'Fininst' appear separately in the different equations of (1)~(3). The squares of these variables are added in the equations in order to evaluate the nonlinear effect of ownership on risks. On the other hand, the ownership variables such as 'Manager', 'Foreign' and 'Nbksh2' are always included in the equations.

The shareholders represented by 'Largest' or 'Cross' affect the risk in a convex manner, i.e., they tend to reduce risk at the lower level of ownership while firm's firms' risk-taking increases as the share of their ownership increases. On the other hand, the coefficient of the variable 'Fininst' is not statistically

significant, which implies that the financial institutions such as banks and insurance companies, fail to play the role of a monitor as a shareholder.

Table 4. Effects of ownership structure on risk

	Dependent Variable: SPEC		
	(1)	*(2)*	*(3)*
C	0.020*	0.020*	0.018*
	(0.077)	(0.065)	(0.099)
Largest(-1)	-0.033**		
	(0.016)		
Largest(-1)^2	0.041***		
	(0.003)		
Cross(-1)		-0.019***	
		(0.008)	
Cross(-1)^2		0.022***	
		(0.007)	
Fininst(-1)			0.002
			(0.828)
Fininst(-1)^2			0.000
			(0.986)
Manager(-1)	0.014***	0.015***	0.017***
	(0.005)	(0.004)	(0.001)
Foreign(-1)	0.019***	0.019***	0.019***
	(0.000)	(0.000)	(0.000)
NBKSH2(-1)	-0.006	-0.006	-0.007
	(0.190)	(0.194)	(0.157)
Size(-1)	0.000	-0.001	-0.001
	(0.976)	(0.787)	(0.676)
LVG(-1)	0.012***	0.012***	0.012***
	(0.001)	(0.001)	(0.001)
Earnings(-1)	-0.002	-0.002	-0.003
	(0.726)	(0.777)	(0.650)
Liquid(-1)	0.000	-0.001	0.000
	(0.929)	(0.846)	(0.891)
Q ratio(-1)	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)
ROA(-1)	-0.004	-0.004	-0.004
	(0.262)	(0.257)	(0.267)
Fixed(-1)	0.003	0.002	0.002
	(0.344)	(0.421)	(0.487)
Freq(-1)	-0.345***	-0.339***	-0.337***
	(0.000)	(0.000)	(0.000)
Year dummy	Yes	Yes	Yes
Adj R^2	0.289	0.289	0.288
SE of Regression	0.017	0.017	0.017
SSR	3.025	3.026	3.026
F-Statistics	4.388***	4.381***	4.369***
Hausman test	222.79***	235.16***	234.91***
No. of cross section	1413	1413	1413
No. of firms	11924	11925	11929

Notes: ( ) represents p-value

*, **, and *** represent statistically significance at 10%, 5% and 1% confidence levels, respectively

The variables 'Managers' and 'Foreigners' are estimated to have always statistically positive relationship with risk variables.[16] Even though it is well known that inside managers avoid risk-taking because of career concerns or cash flow diversion incentives, the estimation results show that the incentives of managers are aligned with those of shareholders when managerial ownership is allowed.

In addition, the results are consistent with the hypothesis that foreign investors enhance corporate risk-taking and show that they do not bias the corporate investment in a conservative direction in pursuit of their myopic interest. On the other hand, the domestic institution investors such as investment trusts or pension funds (Nbksh2) exhibit no statistically significant relationship with firm risks and the signs of the coefficients are negative when they are statistically significant. Even though domestic institutions are expected to influence the management to act in a way to enhance the firm value by taking risk, the estimation results show that it is not the case for Japan.

The performance of control variables is not satisfactory since in many of the cases, the signs of the coefficients are not consistent with the theoretical prediction. The firm size (Size) is expected to affect the risk negatively. However, the test results show that the firm size does not affect the risk level of the firms. When the coefficients of 'Size' are negative, they are not statistically significant, suggesting that large firms are engaged in low operating risks. Debt to asset ratio (LVG) is

[16]Foreign investors may opt to invest in firms with greater risk and hence with greater growth prospects. Miyajima and Kuroki (2010) find that firm size, growth opportunity (Tobin's q), and degree of dependence on bonds have significant positive effects on foreign ownership. In order to take account of the endogeneity problem, we estimate the 2SLS where we use instrument variable for foreign ownership. The estimation results still support the positive effect of foreign ownership on a firm's risk-taking.

expected to lead to less risk since firms with abundant debt are likely to hesitate to take the risk. But in our estimation results, the coefficient of LVG is positive and statistically significant. However, when the signs of the coefficients of 'Liquid' are positive, they are not statistically significant.

Growth opportunity represented by 'Q ratio' is estimated to have a statistically significant positive relationship with firm risks, which is consistent with the theoretical prediction. A variable which represents the firm performance such as ROA is estimated to be negatively correlated with risk. Operating leverage (Fixed) does not affect the firm risks while the firms' equity turnover (Freq) affects both the total risk and idiosyncratic risk negatively.

Effect of ownership variables on Risk in the firms with growth opportunity

In Table 5, we investigate whether investors encourage or inhibit risk-taking in order to capitalize on the opportunity when a firm has growth opportunity. If investors promote risk-taking in the absence of growth opportunities, such risk-taking is considered economically irrational and will not enhance the firm value. To test this, we add the interaction term of ownership variables and Tobin's q (Q ratio), a proxy for the presence of profitable growth opportunity. The interaction term is positive and statistically significant for the case of concentrated ownership (Largest) and ownership by closely related parties (Cross), which implies that the shareholders encourage managers to take more risk when the firms have growth opportunities.

Table 5. Effects of ownership structure on risk with growth opportunity

	Dependent Variable: SPEC		
	(1)	***(2)***	***(3)***
C	0.026**	0.026**	0.019*
	(0.023)	(0.023)	(0.092)
Largest(-1)	-0.035**		
	(0.011)		
Largest(-1)^2	0.030**		
	(0.034)		
Cross(-1)		-0.024***	
		(0.003)	
Cross(-1)^2		0.020***	
		(0.000)	
Fininst(-1)			0.007
			(0.522)
Fininst(-1)^2			0.001
			(0.963)
Manager(-1)	0.014***	0.015***	0.017***
	(0.006)	(0.003)	(0.001)
Foreign(-1)	0.020***	0.020***	0.019***
	(0.000)	(0.000)	(0.000)
NBKSH2(-1)	-0.006	-0.006	-0.007
	(0.197)	(0.203)	(0.174)
Size(-1)	-0.001	-0.001	-0.001
	(0.819)	(0.613)	(0.577)
LVG(-1)	0.012***	0.012***	0.012***
	(0.001)	(0.001)	(0.001)
Earnings(-1)	0.001	-0.001	-0.002
	0.886	(0.923)	(0.741)
Liquid(-1)	0.000	-0.001	0.000
	(0.970)	(0.884)	(0.935)
Q ratio(-1)	-0.003***	0.001	0.003***
	(0.002)	(0.202)	(0.000)
Q ratio(-1)*Largest(-1)	0.010***		
	(0.000)		
Q ratio(-1)*Cross(-1)		0.003***	
		(0.008)	
Q ratio(-1)*Fininst(-1)			-0.003**
			(0.046)
ROA(-1)	-0.004	-0.004	-0.004
	(0.228)	(0.253)	(0.284)
Fixed(-1)	0.003	0.002	0.002
	(0.290)	(0.425)	(0.450)
Freq(-1)	-0.333***	-0.335***	-0.335***
	(0.000)	(0.000)	(0.000)
Year dummy	Yes	Yes	Yes
Adj R^2	0.291	0.289	0.288
SE of Regression	0.017	0.017	0.017
SSR	3.015	3.024	3.025
F-Statistics	4.418***	4.385***	4.370***
Hausman test	232.83***	234.07***	233.29***
No. of cross section	1413	1413	1413
No. of firms	11924	11925	11929

Notes: ( ) represents p-value

*, **, and *** represent statistically significance at 10%, 5% and 1% confidence levels, respectively

The coefficient of the interaction term with 'Fininst' and 'Q ratio' is negative and statistically significant. This result is consistent with the estimation results of Table 4, which imply that financial institution shareholders do not discipline managers or even limit risk-taking by managers in the face of growth opportunity.

Effect of ownership by managers or foreigners on risk

We closely investigate the effects of managerial ownership on risk-taking behavior in Table 6 with the idiosyncratic risk (SPEC) as a dependent variable. The first three equations of (1)~(3) in Table 6 investigate whether the effect of managerial ownership on firm risk-taking is non-linear. The coefficients on the square of the manager ownership (Manager) are positive and statistically significant, whereas the coefficient on the variable Manager is statistically insignificant. This implies that managers engage in risk-taking behavior at the high level of managerial ownership contrary to the entrenchment hypothesis, where managers are expected to take less risk as their managerial ownership increases. The statistically insignificant coefficients of the interaction terms of Q ratio and 'Manager' in the equations of (4)~(6)in Table 6 further imply that an increase in managerial ownership did not necessarily increase their risk-taking behavior in the face of the firms' growth opportunities.

Table 6. Effects of managerial ownership on risk

	Dependent Variable: SPEC					
	(1)	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***
C	0.014	0.019***	0.017	0.014	0.019*	0.017
	(0.215)	(0.094)	(0.116)	(0.217)	(0.095)	(0.116)
Largest(-1)	0.006***			0.006*		
	(0.082)			(0.082)		
Cross(-1)		-0.001			-0.001	
		(0.767)			(0.768)	
Fininst(-1)			0.002			0.002
			(0.566)			(0.566)
Manager(-1)	-0.012	-0.010	-0.009	-0.012	-0.010	-0.009
	(0.250)	(0.312)	(0.370)	(0.265)	(0.326)	(0.376)
Manager(-1)^2	0.051***	0.051***	0.048***	0.051***	0.051***	0.048***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
Foreign(-1)	0.018***	0.019***	0.018***	0.018***	0.019***	0.018***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NBKSH2(-1)	-0.007	-0.006	-0.007	-0.007	-0.006	-0.007
	(0.145)	(0.183)	(0.146)	(0.145)	(0.183)	(0.146)
Size(-1)	0.000	-0.001	-0.001	0.000	-0.001	-0.001
	(0.826)	(0.726)	(0.767)	(0.827)	(0.727)	(0.767)
LVG(-1)	0.012***	0.012***	0.011***	0.012***	0.012***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Earnings(-1)	-0.002	--0.002	-0.003	-0.002	-0.002	-0.003
	(0.714)	(0.784)	(0.634)	(0.712)	(0.782)	(0.635)
Liquid(-1)	0.000	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.890)	(0.851)	(0.885)	(0.888)	(0.850)	(0.886)
Q ratio(-1)	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q ratio(-1)*Manager(-1)				0.000	0.000	0.000
				(0.925)	(0.952)	(0.987)
ROA(-1)	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.278)	(0.265)	(0.261)	(0.278)	(0.265)	(0.261)
Fixed(-1)	0.003	0.002	0.002	0.003	0.002	0.002
	(0.337)	(0.408)	(0.430)	(0.338)	(0.409)	(0.429)
Freq(-1)	-0.346***	-0.344***	-0.347***	-0.346***	-0.344***	-0.347***
	(0.00)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.289	0.289	0.289	0.289	0.289	0.289
SE of Regression	0.017	0.017	0.017	0.017	0.017	0.017
SSR	3.025	3.025	3.023	3.024	3.025	3.023
F-Statistics	4.284***	4.383***	4.379***	4.381***	4.380***	4.375***
Hausman test	237.807***	248.461***	243.405	256.887***	267.210***	258.310***
No. of cross section	1413	1413	1413	1413	1413	1413
No. of firms	11924	11925	11929	11924	11925	11929

Notes: ( ) represents p-value

*, **, and *** represent statistically significance at 10%, 5% and 1% confidence levels, respectively

Table 7 presents the analysis results of the nonlinear effects of foreign ownership on risk. The estimation results of equations (1), (2) and (3) do not reveal any non-linear effect of foreign ownership on firm-specific risk. Even though it affects firm risk positively at a statistically significant level at the lower level of foreign ownership, it does not increase the risk level at the higher level of foreign

ownership. Moreover, the evidence is weak that foreign ownership promotes higher risk-taking behavior in the face of firm growth opportunity since the coefficient of the interaction term between 'Q ratio' and 'Foreign' is positive and statistically significant at the 10% significance level only in the case of equation (4).

Table 7. Effects of foreign ownership on risk

	Dependent Variable: SPEC					
	(1)	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***
C	0.015	0.019*	0.018	0.016	0.020*	0.019*
	(0.193)	(0.080)	(0.105)	(0.171)	(0.068)	(0.089)
Largest(-1)	0.006*			0.006*		
	(0.075)			(0.063)		
Cross(-1)		-0.001			-0.001	
		(0.756)			(0.790)	
Fininst(-1)			0.001			0.001
			(0.710)			(0.698)
Manager(-1)	0.016***	0.017***	0.017***	0.016***	0.017***	0.017***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Foreign(-1)	0.023***	0.023***	0.023***	0.021***	0.021***	0.021***
	(0.002)	(0.001)	(0.002)	(0.005)	(0.004)	(0.006)
Foreign(-1)^2	-0.012	-0.010	-0.010	-0.014	-0.013	-0.012
	(0.429)	(0.499)	(0.504)	(0.349)	(0.416)	(0.429)
NBKSH2(-1)	-0.007	-0.007	-0.007	-0.007	-0.007	-0.007
	(0.137)	(0.173)	(0.150)	(0.135)	(0.173)	(0.149)
Size(-1)	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.709)	(0.616)	(0.688)	(0.677)	(0.585)	(0.653)
LVG(-1)	0.012***	0.012***	0.012***	0.012***	0.012***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Earnings(-1)	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003
	(0.703)	(0.771)	(0.637)	(0.671)	(0.742)	(0.611)
Liquid(-1)	0.000	-0.001	0.000	-0.001	-0.001	-0.001
	(0.911)	(0.867)	(0.898)	(0.867)	(0.825)	(0.856)
Q ratio(-1)	0.003***	0.003***	0.003***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q ratio(-1)*Foreign(-1)				0.002*	0.002	0.002
				(0.096)	(0.118)	(0.124)
ROA(-1)	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.286)	(0.273)	(0.267)	(0.275)	(0.262)	(0.257)
Fixed(-1)	0.002	0.002	0.002	0.002	0.002	0.002
	(0.366)	(0.446)	(0.469)	(0.387)	(0.471)	(0.494)
Freq(-1)	-0.336***	-0.333***	-0.338***	-0.337***	-0.335***	-0.339***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.289	0.289	0.288	0.289	0.289	0.288
SE of Regression	0.017	0.017	0.017	0.017	0.017	0.017
SSR	3.027	3.028	3.026	3.026	3.027	3.025
F-Statistics	4.375***	4.373***	4.370***	4.374***	4.372***	4.369***
Hausman test	267.534***	280.971***	273.064***	272.148***	285.276***	277.201***
No. of cross section	1413	1413	1413	1413	1413	1413
No. of firms	11924	11925	11929	11924	11925	11929

Note: ( ) represents p-value
*, **, and *** represent statistically significance at 10%, 5% and 1% confidence levels, respectively

Firm risk and performance

We turn to Table 8 in order to investigate whether the firm's risk-taking actually enhances its value. At the same time, we evaluate whether ownership structure is related to the enhanced firm valuation. Table 8 presents the estimation results where the Q ratio is used as a proxy for the firm performance.[17]

Estimation results of equations (1) or (5), (6) and (7) in Table 8 reveal that one year lagged risk variables are indeed related to the enhanced firm performance since all the coefficients of the risk variable (SPEC) are positive and statistically significant. The coefficients of the ownership variables 'Largest' and 'Cross' in equations (5) and (6) are positive and statistically significant at the 1% and 5% significance levels, respectively, implying that the investor's influence on firm managers' risk-taking leads to superior firm performance.

However, the estimation result of equation (7) in Table 8 shows that ownership by financial institutions represented by 'Fininst' does not contribute to the firm performance. This result is comparable to Miyajima and Kurioki (2010), who find an inverse relation between bank ownership and performance. Even though managerial ownership or foreign ownership continues to affect the firm performance positively in the case of equations (3) and (4), the effects are weakened when the risk variable is included in the equations in (5)~(7).

[17] When ROA is used as a proxy for the firm performance, the result is mixed and sometimes contradicts the theoretical prediction

Domestic institutions such as investment trusts or pension funds (Nbksh2) do not seem to enhance the firm performance in any case. Some independent variables such as firm size (Size), earnings (Earnings), and the ratio of fixed asset (Fixed) are estimated to contribute to the firm performance negatively.

Table 8. Risk and performance using Q ratio

	Dependent Variable: Q ratio						
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
C	7.583***	7.367***	7.578***	7.613***	7.258***	7.404***	7.532***
	(0.00)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Spec(-1)	3.862***				3.677***	3.744***	3.685***
	(0.000)				(0.000)	(0.000)	(0.000)
Largest(-1)		0.354***			0.408***		
		(0.002)			(0.001)		
Cross(-1)			0.100			0.189**	
			(0.181)			(0.030)	
Fininst(-1)				0.133			0.182
				(0.284)			(0.153)
Manager(-1)		0.204	0.304*	0.293*	0.065	0.137	0.164
		(0.236)	(0.074)	(0.088)	(0.723)	(0.457)	(0.373)
Foreign(-1)		0.204	0.240*	0.270**	0.089	0.110	0.168
		(0.109)	(0.057)	(0.034)	(0.489)	(0.395)	(0.195)
NBKSH2(-1)		0.021	0.078	0.009	0.025	0.089	0.002
		(0.896)	(0.635)	(0.959)	(0.877)	(0.586)	(0.989)
Size(-1)	-1.272***	-1.251***	-1.271***	-1.273***	-1.255***	-1.265***	-1.281***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LVG(-1)	-0.014	0.107	0.120	0.106	0.006	0.014	0.005
	(0.906)	(0.363)	(0.308)	(0.369)	(0.957)	(0.906)	(0.967)
Earnings(-1)	-0.742***	-0.660***	-0.613***	-0.668***	-0.806***	-0.760***	-0.811***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Liquid(-1)	0.381***	0.301**	0.298**	0.301**	0.397***	0.391***	0.395***
	(0.002)	(0.013)	(0.014)	(0.013)	(0.001)	(0.002)	(0.001)
Fixed(-1)	-0.632***	-0.661***	-0.680***	-0.680***	-0.575***	-0.599***	-0.597***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Freq(-1)	11.381***	13.947***	13.910***	13.986***	1.926	1.749	2.062
	(0.000)	(0.000)	(0.000)	(0.000)	(0.527)	(0.565)	(0.498)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.604	0.795	0.795	0.794	0.604	0.604	0.604
SE of Regression	0.578	0.589	0.589	0.589	0.576	0.576	0.576
SSR	3444.277	3800.768	3799.772	3803.407	3406.936	3404.932	3410.519
F-Statistics	13.553***	34.459***	34.470***	34.427***	13.506***	13.520***	13.496***
Hausman test	1128.215***	36547.271	3656.131***	3585.189***	1117.977***	1117.372***	1128.565
No. of cross section	1410	1415	1415	1415	1409	1409	1409
No. of firms	11727	12397	12398	12402	11703	11706	11709

Notes: ( ) represents p-value
*, **, and *** represent statistically significance at 10%, 5% and 1% confidence levels, respectively

4. CONCLUSION

We examine the relationship between ownership structure and corporate risk-taking in Japan over the sample period of 2000~2010. Reflecting the ongoing changes in the ownership structure in Japan, we incorporate the various kinds of insider and outsider ownership in the analysis. Here, insider investors refer to those who derive 'private benefit', which may reflect the goal of other activities they are engaged in as corporations, the prospects of succession or inheritance of the family firms, as well as financial returns from their investments. On the other hand, outsider investor's sole interest is restricted to the financial returns of the companies they invest. Ownership such as concentrated ownership, ownership by closely related parties, financial institutions comprising banks and insurance companies and managers are categorized into inside ownership, while ownership by foreigners or financial institution such as investment trusts or pension funds are categorized into outside ownership. The ownership structure is found to have a different impact on the firm's risk-taking behavior.

The panel estimation results show that concentrated ownership (Largest) or ownership by closely related parties (Cross) affects the firm risks in a convex manner and encourages the firm management to take more risk when the firms have growth opportunities. The increased risk-taking encouraged by these shareholders is also found to enhance the firm performance. On the other hand, ownership by financial institutions does not seem to affect the firm risk level, which implies that the financial institutions, including banks, fail to play their role of a shareholder monitor. This may result from the fact that these financial institutions are not only shareholder but also creditors of the firms. Since creditors have fixed claims, while shareholder has residual claims, creditors have to bear the downside of risk-taking but have nothing to gain

beyond their fixed claim. This makes creditors more risk-averse than shareholders. In case the financial institutions also are main creditors of the firms and their debt stake is of comparable or even larger size than their equity stake, risk aversion would be a rational behaviour in order to protect the debt stake. This is consistent with the previous research conclusions, which point out the detrimental effects of bank ownership of corporations. It seems that they even discourage the firm's risk-taking behavior in the face of growth opportunities. Ownership by financial institutions does not contribute to the firm performance, either.

Japanese managers' incentives are aligned with those of shareholders when managerial ownership is allowed. Contrary to the conventional entrenchment hypothesis, managers seem to take more risk as the share of managerial ownership increases. In the face of firm growth opportunities, however, managers seem to reduce their risk-taking efforts.

Foreign investors are found to enhance corporate risk-taking in a monotonic manner and do not a bias corporate investment in a conservative direction in pursuit of their short-term gains. However, the evidence that foreign ownership promotes risk-taking in the face of firm growth opportunities is weak. Domestic institutions such as investment trusts or pension funds are found to neither affect the firm risk level nor enhance the firm value.

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