

ORGANIZATIONAL STRUCTURE AND PERFORMANCE: EVIDENCE FROM THE NONLIFE INSURANCE INDUSTRY IN JAPAN

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ABSTRACT

This study examines the impact of organizational structure on firm performance, incentive problems, and financial decisions in the Japanese nonlife (property-casualty) insurance industry. Stock companies that belong to one of six horizontal keiretsu groups have lower expenses and lower levels of free cash flow than independent stock and mutual insurance companies. Keiretsu insurers also have higher profitability and higher loss ratios than independent insurers. With a limited sample size, there is some evidence that mutual insurers have higher levels of free cash flows, higher investment incomes, and lower financial leverage than their stock counterparts. Overall, empirical evidence suggests that each structure has its own comparative advantage.

INTRODUCTION

More than 60 years ago, Berle and Means (1932) and Coase (1937) pioneered a stream of research focusing on the relationship of the structure of a firm's "property rights" with its real activities. Alchian and Demsetz (1972), Jensen and Meckling (1976), Mayers and Smith (1981, 1986), and Fama and Jensen (1983) continued this research

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by addressing incentive conflicts between contracting parties; their focus was on manager and owner activities in different ownership and organizational structures. Since then, other research has documented effects of the firm's relation between the firm's choice of organizational structure and real activities.

Mayers and Smith (1981) study the impact of organizational structure on real activities in the U.S. insurance industry, which displaces perhaps the broadest range of organizational forms of any major industry. Stock companies in the insurance industry separate the functions of managers, stockholders, and policyholders. Mutual companies merge the owner and customer functions; that is, policyholders both supply capital and are residual risk bearers. These two types of organizational structure make it possible to examine operational efficiency and incentive problems (see Mayers and Smith, 1981, 1986, 1988, 1992, 1994). Although several empirical studies conclude that stock companies are more efficient than mutual companies, some theoretical analysis and empirical evidence suggest potential benefits of the mutual form of organization. In fact, the survival of both organizational forms indicates that each form has its own particular advantages (Mayers and Smith, 1988).

Other researchers have studied the relation between organizational structure and economic variables in the industrial firms of Japan. The financial environment of Japanese firms provides researchers with an ideal institutional setting to test various aspects of financial theory that have been developed in the United States (Kang and Stulz, 1996). Specifically, many Japanese companies have close ties to a "main bank," which not only provides a company with debt financing, but also owns a substantial amount of the firm's equity (Nakatani, 1984). This corporate structure is known as the financial or horizontal *keiretsu*. Prowse (1992) and Berglöf and Perotti (1994) posit that the financial *keiretsu*, with its extensive cross-shareholdings, makes for one of the most complex governance structures. Because there are also many Japanese companies that are relatively independent of these horizontal corporate networks, researchers can use the Japanese market as a "controlled" experimental design to examine aspects of corporate financial behavior.

Our purpose is to build on the research by Berle and Means (1932), further developed by Coase (1937), Alchian and Demsetz (1972), and Jensen and Meckling (1976), among others. We investigate the impact of organizational structure on firm performance, incentive problems, and financial decisions in nonlife insurance companies in Japan.¹ We believe our findings can shed additional light on the theoretical and empirical issues related to the organizational structure for several reasons. First, *keiretsu* and non*keiretsu* structures allow us to investigate the relation between organizational structure and firm performance. We are interested in this relation because the agency costs and information costs of different types of organization structures are different, and the performance of a firm structured differently is expected to be different.²

¹ According to Article Three of Japanese Insurance Business Law, a nonlife insurance company is an insurance company authorized to write property-casualty insurance policies. Article Three also stipulates that "no person may be authorized for both life and non-life insurance business." The nonlife insurance industry in Japan is similar to the property-casualty insurance industry in the United States.

² The discussions of agency costs and information costs of different organizational structure can be found in the section "An Overview of Japanese Financial *Keiretsu*."

Second, like companies in the U.S. property-casualty insurance industry, Japanese nonlife insurance companies also take two major organizational forms: mutual and stock. Even with a limited sample size, we can thus examine the impact of organizational form on firm financial behavior. Third, this study effectively controls for the effect of government regulation, because the Japanese nonlife insurance industry is subject to a uniform regulatory and tax environment. The U.S. insurance industry is regulated, instead, at the state level. We believe the results of our study should be more reliable than previous U.S. studies.

Fourth, although there have been many empirical examinations of the effect of the keiretsu structure on the performance of industrial firms, little attention has been paid to financial firms. Keiretsu financial firms are different because keiretsu financial firms such as keiretsu insurance companies, provide funds to their member firms. The financial health of the keiretsu financial firms is critical to the performance of the whole group. It is important to examine whether keiretsu insurance companies perform differently from keiretsu industrial firms. Fifth, there is no evidence to date examining the Japanese nonlife insurance industry in terms of performance and financial decisions. A comparison of the results of our study with evidence on Japanese industrial companies should be revealing. Sixth, the Japanese nonlife insurance industry offers savings-type policies, which are not offered in the United States. This unique feature enables us to examine the hypothesis that mutual companies issue more savings-type policies than stock companies to mitigate the costs of conflicts between owners and customers (among other reasons).³ Seventh, the coexistence of keiretsu insurance companies, independent insurance companies, and mutual insurance companies may provide some insights into agency theory. Finally, the U.S. government has been pressuring the Japanese government to open its insurance markets further to U.S. firms. If this is to be a profitable market for U.S. companies, it is crucial to understand the structure and operations of the Japanese insurance industry. Our empirical investigation of the relation between organizational structure and firm financial behavior in the Japanese nonlife insurance industry should be helpful in this regard.

The remainder of the article is organized as follows. The next section provides the related literature. This is followed by a section describing the Japanese nonlife insurance industry. An overview of Japanese financial keiretsu is summarized in the next section. The following section discusses the main research questions. This is followed by the results of empirical analyses. The article ends with a brief summary of conclusions and discussions.

RELATED LITERATURE

When the discretionary behavior of one party (an agent) is authorized by another party (the principal), incentive conflicts arise. Coase (1960) argues that in frictionless markets, differing conflicts are costlessly controlled; that is, the costs of negotiation, administration, and enforcement are zero. In a frictionless market, therefore, the organizational structure of insurance companies will have no impact on real activity choice or performance. Jensen and Meckling (1976), however, argue that contracting is costly and that it is not optimal to resolve all conflicts. Contracting costs,

³ Another possible reason that mutual insurers issue savings-type of policies is that they do not have access to the capital markets and use savings-type policies to amass additional capital.

which include monitoring costs and opportunity costs, are referred to as agency costs. Mayers and Smith (1981) and Fama and Jensen (1983) posit that because a firm's very organizational structure is one of the mechanisms used to control agency conflicts, it should have a significant impact on the firm's financial behavior.

There are a number of organizational forms in the insurance industry including stock, mutual, reciprocal, and Lloyds' associations. The two dominant company forms are stock and mutual companies. The stock form of organization employs the standard corporate form, which establishes different roles for owners (stockholders), fixed-claim holders (customers/policyholders), and managers. Although this structure enhances efficiency through specialization, separation of functions causes agency conflicts among owners, policyholders, and managers.

First, in the case of nonfinancial firms, stockholders have an incentive to increase share values at the expense of debt holders. Stockholders, for example, can raise dividends by liquidating assets that are used to back claims. At the extreme, debt holders are promised a contractually agreed payment from the assets of the company upon the occurrence of a designated event, which will be left with worthless claims. This conflict is generally referred to as the agency cost of fixed claims (debt). The policyholders in an insurance company may face similar problems, although the insurance industry regulation does mitigate agency costs of fixed claim (policyholders claim) in insurance companies. For example, some of the objectives of insurance regulation include maintaining insurance solvency to protect policyholders claims. With regulatory oversight and state guarantee funds, policyholders will not be left with completely worthless claims. A second problem, which involves conflict between owners and managers, is referred to as the agency cost of equity. Managers have incentives to consume company perquisites and to make unprofitable investments for personal gain. This problem is partly controlled by what we call the market for corporate control. Other parties can acquire a firm, replace ineffective managers, and realize the capitalized value of cost reduction. Thus, managers should find it more difficult to make unprofitable investments for personal gains. Even with regulatory oversight and market control, however, the agency costs of fixed claims and the agency cost of equity still persist.

The mutual company form of organization combines the customer and owner functions, which would seem to control agency problems between owners and fixed-claim holders by making them the same people. In fact, this benefit is offset by an increase in contracting costs between owners and managers of the firm (Mayers and Smith, 1981). The outside market for corporate control does not operate in the case of mutual companies. Moreover, ownership rights of mutual policyholders are relatively limited and are not transferable (Mayers, Shivdasani, and Smith, 1997). The only way owners (policyholders) can remove management is through a proxy fight, which can be costly and time-consuming (Mayers and Smith, 1988). Even should owner-policyholders win a proxy fight, they will receive only their proportionate gains from the action. Consequently, mutual company owners have little incentive to initiate an active monitoring mechanism.

Smith (1986) concludes that ownership structures create different incentives for the contracting parties, which, in turn, make different ownership structures variably

efficient in different contexts.⁴ Mayers and Smith (1988) find that different ownership structures are more concentrated in different lines of business, suggesting that each structure has its own comparative advantages. Finally, many researchers contend that the survival of both organizational forms is proof of their efficiency (Alchian, 1950). We examine the impact of organizational structure on firm performance in an alternative setting (non-U.S.) and a different institutional environment.

NONLIFE INSURANCE INDUSTRY IN JAPAN

Japan is the world's second-largest insurance market. Although the industry dates back to 1859, it has experienced dramatic changes in the last 50 years. The impact of World War II on the industry was severe, and the number of insurers fell drastically. One way the Japanese government tried to revitalize companies and limit competition was to forbid entry of new companies after the war. Under the Insurance Business Law of 1943, Japanese insurance companies may not operate simultaneously in both the life and nonlife sectors.

More recently, the nonlife insurance industry has grown steadily despite the oil shock in 1973 and the "Heisei Recession" in 1994. There were 26 nonlife insurance companies. We choose to confine our analyses up to 1994 to control for extraneous factors. The Japanese financial system has undergone drastic change since 1995. Net premiums and total assets in 1994 increased by approximately 3 percent over 1993.

Table 1 shows net premium income by line for the whole industry in 1994.⁵ Figure 1 shows the industry trend in premium income and total assets from 1982 through 1994. Industry assets show a steady but slight increase over the period whereas industry net premiums have experienced a considerably higher growth rate. The total assets of all companies reached ¥28,459.8 billion (US\$285.5 billion) by the end of the 1994 fiscal year. Gross premiums reached ¥8,182.8 billion (US\$82.0 billion) in 1994; premiums were ¥6,765.3 billion (US\$67.9 billion) in 1994. Overall, the nonlife insurance industry in Japan has been performing well.

AN OVERVIEW OF JAPANESE FINANCIAL KEIRETSU

The financial environment in which Japanese firms operate provides an unusual opportunity to explore the relation between organizational structure and firm performance. Unlike their U.S. counterparts, many Japanese industrial companies have close

⁴ For instance, Mayers, Shivdasani, and Smith (1997) find that, to overcome limitations in their organizational structure, mutual companies can use outside directors as a monitoring mechanism. In a study of life insurers that convert from stock to mutual forms of organization (mutualization), Mayers and Smith (1986) find that changing from a stock to a mutual ownership is, on average, efficiency-enhancing. McNamara and Rhee (1992) examine mutual life insurers making the opposite change (demutualization). They conclude that demutualization does not affect firm performance, as measured by premium income, policy mix, lapse rates, and operating expenses.

⁵ Savings-type fire, savings-type personal accident, savings-type movable all risks, and savings-type workers' compensation all experience negative growth between 1993 and 1994. This was only a 1-year phenomenon; none of the lines suffered negative growth since 1990 except in 1994.

TABLE 1

Net Premium Income by Line for Japanese Nonlife Insurance Industry in 1994

Line	Net Premium	Δ%
Fire	885,488	7.73
Savings-type fire	165,069	-4.25
Hull	79,657	-2.55
Cargo	130,387	4.73
Transit	60,084	1.60
Automobile	3,466,250	4.58
Personal accident	594,162	2.53
Savings-type personal accident	165,886	-6.37
Aviation	16,155	6.86
General liability	243,779	4.72
Movable all risks	93,883	6.02
Savings-type movable all risks	1,398	-8.84
Workers' compensation	90,253	-7.33
Savings-type workers' compensation	577	-10.22
Nursing care expense	47,842	-7.37
Savings-type nursing care expense	1,259	0.89
Earthquake	26,309	16.09
Compulsory automobile liability	570,226	-2.02
Total	6,765,273	3.26

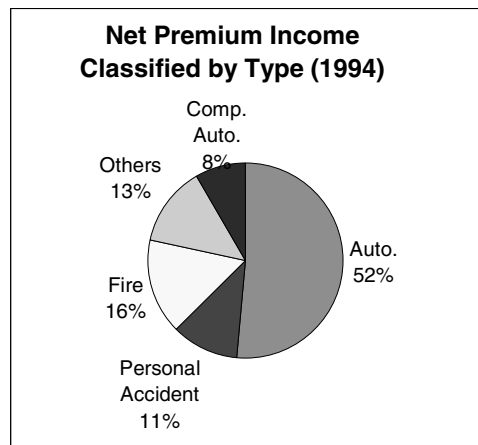
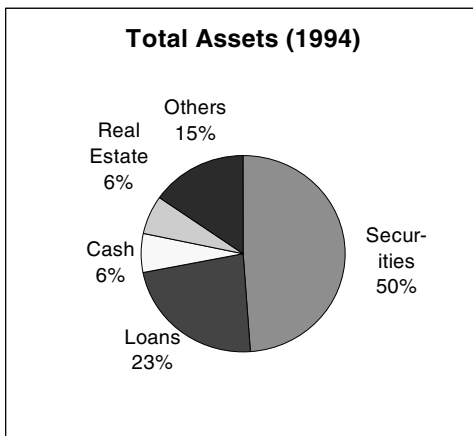
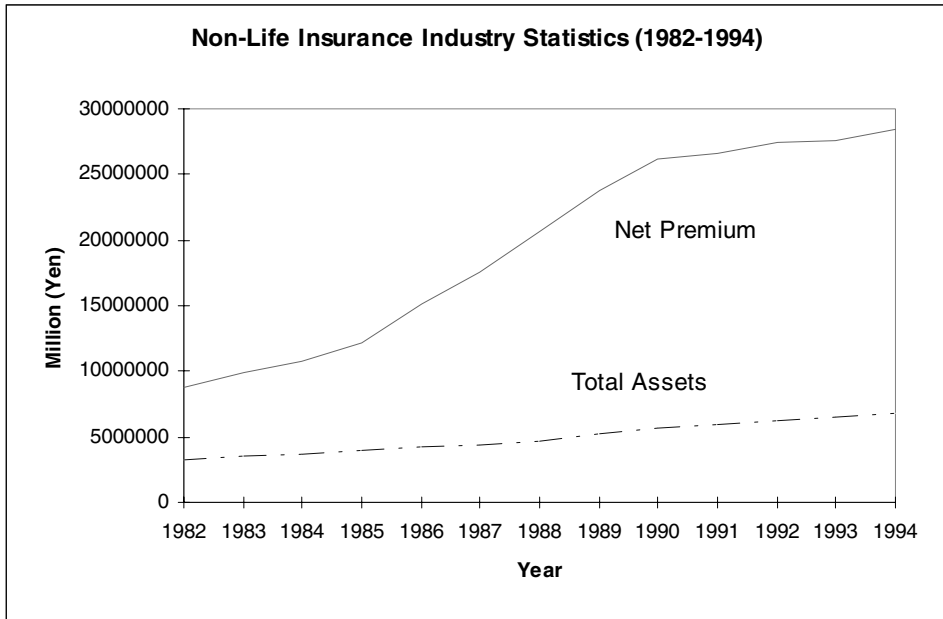
Notes: Business line data are obtained from the annual special issues of *The Statistics of Japanese Non-Life Insurance Business* published by the Insurance Research Institute of Japan. Net premiums are shown in millions (¥). Δ% denotes percentage change from the previous year.

ties to a "main bank," which not only provides them with debt financing but also owns a substantial amount of the firms' equity (Nakatani, 1984). This structure, known as financial or horizontal *keiretsu*, produces a group of firms centered on affiliated banks and financial institutions (Hoshi, Kashyap, and Scharfstein, 1990b).

Until late 1990s, *keiretsu* membership was largely determined by historical developments. After the U.S. Occupation ended in the 1950s, Japanese banks, with indirect support from the Japanese government, began to assemble their own corporate groups by acquiring equity ownership of public firms (Miyashita and Russell, 1994). The newly formed corporate groups were in fact similar to the prewar *Zaibatsu* groups (e.g., Mitsubishi, Mitsui, Fuji, Dai-ichi Kangyo, Sumitomo). The characterization was changed from *Zaibatsu* to *keiretsu* to avoid the negative connotation of the prewar *Zaibatsu* label. In fact, there is no record of *keiretsu* membership switching for the next three decades until the 1990s.

Ownership structure is also determined once the *keiretsu* membership is identified. The complex corporate governance structure ensures that cross-shareholdings are maintained to keep control of the member firms. Empirical evidence has shown that the ownership structure of Japanese firms was quite stable throughout our study period (Prowse, 1992; Berglöf and Perotti, 1994). Kim and Limpaphayom (1998) note that, after amendment of the Anti-Monopoly Act in 1978, which reduced the maximum

FIGURE 1
Japanese Nonlife Insurance Industry Statistics (1994)



proportion of commercial bank share ownership from 10 percent to 5 percent (effective in 1987), aggregate financial institution ownership remained the same after 1988. Keiretsu firms were able to maintain their ownership structure even in the face of major policy changes until the mid-1990s.

Sheard (1989, 1994) observes that the largest lender of a keiretsu company generally is one of the five largest shareholders. Keiretsu companies have strong business ties with one another and significant levels of corporate cross-share ownership (Prowse, 1992). Hoshi, Kashyap, and Scharfstein (1991) suggest that group financial institution

equity holdings serve a monitoring purpose in a keiretsu group. Cross-ownership allows financial institutions to place key personnel in top managerial positions of group firms, thus mitigating some of the managerial agency costs.

The role of financial institutions in horizontal keiretsu groups is well documented. As both the main creditors and significant equity holders, the banks have strong incentives to monitor member firms' financial standing. The degree of monitoring reduces information asymmetry and represents an efficient method of corporate control (Sheard, 1989; Hoshi, Kashyap, and Scharfstein, 1990a; Campbell and Hamao, 1993; Gilson and Roe, 1993).

The main bank plays an important role when member firms become financially distressed. Nakatani (1984) notes that a main bank will immediately provide both financial and administrative assistance to a keiretsu firm encountering financial difficulty. Hoshi, Kashyap, and Scharfstein (1990b) find that the group structure of firms in a Japanese financial keiretsu reduces the costs of financial distress. The main bank allows financially distressed firms both to borrow and invest more than nongroup firms in the years following financial distress.

The fact that major debt holders and shareholders are the same entities virtually eliminates agency conflicts between owners and fixed claimholders (Prowse, 1990). The major consequence of financial institution stockholding is more borrowing, because it eliminates factors that inhibit the use of debt (Flath, 1993). Researchers consistently find that keiretsu firms maintain higher leverage than independent firms. The cross-shareholdings and appointment of personnel among member firms also mitigate the agency cost of equity, as managers are monitored closely by group members.

Kester (1986) suggests that the monitoring and information-gathering activities within the keiretsu structure can alleviate information asymmetry. Campbell and Hamao (1993) argue that this practice minimizes information costs and represents the most efficient method of corporate control in capital markets. Hoshi, Kashyap, and Scharfstein (1991) find that, as a result of low information asymmetry between their lenders, keiretsu industrial firms are not constrained by their liquidity position.

One significant implication is that that keiretsu structure can mitigate some of the information costs faced by most insurers in underwriting and in claims handling. We conjecture that keiretsu insurers should have lower information costs than independent insurers because the cross-holding of shares better aligns the interests between the keiretsu insurers and their member firm policyholders. That is, the information asymmetry is less important for keiretsu insurers.⁶

Little attention has been paid to financial firms, although it is well known that financial firms are at the core of keiretsu groups (Hodder and Tschoegl, 1985; Miyashita and Russell, 1994). Keiretsu financial firms other than main banks, such as securities and insurance companies, also provide funds to members. Nonlife insurance companies not only provide funds to members for investment, but also underwrite insurance on members' business. The well-being of a group is linked to the financial health of the group's insurance companies. This is a good reason to examine whether the keiretsu governance structure affects the performance of keiretsu nonlife insurance companies.

⁶ We are grateful to a referee for suggesting this point.

RESEARCH QUESTIONS

Our main research question relates to how differences in organizational and governance structure of keiretsu and independent nonlife insurance companies affect firm performance and financial decisions. First, we examine the way the keiretsu structure affects firm performance. Keiretsu insurers write policies for keiretsu members and provide funds to keiretsu members. Given the importance of insurance companies to the well-being of the keiretsu, the monitoring mechanisms of keiretsu groups should emphasize the financial health and operational efficiency of keiretsu insurers. We predict that keiretsu insurers are more intensively monitored than independent insurers, which should lead to greater operational efficiency (e.g., low expenses). Independent nonlife insurance companies that are not subject to such monitoring should not perform as well as keiretsu insurers.

Second, cross-shareholdings among keiretsu members have some implications with regard to agency conflicts. Keiretsu major shareholders purchase insurance policies from keiretsu insurers. This arrangement aligns owners and customers, because major shareholders are also policyholders. The overall agency cost of fixed claims should be reduced because there is less incentive for shareholders to expropriate wealth from policyholders, who are also keiretsu group members. Large customer-shareholders are able to gain more from their actions, which, in turn, result in more active and effective monitoring. Independent nonlife insurers are not monitored this way. We predict that there should be more severe agency conflicts between shareholders and policyholders for independent insurers than for keiretsu insurers. Reduced agency conflicts should result in lower free cash flow levels for keiretsu companies.

There are two mutual nonlife insurance companies among the 26 nonlife insurance companies in Japan. This setting allows us to examine the operational efficiency and the extent of incentive conflicts for mutual and stock insurers in Japan. If each organizational form has its particular advantages, as suggested by Mayers and Smith (1981) and Fama and Jensen (1983), we should observe different sorts of performance in particular circumstances. We acknowledge the limited power of the comparison given that there are only two mutual insurers in the sample. We hope, however, that the simultaneous presence of keiretsu insurance companies, independent insurance companies, and mutual insurance companies can provide some insight into the question as to whether each type of organization has its own comparative advantage (Mayers and Smith, 1988).

EMPIRICAL ANALYSIS

Data and Methods

The data used in this study come from annual special issues of *The Statistics of Japanese Non-Life Insurance Business* published by the Insurance Research Institute of Japan and from the PACAP-Japan(tm) Database, compiled by the Pacific-Basin Capital Markets (PACAP) Research Center at the University of Rhode Island. There are 26 nonlife insurers with complete records for the period 1983 through 1994.⁷ As mentioned above, the Japanese financial system has undergone drastic change since 1995. We choose to end our analysis in 1994 to control for extraneous factors.

⁷ Three companies (Accident, Allianz, and Unum) do not have complete data.

TABLE 2
Nonlife Insurance Companies in Japan 1994

Company	Capital	Total Assets	Net Premium
Tokio Marine and Fire ^a	100,817	4,712,256	1,237,501
Yasuda Fire and Marine ^a	58,381	3,473,765	881,118
Mitsui Marine and Fire ^a	48,476	2,540,483	601,286
Sumitomo Marine and Fire ^a	57,276	2,425,195	521,340
Nippon Fire and Marine ^a	61,245	1,897,975	426,575
Dowa Fire and Marine	35,024	991,963	228,363
Nissan Fire and Marine	124,000	876,136	282,436
Koa Fire and Marine	30,003	1,329,356	282,963
Chiyoda Fire and Marine	37,664	1,198,520	385,108
Nisshin Fire and Marine ^a	15,634	557,489	157,659
Nichido Fire and Marine ^a	50,496	1,621,322	389,139
Fuji Fire and Marine	23,082	1,236,153	360,020
Dai-Tokyo Fire and Marine	57,124	1,480,619	420,744
Kyoei Mutual Fire and Marine ^b	700	786,180	182,513
Taisei Fire and Marine ^a	10,000	458,003	97,105
Daiichi Mutual Fire and Marine ^b	500	1,275,139	59,812
Toyo Fire and Marine	1,138	121,144	24,048
Asahi Fire and Marine	2,405	215,600	38,533
Taiyo Fire and Marine	396	101,411	13,467
Daido Fire and Marine	518	43,913	14,170
Allstate Automobile and Fire	10,000	33,025	16,739
J.I. Accident and Fire	5,000	11,449	10,459
Allianz Fire and Marine	2,500	3,406	1,233
Unum Japan Accident	3,000	3,038	5

Notes: Financial data are obtained from the annual special issues of *The Statistics of Japanese Non-Life Insurance Business* published by the Insurance Research Institute of Japan. Keiretsu classification is obtained from *Industrial Groupings in Japan* (1985, 1989) and *kigyo keiretsu souran* (1992). The specialist reinsurance companies (Toa and Japan Earthquake) are excluded. Paid-up capital, total assets, and net premium are reported in millions (¥).

^aKeiretsu company.

^bMutual company.

We exclude two specialty reinsurance companies (Toa and Japan Earthquake). The remaining 24 direct insurance companies are listed in Table 2. Two mutual companies in the sample are Kyoei and Daiichi. Among the stock companies, eight insurers belong to one of the top six horizontal keiretsu groups. The two mutual insurers are not members of any keiretsu. Keiretsu classification is ascertained through the use of publications by Dodwell Marketing Consultants (1989) and Toyo Keizai.

We use a number of multiple regression models to examine the relationship between organizational structure and firm financial behavior.⁸ First, we examine a company's operational efficiency as measured by profitability. We also investigate operating

⁸ We also conducted regression analysis using the fixed-effect models by including the yearly dummy variable or the company dummy variables. The results of these models do not change the overall conclusions.

TABLE 3
Descriptive Statistics

Variables	Keiretsu	Independent	Mutual
Claims paid (loss ratio)	0.501 (0.046)	0.492 (0.049)	0.436 (0.093)
Commission paid	0.198 (0.009)	0.198 (0.022)	0.225 (0.017)
Expense ratio	0.248 (0.029)	0.281 (0.053)	0.308 (0.035)
Log (capital)	17.175 (0.923)	15.539 (1.956)	12.568 (1.046)
Free cash flow	0.045 (0.020)	0.036 (0.021)	0.133 (0.112)
Investment holding	0.229 (0.327)	0.235 (0.337)	0.262 (0.381)
Investment income	0.089 (0.023)	0.086 (0.037)	0.159 (0.101)
Liabilities-to-equity	11.557 (5.068)	21.169 (23.714)	94.556 (73.173)
Loan portfolio	0.068 (0.098)	0.063 (0.102)	0.083 (0.119)
Number of policies ($\times 10^6$)	10.420 (7.184)	8.921 (8.769)	3.193 (1.098)
Return on assets	0.009 (0.004)	-0.004 (0.047)	0.012 (0.007)
Savings-type policies	0.075 (0.041)	0.079 (0.038)	0.146 (0.024)
Securities holdings	0.146 (0.208)	0.164 (0.240)	0.164 (0.241)

Notes: The sample consists of Japanese nonlife insurance companies with complete records during the period 1983–1994. Financial data are obtained from the annual special issues of *The Statistics of Japanese Non-Life Insurance Business* published by the Insurance Research Institute of Japan. Standard deviations are reported in parentheses. Keiretsu classification is obtained from *Industrial Groupings in Japan* (1985, 1989) and *kigyo keiretsu souran* (1992).

expense, commissions, net claims, and investment income. We examine incentive conflicts by comparing free cash flow levels among insurers. Finally, we test for the impact of organizational structure on financial leverage.

Table 3 presents descriptive statistics for the variables used in this study. The data indicate that keiretsu companies are generally larger than other types of companies; mutual companies are relatively small.

Profitability

We would expect to find the organizational form with better monitoring mechanisms, more efficient operations, and lower information costs to be more profitable. Nakatani (1984) observes that industrial firms operating in keiretsu groups have lower profits than independent companies. He argues that this is because keiretsu

groups foster a conservative corporate strategy, which leads to lower risk and lower profits. Weinstein and Yafeh (1998) contend that the main banks are most concerned with interest payments; they would therefore favor stable corporate profitability.

These results relate to Japanese industrial firms, however. We expect insurance companies to behave differently. Nonlife insurance companies not only provide funds for investment, but also underwrite insurance on members' business. The livelihood of the group is bound up with the financial health of the group's insurance companies. The role of the insurer makes it important that keiretsu insurers perform well. Following the line of argument in Jensen and Meckling (1976), we predict that keiretsu insurance companies should be more profitable than other firms.

To investigate the effect of organizational structure on profitability, we use the regression model:

$$\begin{aligned} \text{ROA}_j = & \alpha + \beta_1 \text{SIZE}_j + \beta_2 \text{LEV}_j + \beta_3 \text{LINDX}_j \\ & + \beta_4 \text{POL}_j + \beta_5 \text{STD}_j + \beta_6 \text{K}_j + \beta_7 \text{M}_j + \varepsilon_j \end{aligned} \quad (1)$$

where ROA is return on assets, SIZE is natural logarithm of total firm capital, LEV is the liabilities-to-equity ratio, LINDX is the loss exposure index, POL is the total number of policies written by the company (included to control for possible economies of scale), STD is the standard deviation of loss ratio across all lines, K is a dummy variable indicating financial keiretsu membership (1 = keiretsu; 0 = independent), and M is a dummy variable indicating organizational form (1 = mutual; 0 = stock). Please note that yearly dummy variables are included in the regressions, but the results are not reported.

To create the loss exposure index (LINDX), we calculate the industry annual average of loss ratios by line and weight of the firm's exposure (premium by line) to that particular business line. An insurer that underwrites business in lines that have high loss ratios will have a high index value. This variable is included to control for the impact of losses in specific lines on profitability. To check for robustness of the results, we use business line dummy variables instead of the index as well as return on equity and return on premium as alternative measures of profitability, and obtain similar overall results.

Table 4 presents pooled regression results for the profitability measure (ROA). The keiretsu affiliation dummy variable has a positive coefficient, indicating that keiretsu insurers are more profitable than other insurers. This result also holds for the sample excluding mutual insurers. The results are similar using alternative measures of profitability (return on equity and return on premium; results are not tabulated).

The finding that keiretsu affiliation has a positive impact on profitability is different from the result Nakatani (1984) obtains for industrial firms. The difference is not attributable to accounting practices because of strict supervision by the Ministry of Finance.⁹ The regression coefficient for the mutual-form dummy variable is not

⁹ An insurance company that wishes to alter a statement regarding methods of operations, general policy conditions, or the basis for calculating premiums and underwriting reserve must obtain approval from the Ministry of Finance.

TABLE 4
Regression Results for Profitability

Variables	All Firms	Stock Insurers
Intercept	-0.156*** (-3.344)	-0.170*** (-3.146)
Size	-0.007*** (-3.860)	-0.008*** (-2.981)
Leverage	-0.001 (-0.491)	-0.001 (-0.085)
Loss exposure index	-0.001*** (-2.373)	-0.001* (-1.753)
Number of policies	0.022*** (6.846)	0.022*** (6.462)
Standard deviation of loss ratio	-0.001 (-1.359)	-0.001 (-1.464)
Keiretsu affiliation	0.014*** (2.774)	0.015*** (2.817)
Mutual organization	0.007 (0.661)	
R^2	0.193	0.194
F-Statistic	9.051***	9.801***

Notes: This table presents pooled regression results predicting variation in return on assets (ROA) for nonlife insurance companies with complete records during the period 1983–1994. Financial data are obtained from annual special issues of *The Statistics of Japanese Non-Life Insurance Business* published by the Insurance Research Institute of Japan. Keiretsu classification is obtained from *Industrial Groupings in Japan* (1985, 1989) and *kigyo keiretsu souran* (1992). *t*-statistics are shown in parentheses. Statistical significance at the 1, 5, and 10 percent levels is denoted by ***, **, and *, respectively.

statistically significant indicating that, after controlling for other variables, there is no significant difference in terms of profitability between mutual and stock forms of organization.

One possible explanation for higher profitability is that keiretsu groups can engage in intragroup transactions in order to take advantage of different effective tax rates. If insurance firms face a lower effective tax rate than industrial firms, transferring profits from industrial firms to insurance members of the group could reduce group taxes.

We use financial statement data from the PACAP-Japan Database to calculate effective tax rates for keiretsu insurance companies in our sample and for keiretsu industrial firms listed on the Tokyo Stock Exchange.¹⁰ Following Zimmerman (1983), we use the ratio of income tax to operating cash flow as a measure of the effective tax

¹⁰ In the United States, companies may have two versions of financial statements, one for investors and one for the tax authorities, but there is only one version of financial statements available to outsiders. Tax calculations in Japan are based on published financial statements available to investors.

rate.¹¹ According to the calculations, the average effective tax rate during the period for keiretsu insurers is 14.4 percent, whereas the average effective tax rate for keiretsu industrial firms is 10.5 percent. The difference is statistically significant at the 1 percent level, $t = 2.77$. This pattern remains consistent on an annual basis, so we conclude that there is no tax incentive for keiretsu industrial firms to transfer income to a keiretsu insurer. Is there any incentive for keiretsu insurers to shift their profits to keiretsu industrial firms? Even though the effective tax rate for keiretsu industrial firms is lower, we believe that there is no incentive for a keiretsu insurer to shift part of its profits to keiretsu industrial firms because the financial health of the keiretsu insurer is so critical to the whole keiretsu.

With regard to the control variables, larger firms tend to be less profitable. Gibson (1995), Houston and James (1996), and Knopf and Teall (1996) suggest that the size of a financial institution is inversely related to risk-taking (business risk). Consequently, larger insurers should have less risk, and lower profits. The coefficient for size is negative and highly significant. Leverage shows a negative but not statistically significant relation to profitability. Although financial leverage levels of industrial firms have a negative effect on profitability, this may not be the case for insurance companies because their liabilities are usually noninterest-bearing. Number of policies is positively related to profitability. In other words, issuing more policies leads to higher profits.¹² Exposure to business lines with high loss ratios results in low profits. Finally, the risk proxy, standard deviation of loss ratios, is not statistically significant.

To understand the variation in profitability for Japanese insurance companies, we examine operating expense, commission expense, underwriting performance, and investment performance. We calculate (i) the ratio of general selling and administrative expenses to net premium, (ii) the amount of commissions paid to agents divided by net premium, (iii) the ratio of net claims to net premium (loss ratio), and (iv) investment income divided by net premium. To create an expense exposure index to control for the effect of specific insurance lines on overall expenses, we calculate the industry annual average of expense ratios (general expenses divided by net premium) by line and weight of the firm's exposure (premium by line) to that particular business line.¹³

Regression results of expense ratio, commissions paid, net claim (loss ratio), and investment income are presented in Table 5.

Expense Ratio

We first examine the relationship between expenses and keiretsu affiliation. The keiretsu affiliation dummy variable shows a significant negative relation with expense ratios, consistent with our argument that keiretsu insurers are closely monitored by their groups, which results in low operating expenses. In addition, the result is also

¹¹ This definition is consistent with that advocated by the *Keidanren* (the Federation of Business Organizations in Japan) and that in the Gramlich, Limpaphayom, and Rhee (2002) study of effective tax rates of industrial keiretsu and industrial independent firms during 1977–1997.

¹² We use a number of policies to control the potential effect of economies of scale. See the expense ratio section for more discussions.

¹³ High values for the index indicate that a company underwrites business in lines with high expense ratios.

TABLE 5
Regression Results for Other Key Variables

Variable	Expense Ratio	Commissions	Net Claims	Investment Income
Intercept	0.335*** (4.782)	0.140*** (4.776)	-0.049 (-1.175)	0.089*** (2.990)
Expense exposure index	0.004*** (3.876)	0.003*** (7.116)		
Loss exposure index			0.009*** (18.003)	
Size	-0.001 (-0.640)	-0.003*** (-4.263)	-0.002 (-1.337)	-0.001 (-0.121)
Number of policies	-0.014*** (-4.597)	-0.002 (-1.428)	0.009** (3.290)	
Securities holdings	0.045*** (2.657)			0.061*** (2.761)
Real estate holdings	-0.743*** (-4.510)			-0.369* (-1.670)
Loan portfolio				-0.091 (-1.587)
Keiretsu affiliation	-0.019*** (-3.669)	0.006*** (2.848)	0.018*** (3.630)	0.002 (0.378)
Mutual organization	0.011 (0.961)	0.007 (1.476)	-0.011 (-1.163)	0.092*** (6.926)
Adjusted R ²	0.471	0.453	0.665	0.338
F-Statistic	31.002***	40.026***	94.974***	21.561***

Notes: This table presents pooled regression results predicting variation in expense-to-premium ratio, commissions-to-premium ratio, net claims (loss ratio), and investment income-to-premium ratio for nonlife insurance companies with complete records during the period 1983–1994. Financial data are obtained from the annual special issues of *The Statistics of Japanese Non-Life Insurance Business* published by the Insurance Research Institute of Japan. Keiretsu classification is obtained from *Industrial Groupings in Japan* (1985, 1989) and *kigyo keiretsu souran* (1992). *t*-statistics are shown in parentheses. Statistical significance at the 1, 5, and 10 percent levels is denoted by ***, **, and *, respectively.

consistent with the prediction that information costs are greatly reduced for keiretsu firms. The coefficient for the number of policies is negative and significant at the 1 percent level. This indicates that there may be economies of scale in Japanese insurers.

The coefficient for the mutual insurer dummy variable is not statistically significant in the expense equation. Although this finding is contrary to Boose (1990), it is consistent with the findings of Cummins and VanDerhei (1979) and Mayers, Shivdasani, and Smith (1997), who find no significant difference between mutual and stock organizational forms with regard to general insurance expenses after controlling for lines of business.¹⁴

¹⁴ As expected, the expense exposure index is positively related to expense ratios suggesting that the index is an effective control variable.

Commissions

The keiretsu dummy variable for commissions has a positive and statistically significant coefficient, a result consistent with the literature. Miyashita and Russell (1994) contend that keiretsu companies generally have higher compensation scales than independent companies. Nakatani (1984) posits that keiretsu statements often declare a goal of enhancing the welfare of employees, implying that the average compensation of keiretsu employees is higher than the average compensation of independent firm employees.

Again, the mutual dummy variable is not statistically significant at conventional levels, indicating that there is no significant difference in the commissions paid to agents for mutual and stock companies. These findings are in agreement with the results of Mayers, Shivdasani, and Smith (1997) but not with those of Boose (1990).

Net Claim

The results indicate that keiretsu insurers have significantly higher net claims (loss ratios) than other insurers. To investigate whether the result occurs because keiretsu insurers pay, on average, high claims to their customers, we regress the ratio of total claims to number of policies on the keiretsu dummy variable and other control variables. The results (not reported) show that there is no significant difference between keiretsu and independent insurers in terms of average claim payment per policy. Regression using the average premium per policy yields no statistically significant difference. We conclude that the higher loss ratios for keiretsu insurers are caused by a combination of higher claim payments and lower premiums, because neither claim payments nor premiums drive the higher loss ratio result. The loss exposure index adds robustness to the results because it controls for the fact that the companies underwrite business in different lines with different loss ratios.

There is no evidence of any significant difference in terms of underwriting performance between mutual and stock insurers. This finding is consistent with Mayers and Smith (1988), who hypothesize that mutual companies are prominent in certain insurance lines that require little judgment or discretion in setting rates, whereas stock companies are concentrated in different lines that require managers to exercise more discretion in setting rates.

Investment Income

The investment performance of keiretsu companies is similar to that of the independent companies. This finding, with the others in Table 5, provides strong support for the argument that the keiretsus' relatively high profitability is a result of reduced agency conflicts. Table 5 also indicates that mutual companies have significantly higher investment income than stock companies. We believe this is because Japanese mutual insurers have a higher proportion of savings-type policies than stock insurers (see descriptive statistics in Table 3). Savings-type policies in Japan generally pay premiums plus interest at the end of the policy period. From the descriptive statistics in Table 3, we can also see that mutual companies have higher investment risk than stock insurers, as measured by the standard deviation of investment income. Higher investment risk can partially explain their higher investment income.

Free Cash Flow and Capital Structure

Examination of the determinants of free cash flow and capital structure among non-life insurance companies in Japan requires a simultaneous equation method. One can argue that keiretsu group membership and ownership structure can also be endogenous choices. However, the group membership and ownership structure can be treated as predetermined variables because of the unique setting in Japanese insurance industry. We have noted earlier that keiretsu membership was determined by historical development and ownership structure is set once the keiretsu membership is determined.

One can also argue that dividend policy is an endogenous variable. We find that that dividend policy was also unique during our study period. Japanese executives once believed that dividend payments represent a cost to the firm, so they often followed a fixed dividend policy (French and Poterba, 1991; Kato and Lowenstein, 1995). Throughout the 1980s, for example, dividends were generally fixed at 10 percent of the par value (or fixed at 100 yen) making the average dividend for the entire period from 1981 to 1990 relative stable at approximately 10.5 yen. Frequently, stocks went ex dividend even without an announcement from the firm on the dividend amount. This policy of fixed dividends has changed drastically in the 1990s. As a result, we treat the dividend policy as an exogenous variable in our study period.

The first equation of the model (Equation (2)) has free cash flow as the endogenous variable, while the second equation (Equation (3)) has capital structure (liabilities-to-equity) as the endogenous variable.

The models are:

$$\begin{aligned} \text{CASH}_j = & \alpha + \beta_1 \text{ASSET}_j + \beta_2 \text{CAPS}_j + \beta_3 \text{LINDX}_j \\ & + \beta_4 \text{POL}_j + \beta_5 \text{K}_j + \beta_6 \text{M}_j + \varepsilon_j \end{aligned} \quad (2)$$

$$\begin{aligned} \text{CAPS}_j = & \alpha + \beta_1 \text{ASSET}_j + \beta_2 \text{ROA}_j + \beta_3 \text{CASH}_j \\ & + \beta_4 \text{LINDX}_j + \beta_5 \text{IH}_j + \beta_6 \text{K}_j + \beta_7 \text{M}_j + \varepsilon_j, \end{aligned} \quad (3)$$

where CASH is the ratio of free cash flow to net premium, ASSET is the logarithm of total assets, CAPS is the firm capital structure (liabilities-to-equity ratio), IH is the value of investment holding divided by total assets, and the other variables are as previously defined.

Free cash flow presents an opportunity for abuse; managers can use it to undertake unprofitable investments. Therefore, cash flow "in excess of that required to fund all available positive net present value projects" should be positively related to agency costs of equity (Jensen, 1986). We suggest that the monitoring mechanisms inherent in the keiretsu structure should control free cash flow problems. Mayers and Smith (1981) contend that the mutual form of organization is subject to higher degrees of agency conflicts between owners and managers than the stock form, because its mechanisms for management removal are not as effective as those for stockholder insurers (see also Mayers, Shivdasani, and Smith, 1997). Wells, Cox, and Gaver (1995) observe that U.S. mutual life insurers have higher levels of free cash flow than stock insurers.

To examine the extent of agency costs for Japanese nonlife insurers, we use the model in Equation (2). We use undistributed cash flow (UCF) as a measure of free cash flow (Lehn and Poulsen, 1989; Lang, Stulz, and Walkling, 1991; Wells, Cox, and Gaver, 1995). Specifically, $UCF = \text{Net Operating and Investment Income} + \text{Additional Capital Changes Paid in} - \text{Gross Interest Expenses} - \text{Income Taxes} - \text{Total Stockholder Dividends}$.¹⁵ Firm size (ASSET) should be positively related to cash flow, because large insurers should be able to generate more premium volume than small firms. We also predict a positive relation between the number of policies (POL) and free cash flow levels because a firm may need to have higher levels of free cash flow as a cushion for adverse experience in underwriting or investment. Financial leverage (CAPS) should be negatively related to cash flow, because leverage can be used as a mechanism to bond managerial actions (Jensen, 1986). Lehn and Poulsen (1989) observe a negative relation between debt and cash flow in industrial firms. For insurers, leverage represents their underwriting obligations, which can significantly reduce free cash flow. Because claims paid can reduce cash flow levels, we also expect a negative relation between loss exposure (LINDX) and free cash flow.

To test the effect of organizational structure on financing decisions, we use the model in Equation (3). The role of equity in insurance markets is to back the ability to pay claims (Guo and Winter, 1997). Equity, in the case of mutual companies, is expected to be low because of firms' limited access to capital markets; this may give mutual companies higher financial leverage than stock companies. The keiretsu-monitoring mechanism may also cause keiretsu industrial companies to use more debt than their independent counterparts (Nakatani, 1984; Kim and Limpaphayom, 1998). Prowse (1990) contends that the keiretsu structure can alleviate agency costs because the major lenders are also the major shareholders.

In the case of insurance companies, it is not entirely clear that the effect of the keiretsu structure will be the same. Insurance regulators establish capital requirements and closely monitor capital levels of all companies. The broad effect of capital requirements applied to all insurance companies may nullify the impact of organizational structure on financial leverage.

According to the pecking-order theory (see Myers and Majluf, 1984), return on assets (ROA) should be negatively related to the debt-to-equity ratio. Titman and Wessels (1988) and Rajan and Zingales (1995) observe a negative relation between financial leverage and profitability among industrial firms in the United States and other G-7 countries. Guo and Winter (1997) similarly find that U.S. stock insurer profitability is negatively related to financial leverage. As measures of bankruptcy risk, we include total assets (ASSET) and loss exposure index (LINDX) in our model. Titman and Wessels (1988) observe a negative relation between financial leverage and total assets among U.S. industrial firms. They argue that large firms are able to diversify their risk, which results in lower returns. Jensen (1986) argues that financial leverage is a mechanism to prevent managers from abusing free cash flow, suggesting a negative

¹⁵ As the literature (Wells, Cox, and Gaver, 1995) points out, "it is impossible to determine all positive net present value projects" for a firm, we use UCF as a proxy for FCF. We follow the Lehn and Poulsen (1989) approach and deduct stockholder dividends because firms tend to maintain a stable dividend policy unless large and sustained future losses are expected.

TABLE 6

Two-Stage Least Squares Regression Results for Free Cash Flow and Capital Structure

Variables	Free Cash Flow	Capital Structure
Intercept	0.309*** (6.047)	204.890*** (5.533)
Total assets	0.002 (0.731)	-0.854 (-0.575)
Loss exposure index	-0.005*** (-8.535)	-3.115*** (-4.163)
Liabilities-to-equity	-0.002*** (-11.114)	
Number of policies	-0.004 (-1.155)	
Profitability		-196.397 (-0.147)
Free cash flow		-649.523*** (-3.116)
Investment holdings		-5.851 (-0.657)
Keiretsu affiliation	-0.010* (-1.901)	4.726 (-1.284)
Mutual organization	0.192*** (15.494)	134.874*** (7.591)
Adjusted R ²	0.667	0.582
F-statistic	76.312***	45.930***

Notes: Financial data are obtained from annual special issues of *The Statistics of Japanese Non-Life Insurance Business* published by the Insurance Research Institute of Japan. Keiretsu classification is obtained from *Industrial Groupings in Japan* (1985, 1989) and *kigyo keiretsu souran* (1992). *t*-statistics are shown in parentheses. Free cash flow = Net Operating and Investment Income + Additional Capital Changes Paid in – Gross Interest Expenses – Income Taxes – Total Stockholders Dividends. Statistical significance at the 1, 5, and 10 percent levels is denoted by ***, **, and *, respectively.

relation between the debt-to-equity ratio and free cash flow levels. We include total investment holdings (IH) as a proxy for collateral asset values. Titman and Wessels (1988) report an insignificant relation between collateral values and financial leverage for U.S. industrial firms.

The simultaneous regression results for free cash flow and capital structure are shown in Table 6. According to the free cash flow equation, keiretsu affiliation has a negative relation with free cash flows. This finding supports the notion that keiretsu companies can better control agency conflicts, as measured by free cash flow levels. We also observe a positive regression coefficient for the mutual dummy variable, indicating that the mutual organization form has higher agency costs associated with free cash flows. Firm size (total assets) and number of policies are not related to free cash flow levels. Consistent with the findings of Jensen (1986) and Lehn and Poulsen (1989), our results indicate that leverage is negatively related to free cash flow levels. As predicted, companies that have high loss ratios also have low free cash flow levels.

According to the capital structure equation, the keiretsu affiliation variable is not statistically significant.¹⁶ This could be a result of a regulatory effect. That is, Japanese insurers adhere to capital requirement guidelines established by the authorities. We also find that mutual companies have a significantly higher financial leverage than stock companies. Stock companies have more flexibility in raising capital and may not need to resort so much to debt. We find no empirical evidence in support of the pecking-order theory (Myers and Majluf, 1984), unlike Guo and Winter (1997), who observed a negative relation for property-casualty insurance companies in the United States in 1995. Consistent with the results for free cash flow, there is a negative relationship between free cash flow levels and capital structure. Further, companies that have high loss ratios tend to have low leverage. The result for the investment holdings variable is consistent with the evidence in Smith and Warner (1979).

CONCLUSION

Our examination of the relation between organizational structure and firm performance in the Japanese nonlife insurance industry provides interesting results with regard to keiretsu insurers. Overall, keiretsu affiliation appears to have a significant positive impact on firm performance as measured by profitability. The superior performance of keiretsu companies can be explained by the control of agency conflicts in that the keiretsu structure combines the benefits of both mutual and stock forms of organization. Customer and shareholder functions are more congruent for keiretsu companies reducing the agency costs of fixed claims. Further, keiretsu managers are closely monitored by their large shareholders, which in turn leads to low information asymmetry. These combined benefits lead to efficiency in the form of low operating expenses and free cash flow levels for keiretsu firms.

We also observe that keiretsu insurers have relatively high loss ratios and pay high commissions to agents. One of the objectives of horizontal corporate groups is to satisfy their internal stakeholders. Paying high commissions is consistent with the notion that keiretsu groups also try to enhance employee welfare. One might ask how keiretsu insurance companies are more profitable if they have high loss ratios and high commissions. Table 3 may provide some insights. Without controlling for other independent variables, the expense ratio for keiretsu insurance companies (24.8 percent) is much lower than that of independent insurance companies (28.1 percent), whereas loss ratios and commissions are almost identical for both types of insurance companies. In addition, Japanese nonlife insurance companies have relatively low loss ratios and high expenses.¹⁷ The role of expenses is thus more critical to the profitability of Japanese nonlife insurance companies.

Our results with respect to mutual insurance companies versus stock insurance companies are also consistent with agency theory. Mutual companies have higher free cash flow levels than stock companies; they may need to generate high levels of free cash flow to compensate for their limited access to the capital markets. Mutual companies also have more investment income, because they write proportionately more

¹⁶ Analysis using several alternative measures of leverage (including the equity-to-value ratio) yields similar results.

¹⁷ See "Japan's Insurance Markets—a Sea Change," *sigma*, No. 8, 2000, Swiss Re.

savings-type policies than stock companies. For a stock company, the savings component of such policies would be more likely subject to expropriation by stockholders. The reader should interpret the results of mutual versus stock insurers with caution because there are only two mutual firms in the Japanese nonlife insurance company.

We believe our results provide some additional understanding of agency theory, information cost, and organizational structure. In the end, the keiretsu form of organization seems to allow insurance companies to achieve better performance, beyond supporting their fellow keiretsu members. Independent insurers have relatively low loss ratios and commissions. In addition, mutual insurers have more investment income. Overall, empirical evidence suggests that each structure has its own comparative advantage.

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