

Corporate Ownership Structure and Risk Taking: Evidence from Japan

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Abstract

We examine the relationship between the ownership structure and corporate risk taking in Japan over the sample periods of 2000~2010. The study shows that concentrated ownership or ownership by closely related parties affect the firm risks in a convex manner and encourage the firm management to take more risk when the firms have growth opportunities. On the other hand, ownership by financial institutions does not seem to affect the firm level risk which implies that the financial institutions fail to play their role of a monitor as a shareholder. Japanese manager's incentives are aligned with those of shareholders when managerial ownership is allowed. 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 not to affect the firm risk level nor enhance the firm value.

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I. Introduction

Most previous studies on corporate governance and ownership structure examine 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 the ownership concentration and other variables such as firm performance (Morck et al. 1988), value (Slovins and Sushka 1993), competitiveness (Gadhouri 1999), and its usual financial decisions and policies (Stulz 1988, Shleifer and Vishny 1997).

One critical issue, however, remains largely unexamined - the influence of corporate ownership on the risk-taking behavior of firms. Ownership “represents a source of power that can be used to either support or oppose management depending on how it is concentrated and used” (Salancik and Pfeffer 1980). Consequently, it has important strategic implications for risk taking, takeover resistance, and the long- or short-term orientation of managers. As pointed out by Wright et al. (1996), 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. Whitley (2000) argues that differences in corporate governance have an important bearing on the capacity of firms to innovate.

We examine the relationship between the ownership structures and corporate risk taking in Japan. It is widely recognized that ownership structure in Japan differs from that of an Anglo American type one. 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. As ownership disperses, the incentive to exercise ownership rights disperses. Thus, managers are typically monitored through mechanisms such as managerial incentives (such as stocks and options, performance-based compensation), hostile takeovers, managerial labor markets, active investors and boards of directors.

In contrast, traditional 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.

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

Ownership structure in Japan can be broadly classified into insider and outsider ownership. By

insider investors¹, we mean investors who derive ‘private benefit’ which may reflect the other activities in which they are engaged as corporations or the prospects of succession and inheritance in 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.

In contrast, outsider investor’s sole interest is restricted to the financial returns of the companies in which 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.

Over the past decade, the Japanese unique ownership system that took root during the post-war period was remarkably stable, lasting for almost three decades, but has undergone dramatic changes. Foreign investors began to increase their stakes in Japanese companies in the early 1990s, especially in larger firms. And the ratio of shares held by stable shareholders began to plummet from previous heights.

Reflecting the ongoing changes in the ownership structure, we incorporate the various kinds of insider and outsider ownership comprehensively in our analysis model 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.

The paper is organized as follows. Chapter II surveys literature on the relationship between ownership structure and corporate risk taking. Chapter III describes the evolution of Japanese corporate ownership structure. Chapter IV presents data and empirical estimation results. Chapter V concludes the paper.

II. Literature Review

The link between ownership structure and firm risk-taking was first evoked by Berle and Means (1932), and theorized by Mosen and Downs (1965) and Mosen 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 and favor more risky projects to

¹ Insider ownership often refers to ownership by management

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 non salary 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, inside 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, Rozeff 1982), 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 and shareholders increasingly converge. Demsetz and Lehn (1985) argue that within firms facing more uncertain environments, insider's(manager's) action 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, it is highlighted that outside 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 block holders 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. Also, shareholders with significant ownership stakes might be reluctant to take more risk

due to securing their private benefits of control.

While various literatures 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. Hypothesizing the positive influence of institutional ownership on firm's risk taking, Wright et al. (1996) considers the inside managers and block holder's 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) argues 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 relation between corporate risk taking and equity ownership of the largest shareholders and finds that this result is entirely driven by investors with diversified portfolio.

Many authors examined the relationship between ownership structure and firm performance in Japan over the sample periods of mid 1980s to 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) suggests a greater alignment of managerial interests with those of stockholders. Hiraki et. al. (2003) shows 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 particular category of investors and a firm's financial performance and investment behavior is considered more complex than is depicted in simple principal-agent representations.

Investigating the relationship between the ownership structure and Japanese firm's risk taking behavior, Nguyen (2011) shows that family control and ownership concentration is associated with higher idiosyncratic risk, whereas bank control has the opposite effect. Nguyen (2012) confirms the assumption that the increased involvement of foreign investors motivated by shareholder value is likely to have triggered a major shift in their risk-taking behavior by showing that all the standard measures of performance volatility significantly increase with the level of foreign ownership.

III. Evolution of Corporate Ownership Structure in Japan

As <Figure 1> shows, 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 lasting for almost three decades.

Insider ownership is dominant during the periods as can be seen in (<Figure 2>) where the ownership is categorized into insider and outsider ownership². As it enters the 21st century, however, it became more of an outsider system in the sense that outsider ownership became more prevalent.

In fact, Japan was an outsider ownership system until it was uniquely switched to an insider ownership system of cross-shareholding by banks and corporations after the Second World War.³ Frank et al. (2012) traces the trend of ownership structure throughout the entire 20th century and finds that the ownership structure in the first half of the 20th century is widely dispersed with active stock market and modest bank finance (<Table 1>). The outsider system, in the first half of the 20th century, however, was different from the one that is conventionally associated with Anglo-American systems where outsiders exercise control themselves through the powers conferred on them by their legal systems. Frank et. al (2012) suggests that it was ‘institutions of trust’ rather than legal protection as explained in La Port et. al (1999) that supported outside system in Japan. Instead, business coordinators in the first two decades of the century, and family firms, *zaibatsu*, during the third decade, exercised control on behalf of outside investors, who are not well placed to exercise direct control themselves.⁴

Following Japan’s defeat in 1945 of World War II, the *zaibatsu* stated to be dissolved by the American occupation authorities, who regarded the *zaibatsu* as a major culprit being responsible for the war.⁵ However, the period of newly created dispersed ownership in Japan was short-lived. As individuals began to sell stocks with the reopening of the Tokyo Stock Exchange in 1949, a new ownership structure emerged in the early 1950s. Most Japanese companies were owned by other companies, often as part of reciprocal cross-shareholding ties.; banks became influential shareholders, institutional investors were absent, and there were no hostile takeovers (Okabe, 2002). Japan’s unique ownership structure had become well established by the late 1960s, mainly because top managers considered it to be effective in warding off hostile takeover threats.⁶ In conjunction with stable and large shareholders, high levels of bank debt have also been a traditional characteristic of Japanese corporation (Hoshi and Kashyap 2001).

² Insider includes ownership by financial institutions and business corporations whereas outsider includes ownership by investment trusts, annuity trusts, securities companies, foreigners and individuals.

³ For evolution of ownership in the 20th century, see Morck and Nakamura (2005).

⁴ Business coordinators were themselves outside investors (equivalent to venture capitalists) whose presence encouraged other less well informed outsiders to participate. *Zaibatsu*, on the other hand, were insiders who had considerable private interest. However, their inside interests promoted rather than undermined outside ownership.

⁵ All holding companies were dismantled and prohibited by law, the founding families were stripped of their shares, and the pre-war managers were purged and prohibited from taking office. The resulting change of ownership was of enormous scale, and over 40 percent of all corporate assets in Japan changed hands. Following the conclusion of the reforms in 1950 shareholdings by individuals in Japan reached an all-time high of approximately 70 percent.

⁶ Franks et. al.(2012) suggests the emergence of insider ownership was the response of following three phenomena in Japan; i) resolution of financial distressed firms through debt for equity swaps ii) much of shares sold by institutions was taken up by insiders rather than by existing shareholders, iii) seasoned equity offerings often made at advantageous prices to insiders.

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 close scrutiny. The faithful and stable cross shareholding system had the potential of fostering moral hazard among incumbent managers. As management became entrenched, this resulted in low 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.⁷

After the banking crisis, and particularly after 1999, banks reduced shareholdings mainly by selling shares with higher liquidity and higher expected rates of return, while holding onto shares of firms with which they had long-term relationships (Miyajima and Kuroki 2010). 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 1999)

Recent evidence shows that the power of outside investors is increasing in Japan. Particularly, 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.

IV. Data and Empirical Estimation Results

1. 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 periods of 2000-2010. 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. Financial information (accounting data and stock returns) and data on ownership structure are obtained from the NEEDS database supplied by the Nikkei newsgroup.

⁷ For the comprehensive survey of literature on the discussion of Japanese model of corporate governance, see Yafeh (2000)

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 leads to the enhanced 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 firm's risk. The large idiosyncratic component of stock volatility is likely to reflect the market power and other competitive advantages controlled by the firm.⁸ Since competitive advantages also result in higher performance, the strategy perspective suggests a positive relation between the firm performance and firm-specific risk.

Many literature highlights the role of firm-specific risk. Goyal and Santa-Clara (2003) claim that idiosyncratic risk contributes to predict future stock returns. Campbell et al. (2001) suggests that the higher idiosyncratic risk displayed by US firms reflects their greater emphasis by growth strategies. Xu and Malkiel (2003) establish that idiosyncratic volatility is positively associated with expected earnings growth. Morck et al. (2000b) argue that economies with better investor protection are characterized by higher firm-specific risk and higher performance because idiosyncratic volatility generates information that contributes 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 three-factor model developed by Fama and French (1993). Fama and French (1993) find that firms that have high BE/ME (a low stock price relative to

⁸ 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.

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.

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.⁹ 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. As an additional risk measure we use total risk (TOTAL) which is measured by the standard deviation of the firm's monthly stock return using 60 months (with a minimum of 36 months)

Ownership variables

The ownership variables used are 'Largest', 'Cross', 'Fininst', 'Manager' as insider investors and 'Foreign' and 'Nbks2' as outsider investors. Definitions of variables are summarized in <Table 2>. 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, where variable 'Fininst' includes the shares owned by financial institutions such as banks and insurance companies.

'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.

⁹ 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) by classifying firms in two size of small and large, and 3 B/M groups of low, medium and high ratios..

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 2000¹⁰. 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 manager's incentives to avoid risk, relative to domestic institutional investors. 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 sole incentive of profit making influencing the management to act in a way to enhance the firm value by taking risk.

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. 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 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 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 to 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

¹⁰ *Stock Distribution Survey 2001*

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.

2. Descriptive Statistics

<Table 3> presents the descriptive statistics for the variables used in this study. The mean of the sum of shares owned by 10 largest shareholders (Largest) is 47.2%. Compared to the US where the average reported by Demsetz and Lehn (1985) is 25%, 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 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 investment trust and pension fund combined (Nbksh2) is relatively small being 2.7%. The standard deviation 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 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, Morek et al. 2000b). For the control variables, the mean size of the firm (Size) is 4.896 in log term and the mean ratio of debt to asset (LVG) is 0.497. the mean ratio of EBITDA to total asset (Earnings) is 0.082. Ratio of liquid asset to total asset (Liquid) is 0.334. Average profitability measured by ROA is 0.019. Fixed ratio is 0.518. Tobin's Q which represents the growth opportunity is 1.260 with 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 4>. 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 positive relationship. Variables such as debt ratio, equity ratio, liquid asset ratio have the positive relationship with risk variables.

3. Estimation Results

Effect of ownership variables on Risk

<Table 5> presents the estimation results of panel regression of risks, total risk (Total) and idiosyncratic risk (Spec) on the various kinds of ownership variables 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. Three insider investor variables such as 'Largest', 'Cross', 'Fininst' appear separately in the different equations of (1)~(6). The square 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 effect of ownership on the risk is similar for both the total risk (Total) and idiosyncratic risk (Spec) in <Table 5>. The shareholders represented by 'Largest' or 'Cross' affect the risk in the convex manner. In other words, they tend to reduce risk at the lower level of ownership while firm's 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 including banks fail to play the role of a monitor as a shareholder.

The variable 'Managers' and 'Foreigners' are estimated to have always statistically positive relationship with risk variables.¹¹ Even though it is well known that inside managers avoid risk taking because of career concerns or cash flow diversion incentives, the estimation results shows that incentives of managers are aligned with those of shareholders when managerial ownership is allowed.

Also, 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, many of the cases, the signs of the coefficients are not consistent with those what the theory predicts. It is expected that the firm size

¹¹ Foreign investors may opt to invest in the firms with greater risk hence with greater prospects of the growth. Miyajima and Kuroki (2010) finds 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 firm's risk taking.

(Size) affects the risk negatively. However, test results show that the firm size does not affect the risk level of the firms. When the coefficients of 'Size' is negative, they are not statistically significant, suggesting that large firms are engaged in low operating risks. Debt to asset ratio (LVG) is expected to lead to less risk since firms with abundant debt are likely to hesitate to take risk. But in our estimation results, coefficient of LVG is positive and statistically significant. When the signs of the coefficients of 'Liquid' are positive, they are not statistically significant, though.

Growth opportunity represented by 'Q ratio' is estimated to have statistically significant positive relationship with firm risks which is consistent with what the theory predict. Even though variables which represent the firm performance such as Earnings or ROA are expected to lead to higher risk taking, they are not estimated to be so in this study. In case of ROA, it is found to be negatively correlated with risk. Operating leverage (Fixed) does not affect the firm risks while firm's 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 6>, 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 the 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 imply that the shareholders encourage managers to take more risk when the firms have growth opportunities.

The coefficient of the interaction term with 'Fininst' and 'Q ratio' is not statistically significant when the dependent variable is total risk (Total), and is negative and statistically significant when the dependent variable is idiosyncratic risk. This results is consistent with the estimation results of <Table 5> which imply that financial institution shareholders do not discipline managers or even put lid on the 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 7>. Only the estimation results of the idiosyncratic risk (Spec) case are presented.¹² The first three equations of (1)~(3) in <Table 7> investigate whether the effect of managerial ownership on firm risk

¹² Estimation results of effect of managerial ownership on total risk (Total) is similar with those with idiosyncratic risk.

taking is non-linear. The coefficients on the square of the manager ownership (Manager) are positive and statistically significant while 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 7> further imply that increase in managerial ownership did not necessarily increase their risk taking behavior in the face of the growth opportunities of the firms.

<Table 8> presents the analysis results of nonlinear effects of foreign ownership on risk. Looking at the estimation results of equations (1), (2) and (3), we can't find the non linear effect of foreign ownership on firm specific risk. Even though it affects firm risk positively in statistically significant way 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 of (4),

Firm Risk and Performance

We turn to <Table 9> in order to investigate whether the firm's risk taking actually leads to enhancement of firm value. At the same time, we evaluate whether ownership structure is related to the enhanced firm valuation. <Table 9> presents the estimation results where the Q ratio is used as a proxy for the firm performance.¹³

Estimation results of equation (1) or (5), (6) and (7) in <Table 10> 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.¹⁴ The coefficients of the ownership variables 'Largest' and 'Cross' in equation (5) and (6) are positive and statistically significant at 1% and 5% significance level respectively implying that the investor's influence on firm manager's risk taking leads to superior firm performance.

However, the estimation result of equation (7) in <Table 10> 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) which finds the inverse relation between bank ownership and performance. Even though managerial ownership or foreign ownership still affect the firm

¹³ When ROA is used as a proxy for the firm performance, the result is mixed and sometimes contradicts with what the theory predicts

¹⁴ Estimation results using the total risk (Total) are similar to those using the idiosyncratic risk (Spec).

performance positively in the case of equation of (3) and (4), the effects are weakened when the risk variable is included in the equations in (5)~(7). Domestic institutions such as investment trusts or pension funds (Nbks2) do not seem to enhance the firm performance in any case. Some independent variables such as firm size (Size), earnings (Earnings), or ratio of fixed asset (Fixed) are estimated to contribute to the firm performance negatively.

V. Conclusion

We examine the relationship between the 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. The panel estimation results show that concentrated ownership (Largest) or ownership by closely related parties (Cross) affect the firm risks in a convex manner and encourage 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 level risk which implies that the financial institutions including bank fail to play their role of a monitor as a shareholder. This is consistent with the previous research conclusions which point out the ill effects of bank ownership of corporations. It seems that they even discourage the firm's risk taking behavior in the face of growth opportunities. The ownership by financial institutions doesn't contribute to the firm performance, either.

Japanese manager's 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 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 not to affect the firm risk level nor enhance the firm value.

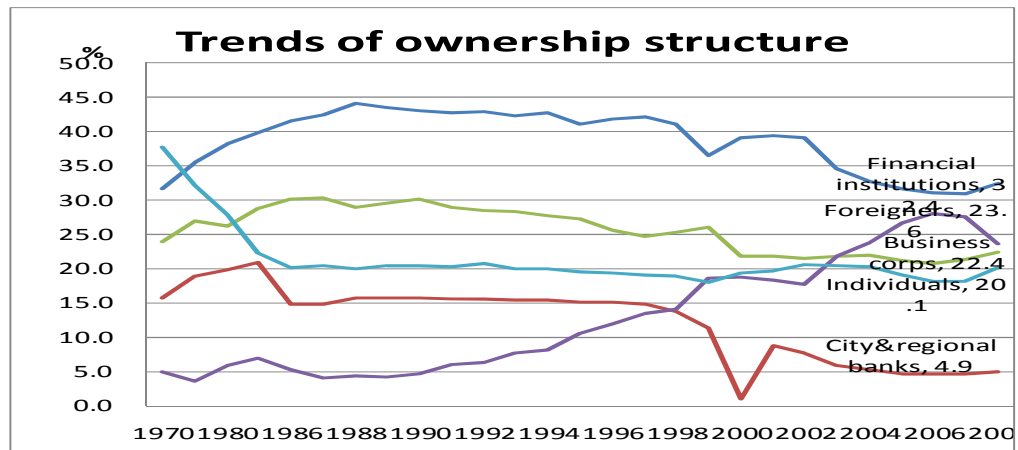
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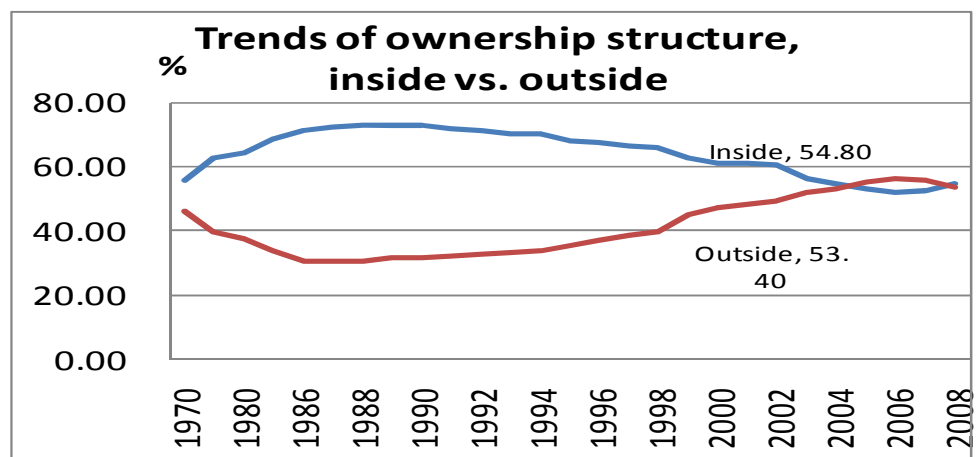
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<Figure 1> Trends of ownership structure



Source) Nitta (2009)

<Figure 2> Trends of ownership structure: insider vs. outsider



Source) Nitta (2009)

<Table 1> Insider and Outsider Ownership in the period 1953-2009

	1953	1955	1958	1962	1964	1967	1969	1974	1982	1990	2000	2009
N	123	125	126	123	121	120	114	114	109	109	109	109
**Managerial Ownership	1.1	1.0	0.7	0.5	0.6	0.8	1.1	1.2	0.0	0.0	0.0	0.0
* Non-Financial Firms	7.4	7.4	11.5	11.7	11.9	12.3	16.7	20.0	20.9	21.3	17.3	17.8
Residual of financial instituions	8.7	15.3	18.6	21.5	19.9	23.8	23.2	22.7	28.4	32.2	28.3	21.7
**Insurance Companies	4.7	4.9	4.8	3.9	4.9	7.0	9.2	12.4	9.8	9.1	6.6	4.2
Insider Ownership1	17.2	23.7	30.8	33.7	32.4	36.9	41.0	43.9	49.2	53.5	45.7	39.5
Insider Ownership 2	21.9	28.6	35.6	37.6	37.3	43.9	50.2	56.3	59.0	62.6	52.4	43.7
*Individual Shareholders	57.2	52.2	49.5	47.8	45.0	43.7	42.4	35.6	28.3	21.1	27.3	25.2
**Investment Trusts	9.5	8.4	9.2	10.3	8.4	2.2	1.4	2.4	2.7	8.1	7.3	9.2
* Securities Houses	7.7	8.2	4.1	2.3	6.5	7.2	1.7	2.0	3.2	2.1	0.9	2.1
*Foreigners	2.7	2.6	1.7	2.0	2.9	2.8	4.2	3.6	7.0	6.1	13.0	19.5
Outside Ownership	77.1	71.4	64.5	62.4	62.8	55.9	49.7	43.6	41.1	37.4	48.5	55.9

1. Source) Franks et al (2012)

2. The * denotes the figure based on the top ten shareholder list, while the ** denote that the figure is based on all shareholders listed in the 10Ks

<Table 2> Definition of Variables

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

<Table 3> Descriptive Statistics

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

<Table 4> 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	-0.04	-0.04	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	0.07	-0.16	-0.19	0.10	-0.20	-0.23	-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
Qratio	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

<Table 5> Effects of ownership structure on risk

	Dependent Variable: Total			Dependent Variable: Spec		
	(1)	(2)	(3)	(4)	(5)	(6)
C	0.059 (0.197)	0.058 (0.192)	0.047 (0.290)	0.020* (0.077)	0.020* (0.065)	0.018* (0.099)
Largest(-1)	-0.144*** (0.009)			-0.033** (0.016)		
Largest(-1)^2	0.173*** (0.002)			0.041*** (0.003)		
Cross(-1)		-0.083*** (0.004)			-0.019*** (0.008)	
Cross(-1)^2		0.099*** (0.003)			0.022*** (0.007)	
Fininst(-1)			-0.011 (0.780)			0.002 (0.828)
Fininst(-1)^2			0.008 (0.887)			0.000 (0.986)
Manager(-1)	0.095*** (0.000)	0.096*** (0.000)	0.102*** (0.000)	0.014*** (0.005)	0.015*** (0.004)	0.017*** (0.001)
Foreign(-1)	0.097*** (0.000)	0.097*** (0.000)	0.094*** (0.000)	0.019*** (0.000)	0.019*** (0.000)	0.019*** (0.000)
NBKSH2(-1)	-0.036* (0.063)	-0.036* (0.060)	-0.035* (0.076)	-0.006 (0.190)	-0.006 (0.194)	-0.007 (0.157)
Size(-1)	0.009 (0.305)	0.007 (0.412)	0.007 (0.422)	0.000 (0.976)	-0.001 (0.787)	-0.001 (0.676)
LVG(-1)	0.044*** (0.002)	0.044*** (0.002)	0.043*** (0.003)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)
Earnings(-1)	0.000 (0.984)	0.002 (0.929)	0.001 (0.969)	-0.002 (0.726)	-0.002 (0.777)	-0.003 (0.650)
Liquid(-1)	0.022 (0.127)	0.021 (0.153)	0.021 (0.152)	0.000 (0.929)	-0.001 (0.846)	0.000 (0.891)
Qratio(-1)	0.011*** (0.000)	0.011*** (0.000)	0.011*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
ROA(-1)	-0.027** (0.046)	-0.027* (0.045)	-0.027** (0.045)	-0.004 (0.262)	-0.004 (0.257)	-0.004 (0.267)
Fixed(-1)	0.019* (0.083)	0.018 (0.101)	0.016 (0.139)	0.003 (0.344)	0.002 (0.421)	0.002 (0.487)
Freq(-1)	-1.423*** (0.000)	-1.396*** (0.000)	-1.384*** (0.000)	-0.345*** (0.000)	-0.339*** (0.000)	-0.337*** (0.000)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.383	0.383	0.382	0.289	0.289	0.288
SE of Regression	0.070	0.070	0.070	0.017	0.017	0.017
SSR	52.497	52.491	52.501	3.025	3.026	3.026
F-Statistics	6.304***	6.303***	6.288	4.388***	4.381***	4.369***
Hausman test	248.993***	248.993***	253.896	222.79***	235.16***	234.91***
No. of cross section	1412	1412	1412	1413	1413	1413
No. of firms	12233	12234	12238	11924	11925	11929

1. () represents p-value

2. *, **, *** represents statistically significant at 10%, 5% and 1% confidence level

<Table 6> Effects of ownership structure on risk with growth opportunity

	Dependent Variable: Total			Dependent Variable: Spec		
	(1)	(2)	(3)	(4)	(5)	(6)
C	0.087** (0.060)	0.086* (0.057)	0.049 (0.276)	0.026** (0.023)	0.026** (0.023)	0.019* (0.092)
Largest(-1)	-0.152*** (0.006)			-0.035** (0.011)		
Largest(-1)^2	0.125** (0.027)			0.030** (0.034)		
Cross(-1)		-0.112*** (0.000)			-0.024*** (0.003)	
Cross(-1)^2		0.100*** (0.003)			0.020*** (0.000)	
Fininst(-1)			0.002 (0.961)			0.007 (0.522)
Fininst(-1)^2			0.011 (0.847)			0.001 (0.963)
Manager(-1)	0.094*** (0.000)	0.096*** (0.000)	0.102*** (0.000)	0.014*** (0.006)	0.015*** (0.003)	0.017*** (0.001)
Foreign(-1)	0.102*** (0.000)	0.101*** (0.000)	0.095*** (0.000)	0.020*** (0.000)	0.020*** (0.000)	0.019*** (0.000)
NBKSH2(-1)	-0.036** (0.065)	-0.036* (0.067)	-0.034* (0.083)	-0.006 (0.197)	-0.006 (0.203)	-0.007 (0.174)
Size(-1)	0.007 (0.418)	0.005 (0.618)	0.006 (0.489)	-0.001 (0.819)	-0.001 (0.613)	-0.001 (0.577)
LVG(-1)	0.047*** (0.001)	0.046*** (0.002)	0.043*** (0.003)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)
Earnings(-1)	0.012 (0.599)	0.008 (0.733)	0.003 (0.896)	0.001 (0.886)	-0.001 (0.923)	-0.002 (0.741)
Liquid(-1)	0.024* (0.097)	0.022 (0.136)	0.021 (0.140)	0.000 (0.970)	-0.001 (0.884)	0.000 (0.935)
Qratio(-1)	-0.015*** (0.001)	0.001 (0.752)	0.013***	-0.003*** (0.002)	0.001 (0.202)	0.003*** (0.000)
Qratio(-1)*Largest(-1)	0.042*** (0.000)			0.010*** (0.000)		
Qratio(-1)*Cross(-1)		0.017*** (0.000)			0.003*** (0.008)	
Qratio(-1)*Fininst(-1)			-0.010 (0.134)			-0.003** (0.046)
ROA(-1)	-0.028** (0.038)	-0.027** (0.043)	-0.027* (0.048)	-0.004 (0.228)	-0.004 (0.253)	-0.004 (0.284)
Fixed(-1)	0.020* (0.064)	0.017 (0.107)	0.016 (0.127)	0.003 (0.290)	0.002 (0.425)	0.002 (0.450)
Freq(-1)	-1.350*** (0.000)	-1.370*** (0.000)	-1.378*** (0.000)	-0.333*** (0.000)	-0.335*** (0.000)	-0.335*** (0.000)
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.385	0.384	0.382	0.291	0.289	0.288
SE of Regression	0.070	0.070	0.070	0.017	0.017	0.017
SSR	52.295	52.427	52.490	3.015	3.024	3.025
F-Statistics	6.348***	6.315***	6.286***	4.418***	4.385***	4.370***
Hausman test	256.824***	257.828***	254.335***	232.83***	234.07***	233.29***
No. of cross section	1412	1412	1412	1413	1413	1413
No. of firms	12233	12234	12238	11924	11925	11929

1. () represents p-value

2. *, **, *** represents statistically significant at 10%, 5% and 1% confidence level

<Table 7> Effects of managerial ownership on risk

	Dependent Variable: Spec					
	(1)	(2)	(3)	(4)	(5)	(6)
C	0.014 (0.215)	0.019*** (0.094)	0.017 (0.116)	0.014 (0.217)	0.019* (0.095)	0.017 (0.116)
Largest(-1)	0.006*** (0.082)			0.006* (0.082)		
Cross(-1)		-0.001 (0.767)			-0.001 (0.768)	
Fininst(-1)			0.002 (0.566)			0.002 (0.566)
Manager(-1)	-0.012 (0.250)	-0.010 (0.312)	-0.009 (0.370)	-0.012 (0.265)	-0.010 (0.326)	-0.009 (0.376)
Manager(-1)^2	0.051*** (0.002)	0.051*** (0.002)	0.048*** (0.004)	0.051*** (0.002)	0.051*** (0.002)	0.048*** (0.004)
Foreign(-1)	0.018*** (0.000)	0.019*** (0.000)	0.018*** (0.000)	0.018*** (0.000)	0.019*** (0.000)	0.018*** (0.000)
NBKSH2(-1)	-0.007 (0.145)	-0.006 (0.183)	-0.007 (0.146)	-0.007 (0.145)	-0.006 (0.183)	-0.007 (0.146)
Size(-1)	0.000 (0.826)	-0.001 (0.726)	-0.001 (0.767)	0.000 (0.827)	-0.001 (0.727)	-0.001 (0.767)
LVG(-1)	0.012*** (0.001)	0.012*** (0.001)	0.011*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.011*** (0.001)
Earnings(-1)	-0.002 (0.714)	-0.002 (0.784)	-0.003 (0.634)	-0.002 (0.712)	-0.002 (0.782)	-0.003 (0.635)
Liquid(-1)	0.000 (0.890)	-0.001 (0.851)	-0.001 (0.885)	-0.001 (0.888)	-0.001 (0.850)	-0.001 (0.886)
Qratio(-1)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
Qratio(-1)*Manager(-1)				0.000 (0.925)	0.000 (0.952)	0.000 (0.987)
ROA(-1)	-0.004 (0.278)	-0.004 (0.265)	-0.004 (0.261)	-0.004 (0.278)	-0.004 (0.265)	-0.004 (0.261)
Fixed(-1)	0.003 (0.337)	0.002 (0.408)	0.002 (0.430)	0.003 (0.338)	0.002 (0.409)	0.002 (0.429)
Freq(-1)	-0.346*** (0.00)	-0.344*** (0.000)	-0.347*** (0.000)	-0.346*** (0.000)	-0.344*** (0.000)	-0.347*** (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

1. () represents p-value

2. *, **, *** represents statistically significant at 10%, 5% and 1% confidence level

<Table 8> Effects of foreign ownership on risk

	Dependent Variable: Spec					
	(1)	(2)	(3)	(4)	(5)	(6)
C	0.015 (0.193)	0.019* (0.080)	0.018 (0.105)	0.016 (0.171)	0.020* (0.068)	0.019* (0.089)
Largest(-1)	0.006* (0.075)			0.006* (0.063)		
Cross(-1)		-0.001 (0.756)			-0.001 (0.790)	
Fininst(-1)			0.001 (0.710)			0.001 (0.698)
Manager(-1)	0.016*** (0.002)	0.017*** (0.001)	0.017*** (0.001)	0.016*** (0.002)	0.017*** (0.001)	0.017*** (0.001)
Foreign(-1)	0.023*** (0.002)	0.023*** (0.001)	0.023*** (0.002)	0.021*** (0.005)	0.021*** (0.004)	0.021*** (0.006)
Foreign(-1)^2	-0.012 (0.429)	-0.010 (0.499)	-0.010 (0.504)	-0.014 (0.349)	-0.013 (0.416)	-0.012 (0.429)
NBKSH2(-1)	-0.007 (0.137)	-0.007 (0.173)	-0.007 (0.150)	-0.007 (0.135)	-0.007 (0.173)	-0.007 (0.149)
Size(-1)	-0.001 (0.709)	-0.001 (0.616)	-0.001 (0.688)	-0.001 (0.677)	-0.001 (0.585)	-0.001 (0.653)
LVG(-1)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)
Earnings(-1)	-0.002 (0.703)	-0.002 (0.771)	-0.003 (0.637)	-0.002 (0.671)	-0.002 (0.742)	-0.003 (0.611)
Liquid(-1)	0.000 (0.911)	-0.001 (0.867)	0.000 (0.898)	-0.001 (0.867)	-0.001 (0.825)	-0.001 (0.856)
Qratio(-1)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
Qratio(-1)*Foreign(-1)				0.002* (0.096)	0.002 (0.118)	0.002 (0.124)
ROA(-1)	-0.004 (0.286)	-0.004 (0.273)	-0.004 (0.267)	-0.004 (0.275)	-0.004 (0.262)	-0.004 (0.257)
Fixed(-1)	0.002 (0.366)	0.002 (0.446)	0.002 (0.469)	0.002 (0.387)	0.002 (0.471)	0.002 (0.494)
Freq(-1)	-0.336*** (0.000)	-0.333*** (0.000)	-0.338*** (0.000)	-0.337*** (0.000)	-0.335*** (0.000)	-0.339*** (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

1. () represents p-value

2. *, **, *** represents statistically significant at 10%, 5% and 1% confidence level

<Table 9> Risk and performance using Q ratio

	Dependent Variable: Q ratio						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
C	7.583*** (0.00)	7.367*** (0.000)	7.578*** (0.000)	7.613*** (0.000)	7.258*** (0.000)	7.404*** (0.000)	7.532*** (0.000)
Spec(-1)	3.862*** (0.000)				3.677*** (0.000)	3.744*** (0.000)	3.685*** (0.000)
Largest(-1)		0.354*** (0.002)			0.408*** (0.001)		
Cross(-1)			0.100 (0.181)			0.189** (0.030)	
Fininst(-1)				0.133 (0.284)			0.182 (0.153)
Manager(-1)		0.204 (0.236)	0.304* (0.074)	0.293* (0.088)	0.065 (0.723)	0.137 (0.457)	0.164 (0.373)
Foreign(-1)		0.204 (0.109)	0.240* (0.057)	0.270** (0.034)	0.089 (0.489)	0.110 (0.395)	0.168 (0.195)
NBKSH2(-1)		0.021 (0.896)	0.078 (0.635)	0.009 (0.959)	0.025 (0.877)	0.089 (0.586)	0.002 (0.989)
Size(-1)	-1.272*** (0.000)	-1.251*** (0.000)	-1.271*** (0.000)	-1.273*** (0.000)	-1.255*** (0.000)	-1.265*** (0.000)	-1.281*** (0.000)
LVG(-1)	-0.014 (0.906)	0.107 (0.363)	0.120 (0.308)	0.106 (0.369)	0.006 (0.957)	0.014 (0.906)	0.005 (0.967)
Earnings(-1)	-0.742*** (0.000)	-0.660*** (0.000)	-0.613*** (0.001)	-0.668*** (0.000)	-0.806*** (0.000)	-0.760*** (0.000)	-0.811*** (0.000)
Liquid(-1)	0.381*** (0.002)	0.301** (0.013)	0.298** (0.014)	0.301** (0.013)	0.397*** (0.001)	0.391*** (0.002)	0.395*** (0.001)
Fixed(-1)	-0.632*** (0.000)	-0.661*** (0.000)	-0.680*** (0.000)	-0.680*** (0.000)	-0.575*** (0.000)	-0.599*** (0.000)	-0.597*** (0.000)
Freq(-1)	11.381*** (0.000)	13.947*** (0.000)	13.910*** (0.000)	13.986*** (0.000)	1.926 (0.527)	1.749 (0.565)	2.062 (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	*	1415	1415	1415	1409	1409	1409
No. of firms	1410	12397	12398	12402	11703	11706	11709
	11727						

1. () represents p-value

2. *, **, *** represents statistically significant at 10%, 5% and 1% confidence level