Ownership Structure and Risk-taking Behavior: Evidence from Banks in Korea and Japan

Chun, Sun Eae and Nagano, Mamoru and Lee, Min Hwan

CHUNG-ANG UNIVERSITY, NAGOYA CITY UNIVERSITY, INHA UNIVERSITY

September 2010

Ownership Structure and Risk-taking Behavior: Evidence from Banks in Korea and Japan

Sun Eae Chun*
Mamoru Nagano**
Min Hwan Lee***

*First author, Associate Professor, Graduate School of International Studies, CHUNG-ANG UNIVERSITY, 221, Heukseok-dong, Dongjak-gu, Seoul 156-756, Korea. Tel: +82-2-820-5821, Fax: +82-2-827-01555, Email: sechun@cau.ac.kr

** Corresponding author, Professor, Graduate School of Economics, NAGOYA CITY UNIVERSITY, Yamanohata 1, Mizuho Nagoya 467-8501, Japan. Tel/Fax: +81-52-872-5736, Email: mnagano@econ.nagoya-cu.ac.jp.

*** Assistant Professor of Finance, Division of Global Finance and Banking, College of Business Administration, INHA UNIVERSITY, Incheon 402-751, Korea. Tel: +82+32-860-7734, Fax: +82-32-866-6877, Email: skymh@inha.ac.kr

Ownership Structure and Risk-taking Behavior: Evidence from Banks in Korea and Japan

Abstract

This study analyzes the effects of managerial ownership on the risk-taking behavior of Korean and Japanese banks during the relatively regulated period of the late 1990s to the early 2000s. It finds that managerial ownership alone does not affect either the risk or the profit levels of Korean banks. In contrast, an increase in managerial ownership adds to the total risk of Japanese banks. However, increased risk-taking behavior does not produce higher levels of profit for Japanese banks. The coefficients of the interaction term between franchise value and managerial ownership are negative and statistically significant for both the Korean and the Japanese banking industries. This means that an increase in managerial ownership at banks with high franchise values discourages risk-taking behavior. The result confirms the disciplinary role of franchise value on the risk-taking behavior of banks. It also falls in line with previous literature supporting the moral hazard hypothesis based on research into the economies of the U.S. and other countries.

JEL Classifications: G20, G21 G32

Keywords: Bank ownership structure, managerial ownership, moral hazard, franchise value, risk-taking behavior

I. Introduction

Limited liability allows shareholders to keep all upside gains while sharing their losses with bondholders. Shareholders, therefore, have a strong incentive to increase risk. Bondholders, particularly depositors, also have weak incentives to monitor and limit such risk-taking behavior because they are shielded from its consequences by the financial safety net of limited liability. This leads to the moral hazard problem associated with deposit insurance. The monitoring function, therefore, falls on regulators, including deposit insurers.

However, many studies suggest that the incentives of bank managers may differ from those of external stockholders. If the managers largely invest in non-diversifiable (i.e., firm-specific) human capital, and managers of failed firms have difficulty finding comparable jobs due to a reputation for incompetence, they may act in a risk-averse rather than in a value-maximizing manner in order to keep their jobs (Berle and Means, 1932; Jensen and Meckling, 1976). This stockholder-manager agency conflict may help offset the moral hazard problem by aligning the interests of risk-averse bank managers with those of bank regulators.

Nevertheless, the conflict between stockholders and managers can be mitigated if the managers' interests are aligned with those of external stockholders. This can arise through insider ownership, which can be created when bank managers are compensated with stock or stock options, and are thus granted ownership of shares. While numerous studies have documented an inverse relationship between risk-taking by non-bank firms and managerial control, the conflict of interest is more complicated in the banking sector.

This is because of the presence of bank regulators, who by their actions set the rules and regulations regarding risk-taking by banks. Less regulated environments can exacerbate stockholder-manager conflict over levels of risk-taking. Such conditions occur when, for example, business activities and interest rates are deregulated, or when closure rules are not strictly enforced. Deregulated environments give bank stockholders greater incentives and abilities to increase risk than tightly regulated ones do. In addition, ownership structure is expected to have a much stronger effect on the levels of risk taken by banks during periods of deregulation than during periods of regulation.

Franchise value—the present value of a firm's future economic profit as a going concern—also works to reduce the risk-taking incentives of banks. This is because banks with high franchise values have much to lose if a risky business strategy leads to insolvency. Therefore, franchise value helps to mitigate the moral hazard problem associated with the safety net. Keeley (1990) claims that the decline in franchise value of the US banks in the 1960s and 1970s can explain the increase in their risk-taking behavior in the 1980s.

This paper examines the relationship between the ownership structure and risk-taking behavior of banks in Korea and Japan during the relatively regulated period of the late 1990s through the mid-2000s. The literature about the effect of managerial ownership on the risk-taking behavior of banks is mainly based upon U.S. banking experiences of the 1980s. Moreover, it differs on the exact relationship between ownership structure and risk-taking. Therefore, an examination of the relationship between ownership structure and the risk-taking of banks in Korea and Japan could provide better insight into the issue.

The organization of the paper is as follows. Following the introduction, Section II

describes the backgrounds of the financial industries in Korea and Japan. Section III reviews the literature on the relationship between the ownership structure and risk-taking behavior of banks. Section IV investigates the empirical model and explains the data employed in this research. Section V presents the results of the empirical estimations, while Section VI concludes the study.

II. The Backgrounds of the Financial Industries in Korea and Japan

This paper examines the relatively regulated periods of 1997 to 2005 for Korea, and of 1996 to 2006 for Japan. In both countries, the industrial organization of the banking sector was gradually changed in the late 1980s and dramatically reformed in the 1990s. Triggered by the bankruptcy of the Continental Illinois National Bank and Trust Company, a major U.S. commercial bank, new international guidelines for commercial banks were introduced under the supervision of the Bank for International Settlements (BIS). Commercial banks in Korea and Japan had to comply with these new guidelines, which began to influence their ownership structure in the late 1980s. In 1990, domestic financial authorities reflected the above international banking supervisions, thereby further promoting the structural change of the Korean and Japanese banking industries in the decade that followed.

Until the mid-1990s, the governments of Korea and Japan intervened heavily in the management of banks through measures such as credit allocation and the appointment of bank CEOs. In those years, neither ownership structure nor franchise value was related to the risk-taking behavior of individual banks. This was especially true in Japan, which

introduced what is commonly dubbed as the financial convoy system.[1] In Korea, too, the government placed heavy impositions on bank management, although to a lesser extent. Under these financially repressed circumstances, the levels of risk taken by banks were not reflected in their balance sheets, nor were differentiating strategies even necessary.

However, the governments began to promote financial liberalization and deregulation in the mid-1990s in order to enhance the competitiveness of their respective banking industries. They deregulated interest rates and permitted new banks to enter the market while implicitly protecting banks so that they would survive. As a result, competition grew intense and banks engaged in aggressive risk-taking behavior, which combined with governmental forbearance from bank closure to become one of the main causes of the 1997 financial crisis as experienced in Korea, and of the prolonged sluggishness of the Japanese banking sector.

The Korean Banking Industry

The 1988 BIS capital standard was introduced to the Korean banking industry in 1992, but was not implemented until 1996. Following the 1997 financial crisis, BIS capital standards were further tightened. Lee (2000) studied the relationship between risk-taking and capital regulation in the Korean banking sector during the 1990s, and finds that capital and risk levels are positively related. In addition, Chun and Lee (2000) look at the effects of strict capital regulation at the end of the 1997 financial crisis, and find that it forced commercial banks to reduce their ownership of risky assets. This led to the so-called credit crunch, which worsened the economic recession caused by the financial crisis (Chun and Lee, 2000).

The Korean banking sector underwent comprehensive financial restructuring after the 1997 financial crisis. At the end of 1997, supervisory bodies were consolidated into a controlling agent, the Financial Supervisory Commission (FSC), and BIS capital regulations were tightly enforced. In 1998, accounting standards were strengthened with the classification rule for non-performing loans aligned to the best international practices. Forward-looking criteria were also employed. Further, Prompt Corrective Action (PCA) was used to restructure individual financial institutions. When the first round of financial restructuring was completed in the context of a stabilized financial market at the end of 1999, a partial deposit insurance guarantee system was introduced. This was meant to alleviate the moral hazard problem associated with the deposit insurance system, and to introduce market discipline in the banking sector.

The financial restructuring of the banking sector resulted in bank mergers that significantly reduced the number of Korean banks from 26 in 1997 to thirteen in 2005. The first bank merger wave hit Korea during the period of 1997 to 2001, when the government launched financial structural reforms as a way of stabilizing the domestic banking system. Conversely, the second wave occurred in late 2001, when individual commercial banks sought to strengthen their competitiveness within the market.[2] As the reforms progressed, the banking sector became heavily concentrated. This development has helped to enhance the franchise value of banks (Lee and Nagano, 2008).

The Japanese Banking Industry

In Japan, financial liberalization was initially introduced in 1979, and was strongly encouraged by the government and the new trend of international regulation

imposed by the BIS during the first half of the 1990s. Consequently, the Japanese banking sector experienced dramatic structural change in the 1990s. Financial liberalization was generally complete when the time deposit interest rate was deregulated in 1994. During the first 1990s, the entire commercial banking sector performed quite soundly, while some non-bank firms declared insolvency.

Between 1996 and 1998, during the Hashimoto administration, the Japanese government conducted another comprehensive round of financial reforms, which is known as the Japanese Big Bang. They made it possible to establish financial holding firms without obtaining prior approval from the financial authorities, and sanctioned regulatory changes that liberalized market entry requirements. Following the ratification of these measures, Japanese banks established holding firms and consolidated the subsidiaries of trust banks, securities companies, and asset management businesses under these holding companies.

During this period, Japan experienced the bankruptcies of two major banks, the Hokkaido Takushoku Bank and the Japan Long-Term Credit Bank. In response to banking sector turmoil, the Financial Supervisory Agency (FSA) was established in 1998 to accede to the supervisory role previously spread across the Ministry of Finance and the Bank of Japan. The FSA introduced new criteria for the assessment of banking assets, which caused increases in the Non-performing Loans (NPL) ratios of banks. Moreover, tightened fiscal policy under the Koizumi administration dragged down the growth of the Japanese economy.

Between 1998 and 2006, there were fourteen bank mergers, three major corporate reorganizations, and four transfers of business operations from bankrupt banks.[3] The

bank merger wave resulted in significant structural changes in the deposit and lending markets, which became remarkably concentrated during this period. While competition increased in metropolitan areas, the banking sector remained oligopolistic in local cities. These differing degrees of ownership concentration across metropolitan areas and local cities have resulted in varying bank franchise values.

III. Literature Review and Hypotheses

(a) Earlier Research on the Relationship between Franchise Value and Ownership Structure

Earlier research has separately examined the disciplinary role of franchise value and the effect of ownership structure on bank risk. Franchise value can help to lessen the moral hazard problem by increasing the incentives of banks to operate safely, thereby aligning their interests with those of deposit insurers and bank supervisors. Keeley (1990) documents the decline in U.S. bank franchise value during the 1950s, 1960s, and 1970s, when the country's banking industry experienced deregulation and faced increased competition from non-bank financial institutions. He argues that the drop in franchise value led to increased risk-taking and heightened rates of insolvency in the 1980s. Galloway, Lee, and Roden (1997) also find that bank holding companies (BHCs) with higher franchise values consistently undertook lower levels of risk between 1977 and 1994, while BHCs with lower franchise values engaged in greater risks for most of the years within this period. Banking literature presents evidence that managerial shareholding is an important determinant of bank risk-taking, but empirical results in this

sphere are mixed because they depend on the different measures of bank risks used and the different regulatory environments considered. Accordingly, there is no consensus on the exact form of the relationship between bank risk and managerial ownership.

(b) Regulatory Conditions and Risk-taking Behavior

The following research contrasts sample periods representing the deregulated and the regulated periods of banking supervision. They reveal that bank risk and managerial ownership were positively correlated during the deregulated period, but negatively or insignificantly related during the regulated period. Saunders, Strock, and Travlos (1990) impose linearity on the relationship between the two factors in their study of large banks, which lasted from 1978 to 1985. Their conclusion for the 1979 to 1982 period of deregulation is that stockholder-controlled banks (banks whose managers hold a relatively large proportion of stock) exhibited significantly higher risk-taking behavior than manager-controlled banks did (these banks being those whose managers hold a relatively small proportion of stock).

Chen, Steiner, and Whyte (1998) reexamine the agency problem posed by managerial ownership during the relatively regulated sample period of the late 1980s and the early 1990s. They find that the extent of managerial ownership is inversely related to the various measures of depository institution risk. Further, Chen, Steiner, and Whyte (1998) provide evidence of nonlinearity in the relationship between risk-taking and managerial ownership. Cebenoyan et al. (1995) find that, in 1988, savings and loan associations (S&Ls) with high levels of managerial ownership engaged in greater risks than S&Ls with lower levels of managerial ownership. This is in the context of a year

that is widely regarded as a time of regulatory leniency and forbearance (Cebenoyan et al., 1995). In contrast, S&Ls with high levels of managerial ownership assumed lower levels of risk in 1991, a year of regulatory stringency and non-forbearance (Cebenoyan et al., 1995). Further, Kole and Lehn (1999), Anderson and Fraser (2000), and Konishi and Yasuda (2004) have examined the relationship between banks' risk-taking behaviors and ownership structure before and after the regulatory changes.

(c) Internal Governance and Risk-taking Behavior

Existing literature also shows that internal control is related to the risk-taking behavior. Gorton and Rosen (1995) use a corporate control approach to explain increased risk-taking behavior by banks in the 1980s. In a banking environment with few good investment opportunities, poor corporate control mechanisms, and information asymmetries that allowed managers to control banks, bad managers engage in more, but ultimately unprofitable, risks in order to convince external stockholders that they are good managers taking on good risks. Under the corporate control hypothesis, banks with entrenched managers who own small amounts of stock will engage in unprofitable risk-taking. However, managers who possess large stockholdings, and who have hence placed considerable personal wealth at stake, will attempt to take on only profitable risks. Gorton and Rosen (1995) find that in 1984–1990, BHCs with high levels of managerial stock ownership acquired lower credit risk while those with low levels of ownership exhibited entrenchment effects. This finding is consistent with the corporate control hypothesis.

(d) Franchise Value and Ownership Structure in Banks and Non-financial Firms

Demsetz, Saidenberg, and Strahan (1997) argue that franchise value and managerial ownership should be treated as independent variables in an examination of risk-taking behavior. Risk aversion on the part of managers may counteract the risk preferences of owners, thus offsetting the moral hazard problem. In addition, the interests of owners and managers would be aligned at banks with high franchise values, though not at banks with low franchise values. Previous studies have indicated the relationship between franchise value and ownership structure in both non-financial firms (see e.g., Demsetz and Lehn [1985]; Mork, Shleifer, and Vishny [1988]) and in banks (see e.g., DeYoung, Spong, and Sullivan [1996]; Booth, Cornet, and Tehranian [2002]; Gonzalez [2005]). Franchise value is inversely related to risk-taking, even after controlling for ownership structure (insider holdings and large block holdings). According to Anderson and Fraser (2000), managerial shareholdings were positively related to total and firm-specific risk in the late 1980s, when banking was relatively less regulated and under considerable financial stress. However, this relationship turned negative in the early 1990s because legislation designed to reduce risk-taking was enacted in 1989 and 1991.

(e) Study Hypotheses and Literature on Korean and Japanese Banks

Few surveys have explicitly examined the agency problem in either the Korean or the Japanese banking industries. According to research published between the years of 1994 to 2000 (Lee, 2004, 2005-2006), bank managers in positions of greater moral hazard tend to have more incentive to align their interests with those of stockholders. They take on more risks and higher levels of managerial ownership when compared with

those in positions of lesser moral hazard. However, this relationship only held over the relatively deregulated period of 1994 to 1997. Konishi and Yasuda (2004) examine the risk-taking activities of Japanese banks during 1990 to 1999, and find that shareholder ownership had a nonlinear relationship with risk, and that declines in franchise value increased the taking of risks.

Literature surveying the risk-taking behavior of banks in the Korean or the Japanese banking sector only examines the 1990s, and neglects to explore the interaction between franchise value and managerial ownership. In contrast, this paper focuses on the relatively regulated period of the late 1990s and the early 2000s, and examines the disciplinary role of franchise value by taking account of the interaction between franchise value and managerial ownership. In doing so, it tests the moral hazard hypothesis, and obtains insights on the agency problem and the disciplinary role of franchise value in periods of relative financial stability in Korea and Japan. It also investigates whether risk-taking behavior resulting from increased levels of managerial ownership leads to higher profits.

IV. Empirical Model and Data

1. Model

We use the panel estimation model, which combines data for various commercial banks over the sample periods in equation (1), to examine the relations among risk, ownership structure, and franchise value for banks in Korea and Japan. Following Saunders, Strock, and Travlos (1990), we assume that, at least in the short term,

managing performance can be viewed as an endogenous decision variable, which is affected by ownership structure, franchise value, and other control variables.[4]

$$Risk_{jt} = \gamma_j + \gamma_1 Inside_{jt} + \gamma_2 Inside_{jt}^2 + \gamma_3 Outside_{jt} + \gamma_4 Qratio_{jt-1}$$
$$+ \gamma_5 Qratio_{jt-1} * Inside_{jt} + Control\ Variables + Dum + \varepsilon_t \qquad (1)$$

We capture the differences in cross-sectional bank units by specifying an intercept coefficient for each cross-sectional unit in the panel model, and estimate the difference in intercepts using dummy variables. This is a fixed effects model because the regression line is raised or lowered by a fixed amount for each individual. However, individual difference can also be treated as random disturbance drawn from specified distribution in a random effects model, in which case, it becomes part of the model's disturbance term (Judge et al., 1988; Baltagi, 2008).

The method of ordinary least squares is the best unbiased linear estimator for fixed effects models, and the method of generalized least squares is the best unbiased linear estimator for random effects models. Random effects models require no correlation between the regressors and the individual attributes represented by intercept coefficients. The Hausman specification test was employed to choose between the fixed effects model and the random effects model, and its rejection of the null hypothesis suggested that the random effects model was not appropriate and that the fixed effect models should be employed (Hausman and Taylor, 1981).

$Risk_{jt}$ in equation (1) represents bank *j*'s risk in time *t*. As in Chen, Steiner, and Whyte (1998), we use the two-index model to generate risk measures. The two-index model is represented as follows:

$$R_{jt} = \alpha_0 + \beta^s_{MKt} R_{MKt} + \beta^s_{IN} R^s_{INt} + e_{jt}$$

Here, R_{jt} represents the return on the stock of the j^{th} bank at time *t*. R_{MKt} designates the market index (either the Korea Composite Stock Price Index [KOSPI] or the Tokyo Stock Price Index [TOPIX]) at time *t*. R^s_{INt} denotes the short-term interest rate series indicated by daily changes in yield on 30-day Treasury bills, and e_{jt} represents random error terms.

Various risk measures can be derived from the above two-index model. Total risk σ_s is measured as the standard deviation of weekly returns on each bank's stock. Unsystematic risk σ^s_ε is measured as the standard deviation of residual error terms from the model. Systematic risk is represented by β^s_{MK}, the coefficient of market portfolio returns, or market beta.

These measures are employed because management can affect both systematic and unsystematic risks, given that banks are simply portfolios of primary financial assets. For example, a bank investing heavily in Treasury securities would be relatively low-risk and have a low market beta. Thus, systematic risk can be influenced by management decisions. Banks may also find it difficult to diversify unsystematic risk if lending is concentrated in certain regions or on certain products.

$Inside_{jt}$ refers to the percentage of equity held by managers and directors at the j^{th} bank at time *t*. For Japanese banks, $Inside_{jt}$ refers to the portion of equity owned by stable shareholders (those who do not engage in short-term stock trading, including directors, managers, and banks as organizations). It is generally believed that Japanese firms are controlled by stable shareholders (Kang et al., 1999). This is expected to have potentially the same effects on risk-taking as managerial ownership does in the U.S. $Inside_{jt}^2$, the square of $Inside_{jt}$, allows for the possibility of a nonlinear relationship between managerial ownership and risk-taking behavior. This is to accommodate the observations of McConnell and Servaes (1990), Gorton and Rosen (1995), and Cebenoyan et al. (1999). The corporate control hypothesis predicts a significant positive coefficient for $Inside_{jt}$, and a significant negative coefficient for $Inside_{jt}^2$.

The monitoring of managerial risk-taking could be affected by the structure of ownership as well as by the regulatory structure. We include $Outside_{jt}$ as a proxy for the structure of ownership. $Outside_{jt}$ is measured as the percentage of shares held by external block holders.[5] The information asymmetry hypothesis (Ross [1989]; Zeckhause and Pound [1990]) predicts that the opaque nature of banking gives external stockholders, including institutional investors, little control over bank managers. This hypothesis anticipates that the coefficient for $Outside_{jt}$ will be insignificant. Conversely, Pound's (1988) prudent man hypothesis predicts the opposite. According to this hypothesis, institutional investors as large block holders have greater expertise, resources, and incentives for monitoring bank management, and are less subject to the information asymmetries suffered by other stockholders. Therefore, the prudent man hypothesis

envisions that $Outside_{jt}$ will have a negative relationship with the risk measures and a positive one with profitability.

$Outside_{jt}$ may represent concentrated ownership, which is often used to identify shareholder monitoring. The literature has used interesting ways to investigate the relationship among ownership concentration, firm risks, and regulation. Under the substitution hypothesis, owners are more active when there is less regulation. Gonzalez (2005) and Kim et al. (2007) conduct extensive reviews on the literature about the substitution hypothesis. Demsetz and Lehn (1985), Himmelberg, Hubbard, and Palia (1998), and Holderness, Kroszer, and Sheehan (1999) find a positive relation between ownership concentration and firm risk. Kim et al. (2007) suggest that this is indicative of monitoring by large shareholders. Anderson and Fraser (2000) and Konishi and Yasuda (2004) find that risk-taking by shareholders commonly increases during less regulated periods while decreasing during periods of stringent regulation.[6]

Q_{jt-1} represents the franchise value of bank *j* at time *t-1*. In order to take account of the fact that risk-taking behavior is affected by the previous year's franchise value rather than by the current one, franchise value was lagged. Tobin's *q*, defined as the ratio of the market value of a firm to the replacement costs of its assets, is an attractive theoretical measure with which to determine franchise value.[7] Following Keeley's (1990) technique for deriving a proxy for franchise value, we used a simple estimator of *q*, the sum of the market value of common equity (price per share times number of shares) plus the book value of liabilities divided by the book value of assets.

To examine the interaction between managerial stock ownership and franchise value, we added the slope interaction variable $Qratio_{jt-1} * Inside_{jt}$. The coefficient indicates

whether managerial ownership has an encouraging or depressing effect on risk as the franchise value of a bank increases. Negative and significant coefficients imply that an increase in managerial ownership at banks with high franchise value discourages risk-taking activity, which supports the hypothesis that franchise value plays a disciplinary role in regulating risk-taking by banks.

We used three control variables in the model: LTA_{jt}, CAP_{jt}, and FA_{jt}. LTA_{jt}, the log of the total assets of the j^{th} bank at time *t*, should have an offsetting effect on risk-taking because large banks tend to hold more diversified asset portfolios, resulting in lower levels of risk. Nevertheless, the implicit guarantee provided by the government for large banks through endorsement of the "too big to fail" notion may encourage banks to take more risks. CAP_{jt}, the capital-to-asset ratio (shareholder equity as a proportion of total assets) of the j^{th} bank at time *t*, represents financial leverage and should be negatively related to the risk measures. As the capital-to-asset ratio of an institution rises, its level of risk is expected to fall.

Although we chose the capital-to-asset ratio to signify financial leverage, the equity-to-asset ratio is also one of the most commonly used proxies for bank risk. When equity levels are low, bank risk is high; this is because capital represents collateral against liabilities and protects banks from insolvency when asset values decline (Pringle, 1974; Santomero and Watson, 1977; Taggart and Greenbaum, 1978; Buser, Chen, and Kane, 1981; Marcus, 1983; Houston and James, 1995). Conservative owners or managers will maintain high levels of capital. Further, Barth, Bartholomew, and Bradley (1990); Cebenoyan, Coperman, and Register (1995); Gibson (1995); and Knopf and Teall (1996) used the capital-to-asset ratio as a proxy for bank risk in their studies of Japanese banks.

Lastly, write-offs for loan losses could be used as another measure of bank risk (Gorton and Rosen, 1995). We also used the variable CAP_{jt} as a dependent variable for bank risk in Korea and Japan, and report the results of estimations thus derived. In addition, we employed the ratio of write-offs to total assets as a dependent variable representing risk appetite in Japanese banks.[8]

The final control variable is FA_{jt}, the fixed asset ratio (i.e., the ratio of property, plant, and equipment to total assets) of the j^{th} bank at time *t*. It should be positively related to the risk measures because fixed assets serve as a measure of both operating leverage and liquidity of the asset portfolio. Year dummy variables were included in order to capture year- specific characteristics.

Return on assets (ROA) was also used as an independent variable in a separate model in order to analyze the effects of insider ownership and franchise value on the profitability of banks. The banking system differs between the two countries. For example, keiretsu banks in Japan extract rents from their client firms (Weinstein and Yafeh, 1998) in exchange for maintaining close relationships with them. These banks pressure their client firms to maintain high levels of bank debt at high interest rates. Therefore, they are likely to be more profitable than other types of banks. To see whether this affects the ROA for Japanese banks, we included an additional equation with a keiretsu dummy variable for Japanese banks.

2. Data

We used panel data on commercial banks from the relatively regulated periods of 1997 to 2005 for Korea and 1996 to 2006 for Japan. Since bank risks are measured by capital market risk, sample banks should be listed on a stock exchange. The number of listed banks varies greatly during the sample periods because the banking sectors were undergoing financial restructuring, and merged banks are treated as new banks. Table 1 shows the number of banks surveyed per year.

Table 1 here

Our panel is unbalanced, and the estimations could be biased by the selection of only surviving banks. This is because riskier banks presumably drop out of the sample on a more frequent basis. Further, new entrants may assume different risk-taking behaviors from existing banks. It is widely recognized that, when this is the case, ordinary least squares (OLS) estimates suffer from selection bias. Therefore, we apply a two-step Heckman procedure (Heckman, 1979) and calculate the Mills ratio to check the survival bias in our sample. The results are reported in the Appendix.[9]

Data on Korean stock market returns were obtained from the Korea Stock Research Institute (KSRI). Data on managerial ownership and large block holders were acquired from the database of the Korea Listed Companies Association (KLCA) and the annual reports of individual banks. Balance sheet data and equity market value were both secured from the Fnguide[10] database and the Financial Supervisory Service (FSS).[11]

Japanese stock market data (i.e., the Tokyo stock market index and the stock prices of individual banks) were procured from FinancialQuest, the online database of the

Japanese business newspaper publisher NIKKEI, while ownership data were from Bloomberg and Thomson Reuters. The financial data on commercial banks are from the "Kaisha Zaimu Karte" of the Tokyo Keizai Shimpo. Table 2 shows the list of variables and their description.

Table 2 here

V. Empirical Results

1. Descriptive Statistics

Table 3 provides descriptive statistics for the sample of the Korean banking sector, which covers the years of 1997 to 2005. It shows that the level of total risk, measured as the standard deviation of weekly stock return series, is 10.22 percent, and that the mean level of unsystematic risk, measured as the standard deviation of the residuals of the index model, is 8.70 percent. It also reveals that the mean market beta, while positive, equals less than one. Additionally, the average level of officer and director ownership is 0.25 percent, with a standard deviation of 0.65 percent, and a maximum share of 3.84 percent. In comparison, the mean average of ownership by external block holders is 35.45 percent. At 0.99, our measure of franchise value falls just below one. This means that, on average, the market value of assets is 0.08 percent smaller than the book value of assets for the banks in the sample. The standard deviation of 0.03 reveals some dispersion in franchise values, but most sample banks have franchise values approximating the average.

The mean value of log of total asset is 23.75, and the average capital-to-asset ratio for the banks in the sample is 4.28 percent. The fixed-asset-to-total asset ratio has an average of 3.28 percent, with maximum and minimum values of 7.91 percent and 1.28 percent, respectively. The ROA mean is 7.81 percent, with a standard deviation of 2.76 percent.

Table 3 here

Table 4 describes the statistics for the sample of the Japanese banking sector, which covers the years of 1996 to 2006. It shows that the level of total risk, measured as the standard deviation of weekly stock return series, is 1.84 percent. This is lower than the total risk level of Korean banks. Further, the mean level of unsystematic risk is also lower than in the Korean data. The average level of insider ownership is 0.89 percent, with a standard deviation of 1.32 percent. Generally, insider ownership ratios are high for local banks and low for banks with headquarters in the metropolitan area. The Japanese banks have a mean franchise value of one, which is as high as that of the Korean banks. The mean value of the log of total asset is 14.67,while the average capital adequacy ratio and average fixed assets ratio divided by total asset ratio is 4.62 percent and 1.68 percent, respectively. ROA mean has a negative value of 0.09 percent.

Table 4 here

2. Empirical Results for Korea

Table 5 shows the estimations for the relationship between managerial ownership and bank risk in Korea, which use various measures of bank risks as dependent variables. Managerial ownership and franchise value are included in the model with the interaction term. In cases where the Hausman specification test rejected the random effects model, the estimations of the fixed effects model are reported in its stead. We applied the two-step Heckman procedure to correct the sample bias in the model, and present the results in Appendix I. When total and unsystematic risk are used as dependent variables, the parameters estimated by the OLS method and the Heckman procedure are similar, and the Mills ratio is very small and insignificant. This implies that there is no sample bias in the model.

The sample period in this analysis is the late 1990s and early 2000s, which was a relatively regulated time. Previous literature suggests that ownership structure has a much stronger effect on the risk characteristics of banks during periods of deregulation than it does during periods of regulation. Managerial ownership, Inside, when controlled for franchise value, affects only one of the three risk measures—systematic risk. This is shown by the negative and statistically significant coefficient of the square of managerial ownership, $Inside^2$, in the systematic risk model. Similarly, franchise value, *Qratio(-1)*, affects only systematic risk when controlled for managerial ownership.

However, when the coefficients of the interaction term, *Qratio(-1)*Inside*, are estimated, the results obtained are consistent with the moral hazard hypothesis. These coefficients are negative and statistically significant at 10 percent for all the risk measures used as dependent variables. This implies that increases in managerial ownership at banks with high franchise value curb risk-taking behavior and reduce levels

of risk. This is because the costs of bank failure can be dear for the owners of banks with high franchise values, who have much to lose if a risky business strategy leads to insolvency. As a result, the aforementioned increases strengthen their incentive to operate safely, thereby aligning their interests with those of deposit insurers and bank supervisors.

The result concurs with previous literature confirming the disciplinary role of franchise value on bank risk-taking. It also accords with existing analyses of Korean cases by Lee (2004, 2005-2006), which state that banks in positions of greater moral hazard tend to have more incentive to align their interests with those of stockholders, and are therefore inclined to take on more risk as managerial ownership increases.

The coefficient of *Outside*, which is the percentage of shares held by external block holders, is significant when total risk and systematic risk are used as dependent variables. This implies that large external owners affect the managerial decisions and the risk-taking behavior of banks. In the Korean banking sector in general, larger assets entail greater amounts of risk. However, large banks are able to diversify, leading to lower risk, and the "too big to fail" notion may also to reduce bank risk. According to Oh et al. (2003) and Park and Park (2007), increases in asset size negatively affect the stability of Korean banks. In our estimation, the larger the asset size, the greater the systematic risk. This is consistent with previous research and the "too big to fail" doctrine. Our results also show that the capital-to-asset ratio does not significantly affect the risk level of banks. As expected, the fixed asset ratio increases the levels of total risk and unsystematic risk in the model. Finally, the positive and statistically significant coefficients of the yearly dummy variables for the years of 1997 to 2002 reflect the unfavorable banking environment engendered by high levels of risk.

Table 6 examines the relationship between managerial ownership and ROA, which acts as a proxy for banking profitability. The variables *Inside* and $Inside^2$ do not affect bank profits to a significant degree. Thus, managerial ownership affects neither bank risk as examined in Table 5, nor banking profitability as examined after controlling for franchise value. Contrary to our expectations, franchise value reduces banks profit after it is controlled for managerial ownership. Conversely, the interaction term between managerial ownership and franchise value does not influence bank profits. Elsewhere, the capital-to-asset ratio positively affects banking profitability, while the fixed asset ratio sways it in a negative direction. The negative and significant coefficients of the dummy variables for the years of 1997 to 2000 reflect the unfavorable banking environment of the time.

Table 5 here

Table 6 here

3. Empirical Results for Japan

Table 7 presents the estimations for Japan. As for Korea, the estimations of the fixed effects models are presented in cases where the Hausman specification test rejected the random effects model. In addition, the two-step Heckman procedure was administered to correct the sample bias in the Japanese banking industry, and the results are presented in Appendix II. When all three risk measures are used as dependent variables, the parameters estimated by the OLS method and the Heckman procedure are

similar, and the Mills ratio is very small and insignificant. These results imply that the model contains no sample bias.

After controlling for the influence of franchise value, the model analyzes increases in managerial ownership for their propensity to increase total risk. It finds that managerial ownership does not affect levels of unsystematic or systematic risk. However, franchise value reduces both types of risk. In particular, its role in reducing levels of systematic risk maintains a one percent significance level. The coefficients of the interaction term for franchise value and managerial ownership are negative and significant, maintaining a five percent significance level for total risk and a one percent significance level for unsystematic and systematic risk. These results confirm that franchise value disciplines risk-taking behavior in the Japanese banking industry, just as it does in the Korean banking industry.

The estimations show that external block holders of Japanese banks do not affect risk levels. This falls in with the predictions of the information asymmetry hypothesis. Asset size particularly increases levels of total risk, thereby supporting the notion of "too big to fail." The results also confirm that total risk falls as the capital-to-asset ratio rises, and that the parameters of the ratio of write-offs to assets are entirely insignificant, probably because the variable excludes bad loans from write-off expenses.

Table 8 shows the estimations that use ROA as a proxy for banking profitability, which is then used as a dependent variable. By regressing the independent variables in profit calculations, we can examine the corporate control hypothesis, which states that increased risk-taking behavior resulting from an increase in managerial ownership should produce larger profits. However, increases in total risk resulting from increased

managerial ownership do not lead to higher profits for Japanese banks. This result is commonly obtained when the keiretsu dummies are added.

Table 7 here

Table 8 here

VI. Conclusion

Bank stockholders have greater incentives and abilities to increase risk in deregulated environments than they do in tightly regulated ones. This is documented by the existing literature, which demonstrates that ownership structure tends to have much a stronger effect on the levels of risk taken by banks during deregulated periods than it does during regulated ones. Our study contributes to the literature by analyzing the effect of managerial ownership on the risk-taking behavior of banks in the Korean and Japanese banking industries during the relatively regulated period of the late 1990s to early 2000s. We experiment with a model that includes the variables of managerial ownership and franchise value, which are used to produce an interaction term.

Managerial ownership affects neither the risk levels nor the profit levels of Korean banks. In contrast, increases in managerial ownership heighten the total risks of Japanese banks. However, this increase in risk does not produce higher profits for Japanese banks.

When the coefficients of the interaction term between franchise value and managerial ownership are estimated, we obtain results that are consistent with the moral

hazard hypothesis. These coefficients are negative and statistically significant when all three risk measures are used as dependent variables for both the Korean and the Japanese banking industries. This indicates that increases in managerial ownership at banks with high franchise values discourage risk-taking behavior.

The costs of bank failure can be high for the owners of banks with high franchise values because these owners have much to lose if risky strategies lead to insolvency. Therefore, banks with high franchise values are motivated to operate safely, and this aligns their interests with those of deposit insurers and bank supervisors. Our estimations correspond to the results detailed in previous literature, which has established the disciplinary role of franchise value on the risk-taking behavior of banks. While the origins or trends of franchise value may differ in Korea and Japan, its role in curbing the risk-taking incentives of banks is uniform across both countries.

Existing literature on the relationship between managerial ownership and risk-taking behavior mostly focuses on the U.S. banking system. Our results show that theories derived from market-based systems such as the U.S. economy can be applied to other types of financial systems, such as the bank-based economies of Korea and Japan. Our findings may be enhanced by future studies covering a wider range of international panel data. An examination of the post-1990s period would be especially enlightening because a large number of developed and emerging countries have experienced financial deregulation and reregulation since that time.

Reference

Alvarez, R. and H. Gorg, 2007, Multinationals as stabilizers? Economic crisis and plant employment growth, *IZA Discussion Paper*, 2692.

Anderson, Ronald C. and Donald R. Fraser, 2000, Corporate control, bank risk taking, and the health of the banking industry, *Journal of Banking & Finance,* **24**, pp. 1383-1398.

Baltagi, Badi H., 2008, *Econometric Analysis of Panel Data*, Wiley.

Barth, J. R., P. F. Bartholomew, and M. C. Bradley, 1990, The determinants of thrift institutions resolution costs, *Journal of Finance* **45**, pp. 731-754.

Berle, Adolf A. and Gardner C. Means, 1932, *The Modern Corporation and Private Property,* New York: Commerce Clearing House.

Booth, J. R., Cornett, M. M. and Tehranian, H., 2002, Boards of directors, ownership, and regulation, *Journal of Banking and Finance* **26**, pp. 1973-1996.

Buser, S. A., A. H. Chen, and E. J. Kane, 1981, Federal deposit insurance, regulatory policy, and optimal bank capital, *Journal of Finance* **35**, pp. 51-60.

Caprio, G., Laeven, L. and Levine, R., 2003, Governance and bank valuation, *World Bank working paper.*

Cebenoyan, A. Sinan, Elizabeth S. Cooperman and Charles A. Register, 1999, Ownership structure, charter value, and risk-taking behavior for thrifts, *Financial Management,* **28**, pp. 43-60.

_____, 1995, Deregulation, reregulation, equity ownership, and S&L risk taking, *Financial Management,* **24**, pp. 63-76.

Chen, C.R., T.L., Steiner and A.M. Whyte, 1998, Risk-taking behavior and management ownership in depository institutions, *Journal of Financial Research,* **21,** pp. 1-16.

Chun, Sun Eae and Lee In Sil, Bank capital regulation and credit crunch in Korean banking Industry, *Review of Korean Financial Stability* 1, pp.1-28.

Demsetz, Rebecca S., March R. Saidenberg and Philip E. Strahan, 1997, Agency problems and risk taking at banks, *Federal Reserve Bank of New York, Research Paper,* No. 9709.

_____, 1996, Banks with something to lose: the Disciplinary role of franchise value, *FRBNY Economic Policy Review.*

Demsetz, H. and Lehn, K., 1985, The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* **93**, pp. 1155-1177.

DeYoung, Robert, Kenneth Spong and Richard Sullivan, 1996, Ownership, control, and performance at small commercial banks, mimeo, Office of the Comptroller of the Currency.

Galloway, T. M., W. B. Lee and D. M. Roden, 1997, Bank's changing incentives and opportunities for risk taking, *Journal of Banking and Finance,* **21**, pp. 509-527.

Gibson, M. S., 1995, Can bank health affect investment? Evidence from Japan*, Journal of Business* **68**, pp. 281-308.

Gonzales, R., 2005, Bank Regulation and Risk-Taking Incentives: An International Comparison of Bank Risk, *Journal of Banking and Finance*, **29**, pp.1153-1884.

Gorton, G. and Rosen, R., 1995, Corporate control, portfolio choice, and the decline of banking, *Journal of Finance,* **50**, pp. 1377-1420.

Grossman, S. and O. Hart, 1986, The costs and Benefits of Ownerssip: A Theory of Vertical and Lateral Integration, *Journal of Political Economy* **94**, pp. 691-719.

Hausman, J. A. and W. E. Taylor, 1981, Panel data and unobservable individual effects, *Econometrica*, **49**, pp. 1377-98.

Heckman, James J., 1979, Sample selection bias as a specification error, *Econometrica*, **47**, pp. 153-161.

Himmelberg, C. P., Hubbard, R. G. and Palia, D., 1998, Understanding the determinants of managerial ownership and the link between ownership and performance, *Journal of financial Economics* **53**, pp. 353-384

Holderness, C.G., R.S. Kroszer, and D. Sheehan, 1999, Were the Good Old Days That Good? Changes in Managerial Stock Ownership since the Great Depression, *Journal of Finance* **54**, pp.435-469.

Houston, J. F. and C. James, 1995, CEO compensation and bank risk: Is compensation in banking structured to promote risk taking?, *Journal of Monetary Economics* **36**, pp. 405-431

Jensen, M and Meckling W., 1976, The theory of firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics,* **3**, pp. 305-365.

Judge, G. G., R. Carter Hill, William E. Griffiths, Helmut Lutkepohl and Tsoung-Chao Lee, 1982, *Introduction to The Theory and Practice of Econometrics*, Wiley.

Kang, J., Kim, Y., Stulz, R., 1999, The under-reaction hypothesis and the new issue puzzle: Evidence from Japan, *Review of Financial Studies,* **12**, pp. 519–534.

Karlsson, Sune, Nannan Lundin, Fredrik Sjoholm and Ping He, 2009, Foreign firms and Chinese employment, *The World Economy*, **32**, pp. 178-201.

Keeley, M. C., 1990, Deposit insurance, risk and market power in banking, *American Economic Review,* **80**, pp. 1183-1120.

Kim, Kenneth A., Sang-Hyop Lee, and S. Ghon Rhee, 2007, Large shareholder monitoring and regulation: The Japanese banking experience, *Journal of Economics and Business* **59**, 2007, pp. 466-486

Kole, S., and Lehn, K., 1999, Deregulation and the adaptation of governance structure: The case of U.S. airline industry, *Journal of Financial Economics* **52**, pp. 79-117

Konishi, M. and Y. Yasuda, 2004, Factors affecting bank risk taking : Evidence from Japan, *Journal of Banking and Finance* **28**, pp. 215-232.

La Porta, R, F., Lopez-de-Silanes, A. Shleifer, and R.W. Vishny, 1998, Law and Finance, *Journal of Political Economy* **106**, pp. 1113-1155.

Lee, In Sil, 2000, Bank capital regulation and bank risk taking behavior in Korea, *Journal of Korea Money and Finance* 5(1), pp. 111-143

Lee, Seok Weon, 2005~2006, Moral hazard, agency problem and ownership structure, C*orporate Ownership & Control,* **3**, pp. 116-124.

_____, 2004, Regulation, corporate control and bank risk taking, *Corporate Ownership & Control,* 1(4), pp. 108-117.

Marcus, A. J., 1983, The bank capital decision: A time series-cross section analysis, *Journal of Finance* **38**, pp. 1217-1232.

McConnell, J. J. and H. Servaes, 1990, Additional evidence on equity ownership and corporate value, *Journal of Financial Economics,* **27**, pp. 595-612.

Morck, Randall, Andrei Shleifer and Robert Vishny, 1988, Management ownership and market valuation: an Empirical analysis, *Journal of financial Economics*, **20**, pp. 293-316.

Lee, M. H. and M. Nagano, 2008, Market competition before and after bank merger wave: A comparative study of Korea and Japan, *Pacific Economic Review,* **13**, pp. 604-619.

Oh, Wan Keun, Hung Sik Kim and Hong Sun Song, 2006, The effect of universal banking & mega bank on banks' risks, *Policy Paper*, Korea Deposit Insurance Corporation, (in Korean).

Park, Kwang Woo and Hyun Sung Park, 2007, Mega bank and soundness of deposit insurance fund, *Policy Paper*, Korea Deposit Insurance Corporation, (in Korean).

Pound, J., 1988, Proxy contests and the efficiency of shareholder oversight, *Journal of Financial Economics,* **22**, pp. 237-265.

Pringle, J.J., 1974, The capital decision in commercial banks, *Journal of Finance* **29**, pp. 779-795

Ross, S. A., 1989, Institutional markets, financial markets, and financial innovation, *Journal of Finance*, **44(3)**, pp. 541-556

Santomero, A. M. and R.D. Watson, 1977, Determining an optimal capital standard for the banking industry, *Journal of Finance* **32**, pp. 1267-1282

Sanuders, A., E. Strock and N. G. Travlos, 1990, Ownership Structure, deregulation and bank risk taking, *Journal of Finance*, **45**, pp. 643-654.

Sharpe, I. G., 1994, Determinants of capital structure of Australian trading banks, *Asia Pacific Journal of Management* **12**, pp. 97-121.

Taggart, R. A. and S. I. Greenbaum, 1978, Bank capital and public regulation, *Journal of Money, Credit, and Banking* **10**, pp. 158-169,

Weisbrod, S., Lee, H. and Rohas-Suarex, L., 1992, Bank risk and the declining franchise value of the banking system in the United States and Japan, *IMF Working Paper*, 92/45.

Weinstein, D. E. and Y. Yafeh, 1998, On the costs of a bank-centered financial system: Evidence from the changing main bank relations in Japan, *Journal of Finance* **53**, pp. 635-672.

Zeckhauser, R. J. and J. Pound, 1990, Are large shareholders effective monitors? An investigation of share ownership and corporate performance. In: Asymmetric Information Corporate Finance, and Investment (eds. R.G. Hubbard), pp. 149-180. University of Chicago Press, Chicago.

<Table 1> Number of Sample Commercial Banks Analyzed Over the Years

year	Number of banks analyzed	
	Korea	Japan
1996	-	74
1997	25	77
1998	25	79
1999	18	82
2000	15	78
2001	14	79
2002	11	82
2003	11	84
2004	10	86
2005	9	87
2006	-	87

<Table 2> List of the Variables

Variables		Description
Risk	σ_s	-Total risk, standard deviation of the weekly return on each bank's stock
	σ_ε^s	-Unsystematic risk, standard deviation of the residual error term from index model
	β_{MK}^s	-Market beta representing systematic risk, coefficient on the market portfolio return
	WOF	-Write-off-to-asset ratio
Inside *Outside*		-Managerial ownership, percentage of equity held by managers and directors - Shares of outside block holders
Qratio		-Franchise value, proxied by Tobin's q measured as the sum of market value of common equity plus the book value of liabilities divided by the book value of asset
LTA *CAP* *FA* *Dum*		-Log of total asset -Financial leverage, capital-to-asset ratio(share holder's equity/total asset) -Operating leverage, fixed asset to total asset -Yearly dummy variables
ROA		-Profit proxied by ROA

<Table 3> Descriptive Statistics for Korean Banking Industry

		mean	median	s.d.	max	min
Risk	σ_s (%)	10.22	9.09	5.30	29.00	2.00
	σ_ε^s (%)	8.70	7.24	4.91	2.69	1.63
	β_{MK}^s	0.95	0.97	0.43	2.10	-0.08
Inside (%)		0.25	0.02	0.65	3.84	0.00
Outside (%)		35.45	15.1	35.17	123.62	1.17
Qratio (%)		0.99	0.99	0.03	1.07	0.95
LTA		23.75	23.99	1.27	25.94	21.05
CAP (%)		4.28	4.00	1.73	9.00	-6.00
FA (%)		3.28	2.99	1.29	7.91	1.28
ROA (%)		7.81	0.26	2.76	3.1	-11.45

<Table 4> Descriptive Statistics for Japanese Banking Industry

		mean	median	s.d.	max	min
Risk	σ_s (%)	1.84	1.80	0.80	6.50	0.00
	σ_ε^s (%)	0.15	0.10	0.00	0.90	0.10
	β_{MK}^s	0.13	0.03	0.25	1.81	0.00
	WOF(%)	0.13	0.63	0.02	14.81	0.00
Inside (%)		0.89	0.24	1.32	10.68	0.00
Outside (%)		52.27	50.98	14.76	99.41	3.50
Qratio (%)		1.00	1.00	0.02	1.23	0.96
LTA		14.67	14.61	0.97	19.05	12.65
CAP (%)		4.62	4.50	1.35	12.80	0.00
FA (%)		1.68	1.60	0.70	4.70	0.20
ROA (%)		-0.09	0.12	3.20	7.60	-52.10

<Table 5> Relationship between Managerial Ownership and Bank' Risk: Korean Case

Dependent variable	Total Risk (σ_s)	Unsystematic Risk (σ_ε^s)	Systematic Risk (β_{MK}^s)	Capital (CAP)
	Random Effect	Fixed Effect	Random Effect	Fixed Effect
c	0.080	-0.192	1.396	0.259
	(0.575)	(0.721)	(0.409)	(0.391)
Inside	0.002	-0.004	-0.275	0.420
	(0.916)	(0.915)	(0.307)	(0.246)
$Inside^2$	-0.004	-0.010**	0.017	0.002
	(0.184)	(0.023)	(0.639)	(0.360)
Outside	0.031***	0.025	0.203*	-0.019**
	(0.00)	(0.171)	(0.067)	(0.022)
Qratio(-1)	-0.081	0.076	-3.125*	0.077
	(0.574)	(0.681)	(0.068)	(0.393)
*Qratio(-1)*Inside*	-0.041*	-0.038*	-0.220*	-0.437
	(0.098)	(0.090)	(0.079)	(0.237)
LTA	0.001	0.006	0.116***	-0.012
	(0.589)	(0.781)	(0.000)	(0.299)
CAP	-0.227	-0.210	-0.466	
	(0.176)	(0.358)	(0.814)	
FA	0.749***	1.047*	4.810	0.547
	(0.006)	(0.068)	(0.196)	(0.121)
Year dummies	yes	yes	yes	yes
R-squared	0.76	0.67	0.59	0.84
F Statistic		12.950***		
Wald Chi^2	286.390***		127.580***	
Hausman Specification Test	12.310	186.700***	7.840	77.75***
Breusch Pagan LM Test	4.260***	0.130	4.470**	1.110
Observations	106	106	106	85
Firms	26	26	26	19

Note: ( ) represents p-value.

*** represents the coefficient is statistically significant at 1% level, ** at 5% level and * at 10% level

<Table 6> Relationship between Managerial Ownership and Bank' Profit: Korean Case

	ROA
	Fixed Effect
c	0.180*
	(0.077)
Inside	0.009
	(0.517)
$Inside^2$	0.000
	(0.896)
Outside	-0.014*
	(0.066)
Qratio(-1)	-0.222**
	(0.010)
*Qratio(-1)*Inside*	-0.006
	(0.599)
LTA	0.002
	(0.440)
CAP	0.468***
	(0.000)
FA	-0.517**
	(0.020)
Year Dummies	Yes
R-squared	0.73
F Statistic	11.800***
Wald Chi^2	
Hausman Specification Test	27.490*
Breusch Pagan LM Test	2.050
Observations	104
Firms	26

Note: ( ) represents p-value.

*** represents the coefficient is statistically significant at 1% level, ** at 5% level and * at 10% level

<Table 7> Relationship between Managerial Ownership and Bank' Risk: Japanese Case

	Total Risk (σ_s)	Unsystematic Risk (σ_ε^s)	Systematic Risk (β_{MK}^s)	Capital (CAP)	Write-off (WOF)
	Random Effect	Random Effect	Fixed Effect	Random Effect	Random Effect
c	-0.007	-0.003	0.581	0.081***	0.006
	(0.740)	(0.228)	(0.238)	(2.830)	(1.020)
Inside	1.794**	0.142	8.549	-1.042	-0.131
	(0.019)	(0.188)	(0.234)	(-1.050)	(-0.570)
Inside^2	-0.563	0.051	-12.165	1.562	-0.396
	(0.730)	(0.789)	(0.546)	(0.710)	(-0.910)
Outside	0.000	0.000	-0.013	0.003	-0.001
	(0.882)	(0.231)	(0.749)	(0.650)	(-0.310)
Qratio(-1)	-0.005	0.005*	-0.604***	-0.035	-0.008
	(0.787)	(0.097)	(0.000)	(-1.430)	(-1.420)
*Qratio(-1)*Inside*	-1.769**	-0.146*	-8.183*	0.984	-0.007
	(0.022)	(0.078)	(0.086)	(0.990)	(-1.420)
LTA	0.003***	0.000	-0.004	0.003	0.001*
	(0.000)	(0.174)	(0.892)	(0.410)	(1.870)
CAP	-0.141***	-0.005	-0.461		
	(0.000)	(0.113)	(0.198)		
FA	0.036	-0.008	0.745	0.460***	-0.021
	(0.533)	(0.210)	(0.319)	(6.520)	(-1.580)
Years Dummies	Yes	Yes	Yes	Yes	Yes
R-squared	0.19	0.09	0.23	0.21	0.20
F Statistic			18.840***		
Wald Chi^2	122.590***	47.100***		604.15***	221.87***
Hausman Specification Test	11.760	19.620	30.370***	2.160	11.112
Breusch Pagan LM Test	433.320***	27.200***	0.170	1024.5***	49.49***
Observations	706	578	844	790	790
Firms	86	87	86	87	87

Note: ( ) represents p-value.

*** represents the coefficient is statistically significant at 1% level, ** at 5% level and * at 10% level

Variables "Dropped" due to collinearity problem

<Table 8> Relationship between Managerial Ownership and Bank' Profit: Japanese Case

	ROA	ROA
	Random Effect	Random Effect
c	-0.003***	-0.015
	(-0.190)	(-1.160)
Inside	-1.077*	-1.117**
	(1.920)	(-2.020)
$Inside^2$	1.818	1.769
	(1.560)	(1.600)
Outside	-0.002	-0.004
	(-0.150)	(-0.320)
Qratio(-1)	-0.003	0.003
	(-0.200)	(0.280)
*Qratio(-1)*Inside*	1.005*	1.047*
	(1.780)	(1.880)
LTA	-0.002	0.002
	(-1.080)	(0.920)
CAP	0.228***	0.209***
	(12.730)	(12.300)
FA	-0.035	-0.028
	(-0.990)	(-0.870)
Keiretsus dummies	No	Yes
Year Dummies	Yes	Yes
R-squared	0.26	0.29
F Statistic		
Wald Chi^2	260.200***	286.490***
Hausman Specification Test	10.210	14.140
Breusch Pagan LM Test	18.990***	2.96*
Observations	722	722
Firms	87	87

Note: ( ) represents p-value.

*** represents the coefficient is statistically significant at 1% level, ** at 5% level and *at 10% level

Variables "Dropped" due to collinearity problem

<Appendix I> Heckman Two-step Estimation Results: Korean Case

Dependent variable	Total Risk (σ_s)		Unsystematic Risk (σ_ε^s)		Systematic Risk (β_{MK}^s)	
	OLS Estimates	Heckman Two-step Estimates	OLS Estimates	Heckman Two-step Estimates	OLS Estimates	Heckman Two-step Estimates
c	-0.027	0.088	-0.087	0.014	2.166	5.175
	(0.828)	(0.552)	(0.472)	(0.921)	(0.180)	(0.215)
Inside	0.004	0.002	0.157	0.016	-0.304	-0.240
	(0.854)	(0.944)	(0.466)	(0.571)	(0.290)	(0.783)
$Inside^2$	-0.004	0.013	-0.006**	0.016	0.028	-0.126
	(0.166)	(0.332)	(0.045)	(0.210)	(0.486)	(0.737)
Outside	0.028***	0.039***	0.027***	0.045***	0.292**	0.014
	(0.001)	(0.000)	(0.001)	(0.000)	(0.007)	(0.956)
Qratio(-1)	0.037	-0.741	0.088	0.001	-1.106	-5.254
	(0.749)	(0.629)	(0.445)	(0.995)	(0.469)	(0.222)
Qratio(-1) Inside*	0.010	0.008	0.006	0.001	0.182	0.139
	(0.574)	(0.679)	(0.708)	(0.963)	(0.424)	(0.810)
FA	0.816***	0.148	0.850***	0.109	-2.027	7.457
	(0.000)	(0.672)	(0.000)	(0.750)	(0.498)	(0.471)
Indugro	dropped	0.095	dropped	0.074	dropped	6.875
		(0.623)		(0.696)		(0.220)
Yearly Dummy	yes	yes	yes	yes	yes	yes
R-squared	0.778		0.739		0.485	
Observations	115	121	117	121	117	121
Mills ratio		0.009		-0.004		0.762**
		(0.429)		(0.706)		(0.023)

Note: ( ) represents p-value.

*** represents the coefficient is statistically significant at 1% level, ** at 5% level and * at 10% level

Variables “Dropped” due to collinearity problem

<Appendix II> Heckman Two-step Estimation Results: Japanese Case

Dependent variable	Total Risk (σ_s)		Unsystematic Risk (σ_ε^s)		Systematic Risk (β_{MK}^s)	
	OLS Estimates	Heckman Two-step Estimates	OLS Estimates	Heckman Two-step Estimates	OLS Estimates	Heckman Two-step Estimates
c	0.030*	0.040	-0.000	-0.000	-0.115	-0.125
	(0.091)	(0.963)	(0.799)	(0.929)	(0.427)	(0.872)
Inside	-0.041	-0.352	0.095	0.094	5.484	5.780
	(0.959)	(0.993)	(0.262)	(0.636)	(0.403)	(0.870)
Inside^2	-2.630	-1.180	-0.029	-0.023	-6.936	-8.252
	(0.113)	(0.989)	(0.874)	(0.957)	(0.609)	(0.910)
Outside	-0.006***	-0.005	-0.000**	-0.000	0.010	0.009
	(0.001)	(0.956)	(0.060)	(0.441)	(0.018)	(0.909)
Qratio(-1)	-0.009	-0.021	0.002	0.002	0.133	0.145
	(0.593)	(0.980)	(0.235)	(0.629)	(0.335)	(0.846)
Qratio(-1) Inside*	0.185	0.415	-0.096	-0.095	-5.366	-5.588
	(0.816)	(0.992)	(0.261)	(0.633)	(0.412)	(0.874)
FA	-0.260***	-0.102	-0.011**	-0.011	-0.000	-0.144
	(0.000)	(0.964)	(0.033)	(0.413)	(0.998)	(0.944)
Indugro	0.043	0.050	0.000	0.000	-0.838***	-0.844
	(0.177)	(0.974)	(0.911)	(0.961)	(0.002)	(0.550)
Yearly Dummy	yes	yes	yes	yes	yes	yes
R-squared	0.120		0.072		0.082	
Observations	826	827	662	663	822	823
Mills ratio		-0.360		-0.002		0.320
		(0.865)		(0.786)		(0.557)

Note: ( ) represents p-value.

*** represents the coefficient is statistically significant at 1% level, ** at 5% level and * at 10% level

Variables "Dropped" due to collinearity problem

Endnotes:

[1] The convoy banking system originated in the desire of Japanese bank regulators to prioritize financial stability over all else in the design of their regulatory regime. This system constrained all the banks within it to grow at the same pace, in a manner similar to how ships in a convoy are required to move at the pace of their slowest member. In addition, the convoy rescue system placed the burden of resolving bank failures on the banking system itself. Instead of liquidating failing banks through a deposit insurance regime, regulators merged it with a healthy bank. This "convoy approach" may have played a role in the system's poor performance.

[2] In early 1998, the Korea First Bank and the Seoul Bank were offered to foreign investors through an agreement with IMF. Five ailing banks were merged with healthy banks through P&A procedures. In 1999, the Commercial Bank of Korea and Hanil Bank were merged to become Hanvit Bank, while Boram Bank was merged with Hana Bank. In 2001, four banks that had received public funds, (Hanvit Bank, Kwangju Bank, Kyungnam Bank, and the Peace Bank) were consolidated into Korea's first financial holding company, the Woori Financial Holding Company. As well, Kookmin Bank and the Korean Housing Bank were merged. In December 2002, Hana Bank and the Seoul Bank were merged. In 2003, the nationalized Chonhung Bank was sold to the

Shinhan Financial Holding Company.

[3] The bank merger wave in the Japanese metropolitan area was triggered by repeated bankruptcies and a series of financial reforms in the 1990s. As of September 2006, the number of banks in Japan's metropolitan area was reduced to approximately three financial holding firms, namely, Mitsubishi Tokyo UFJ Financial Holdings, Mitsui Sumitomo Banking Corporation, and Mizuho Financial Holdings. This was not the case in the regional banking market, with the number of banks in local areas totaling 129. On average, the number of regional bank branches decreased by 1.1 percent per annum from 1992 to 2006. As the number of bank mergers increased, the top three banks' share of deposits grew, reaching 40.5 percent in 2005 as compared with 26 percent in 1991.

[4] In our examination of the relation between risk and ownership, we treat risk as a dependent variable and ownership variable as an independent variable, rather than the other way around. However, it is important to note that individual perspectives on the relation between bank risk and ownership differ, as Saunders, Strock, and Travlos (1990) point out. Demsetz and Lehn (1985) and Grossman and Hart (1986) state that ownership is endogenous (i.e., dependent on firm-specific factors). Some firms (e.g., riskier ones) need monitoring owners. Therefore, papers that study ownership monitoring have treated ownership structure as a dependent variable (see e.g., Demsetz and Lehn, 1985; La Porta et al., 1998; Holderness, Kroszner, and Sheehan, 1999).

[5] *Outside* for Korea represents the share of stock held by a bank's largest shareholder, and includes the share owned by the related families and subsidiaries of this company.

[6] In testing the substitution hypothesis, papers have done one of the following: (1) contrasted periods before and/or after a change in the regulatory environment (e.g., Kole and Lehn, 1999; Anderson and Fraser, 2000; Konishi and Yasudat, 2004); (2) contrasted firms in regulated industries with firms in non-regulated industries (e.g., Demsetz and Lehn, 1985; Booth et al., 2002); or (3) contrasted the internal governance of firms from countries with different regulatory environments (La Porta et al., 1998; Caprio et al., 2003).

[7] Franchise value can be used to represent future growth opportunity, which usually depends largely upon the risk-taking behavior of individual banks. This is because future profitability and its volatility is significantly related to risk-taking behavior, as suggested in financial engineering literature. However, we look at whether past franchise value has an inverse effect on risk-taking behavior.

[8] We appreciate comments from anonymous referees on this point. We used the equity-to-asset ratio as a dependent variable in estimations for both countries. As Sharpe (1994) contends, most studies are unable to use write-offs for loan losses as a measure of bank risk due to the unavailability of such data. Due to limitations on data regarding write-offs for Korean banks, we only use write-offs as a dependent variable for Japanese banks in this paper.

[9] The survival bias (the sample selection problem) is extensively dealt with in firm-related literature by authors such as Karlsson et al. (2009) and Alvarez and Gorg (2007).

[10] The website of Fnguide can be accessed at http://www.fnguide.co.kr.

[11] The website of the Financial Supervisory Service (FSS) can be accessed at http://fisis.fss.or.kr.