

**The Impact of Ownership Structure on the Dividend Policy of Japanese Firms
with Free Cash Flow Problem**

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Abstract

This paper, using 986 observations of listed Japanese firms between the years 1992 to 2000, explore the implications of the free cash flow hypothesis concerning the disciplinary role of ownership structure in dividend policy. We find evidence in support of the hypothesis that a positive relation exists between dividends and free cash flow and it's greater for low-growth firms than for the high-growth firms. The results also show that the impact of managerial ownership and bank ownership on dividend yield is positive particularly for the low growth firms. This is inconsistent with the view that the managerial ownership and institutional ownership reduce the need for the dividend mechanism. Finally, there is evidence that the Keiretsu classification affects relations between ownership structure and dividend payouts. Overall, the dividend policy appears to be used by Japanese low-growth firms to control the overinvestment problem. Free cash flow hypothesis is to some degree supported.

JEL classification codes: G32 G34 G35

Keywords: Ownership Structure, Dividend Policy, Free Cash Flow

1. Introduction

Why does a firm pay dividends? This question has been the subject of debate for many years. In the pre-Miller and Modigliani era, it was believed that increasing dividends would always increase market value. Miller and Modigliani (1961) establish that in a perfect capital market, given an investment policy, dividend is irrelevant in determining share value. Empirically, however, we have observed that a change in dividend policy does have a significant impact on the share price. Different researchers have concentrated on different types of imperfections in the market in order to rationalize why dividends matter. Of these, a plausible idea is that corporate dividend policy addresses agency problems between shareholders and managers (Rozeff, 1982; Easterbrook, 1984; Jensen, 1986). According to these agency theories, unless profits are paid out to shareholders as dividends, they may be committed to unprofitable projects that provide private benefits for the managers. Rozeff (1982) and Easterbrook (1984) argues that the payment of dividends expose companies to the possible need to raise external funds, and hence subjects them to greater monitoring by capital markets. Jensen (1986) argues that paying dividends reduces the discretionary resources under managerial control and so helps to mitigate the overinvestment problem.

In this study, we examine the implication of the free cash flow hypothesis in corporate dividend policy, and focus specifically on cross-sectional relations between dividend payout policy and ownership structure and free cash flow. Given the severity of the overinvestment problem, relations between dividend payouts and ownership structure, free cash flow may be conditioned on the existence of growth opportunities. This research examines how the sensitivity of relations between dividend payouts and ownership structure, free cash flow varies cross-sectionally with growth opportunities.

Previous studies have shown that in countries like the US, firm ownership is relatively dispersed, leading to a limited ability of owners to monitor or control management's use of free cash flow. Thus the dividend payout is one of the primary control mechanisms whereby shareholders can reduce management access to or abuse of discretionary funds. In countries with 1) a higher concentration of ownership 2) extensive cross-shareholding and 3) strong banking relationship, like Japan, dominant shareholders are believed to have both the incentives and the ability to keep management in check.

Tests using a sample of 986 observations for 350 firms from 1992 to 2000 period indicate that the sensitivity of managerial ownership and bank ownership to dividend payouts varies directly with the relative abundance of growth opportunities. we find that dividend payouts for low-growth firms are significantly related to managerial ownership and bank ownership. In

contrast, there are no significant relations between dividend payouts and managerial ownership, bank ownership for high-growth firms.

We also investigate associations between free cash flow and dividend payouts. Consistent with the prediction by Jensen (1986), there is a strong positive relation between the level of free cash flow and dividend payouts. Furthermore, association between free cash flow and dividend payouts is stronger for low-growth firms.

The rest of the paper is organized as follows. Section 2 reviews the previous theoretical and empirical research. Section 3 explains the Japanese institutional background. Section 4 describes the empirical framework. The empirical results are presented in Section 5-6 and Section 7 concludes.

2. Dividend payouts, Ownership Structure and Agency Cost Theory

2.1 Dividends and Agency Costs

Corporate dividend policy has been viewed as a control mechanism that mitigates agency conflicts between shareholders and managers. Jensen and Meckling (1976) suggest that one way to reduce agency costs of equity is to pay a larger proportion of its earnings as dividends to its stockholders. A high dividend payout ratio will result in lower “discretionary” cash flows available to be squandered away by managers. Rozeff (1982) argues that dividend payments are part of the firm’s optimal monitoring/bonding package and serve to reduce agency costs. Easterbrook (1984) lists some of the mechanisms by which dividends and the consequent raising of capital can control agency costs. Agency costs “are less serious if the firm is constantly in the market for new capital. When it issues new securities, the firm’s affairs will be reviewed by an investment banker or some similar intermediary acting as a monitor for the collective interest of shareholders, and by the purchasers of the new instruments”.

2.2 Free cash flow hypothesis

The free cash flow hypothesis is a variant of the agency argument based on the Principal-Agent framework. According to this framework, dividends are used by shareholders as a device to reduce overinvestment by managers. Jensen(1986) argues that managers with substantial free cash flow tend to invest it in wasteful projects rather than pay it out to shareholders, because managerial compensation and perquisites increase even with poor investments. These unnecessary investments lead to poor performance, creating conflicts between shareholders and managers. Jensen emphasizes the disciplinary role of dividends that restrain managerial unprofitable expansionary tendencies by limiting financial resources available to managers. Dividend payments represent an ongoing commitment to maintain higher payments in future periods, because firms are reluctant to cut dividends and have been greeted by a significant

negative stock market reaction when they do. Jensen suggests that dividends should be paid out in ways that instigate managers to gorge the cash beyond the optimal amount. This implies that free cash flow positively determines dividend payments.

2.3 Ownership structure and dividend policy

One criticism of the agency cost theory is that if managers want to overinvest or spend more on jets, what is the mechanism that will force them self-commit to an action that will prevent them from doing so? Several authors address this issue in the context of ownership structure

2.3.1 Institutional Ownership

There are several important ways in which institutions differ from individual investors. In general, institutions manage large pools of funds and therefore invest larger amounts in each stock. Because they have larger amounts at stake, they should have incentives to devote resources to monitoring (Grossman and Hart, 1980; Shleifer and Vishny, 1986).

Institutions are also likely to be better informed than are individual investors. Not only do institutions devote resources to gathering information, but they are also sometimes privy to corporate information that individual investors do not have (Michael and Shaw, 1994).

However, the prediction on the relationship between dividend policy and institutional ownership are mixed.

The first line of research suggests a positive relation. Zeckhauser and Pound (1990) suggest the arm's length view of investment held by many institutional investors, coupled with the incentives to free ride with respect to monitoring activities, implies that institutional shareholders are unlikely to provide direct monitoring themselves. The institutions, rather than providing monitoring themselves, forces firms to increase their dividends in order that they are subsequently forced to go to the external capital market for future funds. Eckbo and Verma (1994) argue that institutional shareholders will prefer free cash flow to be distributed in the form of dividends in order to reduce the agency costs of free cash flow. From this perspective, it may be argued that institutional shareholders may counter a tendency for managers to prefer the excessive retention of cash flow and, by virtue of their voting power, force managers to pay out dividends. Moh'd, Perry and Rimbey (1994) and Short, Zhang, and Keasey (2002) also provide additional support.

The second line of research suggests a negative relation. Jensen and Meckling (1976) argue that external monitoring activity is an important controlling element when agency conflict exists. If large institutional investors act as monitoring agents, and if dividends are paid to reduce agency cost, then according to this theory, there should be a substitute relation between dividend policy and institutional ownership. This implies a negative relationship between the percentage of

shares held by institutions and the dividend payout. D'Souza, and Saxena (1999) provide the empirical evidence.

2.3.2 Managerial Ownership

There are several lines of argument on the role of managerial ownership. The first line of argument suggest that managerial ownership may better aligning the interest of management and shareholders and helps mitigate free cash flow problems. Therefore it results in a higher level of total payouts when managers hold more shares. (White,1996; Fenn and Liang,2001).

The second line of argument suggest that insider stock ownership provides direct incentive alignment between managers and shareholders while dividends serve as a bonding mechanism reducing management's scope for making unprofitable investment out of internal funds. Thus, insider stock ownership and dividend policy are viewed as substitute means of addressing potential agency problem. This approach expects that dividend payouts are negatively related to insider stock holdings, which is verified by a number of studies. (Rozeff, 1982; Crutchley and Hansen, 1989; Dempsey and Laber, 1992; Jensen, Solberg and Zorn,1992; Moh'd, Perry and Rimbey ,1995; Agrawal and Jayaraman, 1994; Holder, Langrehr and Hexter, 1998; Chen and Steiner,1999; Short, Zhang, and Keasey, 2002;)

The third line of argument suggests non-monotonic relation. Shleifer and Vishny (1989) developed managerial entrenchment model. They argue that at a certain level of insider-holdings managers have effective control and engage in non-value maximizing behavior as the relative cost of such behavior are outweighed by the relative benefit. Empirical articles have shown that managerial ownership is not a linear function of agency costs. Morck, Shleifer and Vishny (1988) and McConnell and Servaes (1990) found insider ownership is related to performance in a nonlinear fashion. Schooley and Barney (1994) report a nonmonotonic relation between CEO stock ownership and dividend yield. Farinha (2003) documented the U-shaped relationship between insider ownership and dividend payout in the UK. He argues that it stems from the effects of managerial entrenchment.

3. Japanese Institutional Background

Japan offers us a valuable opportunity to examine issues related to dividend policy under an institutional setup quite different from that in U.S., such as the main bank, the cross-shareholding among corporations. This distinctive Japanese institutional background may result in important difference between Japanese and U.S. firms in terms of corporate monitoring and information sharing. Since, most theoretical explanations of dividends rely on agency and information issues, they would suggest different choices of dividend policy in Japan.

3.1 Main bank

Aoki, Patrick and Sheard (1994) highlight a significant governance role played by the main bank for Japanese firms. The main bank effectively monitors the client firms by becoming well-informed about the firm (Diamond, 1984)). The main bank's equity stake in the client firm mitigates agency costs between creditors and shareholders (Prowse (1990)). The main bank sometimes intervenes the management of the client firm that performs poorly by appointing bank employees to the board of directors in the client firm (Kaplan and Minton,1994; Kang and Shivdasani, 1995; Morck and Nakamura, 1999). In case of financial distress, the main bank acts as a guarantor for other creditors, reducing the cost related to the restructuring of the client firm (Hoshi, Kashyap and Sharfstein,1990)..

In contrast, several authors suggest that there is a cost in having a main bank. Firms relying on the main bank for financing are likely to be constrained in raising the additional capital when the banking sector as a whole has a financial difficulty (Kang and Stulz, 2000). The main bank can extract surplus from the client firms due to its monopolistic power of information production (Rajan, 1992). In a similar context, the main bank has an incentive to force the client firms to undertake low-risk, negative NPV projects (Weinstein and Yafeh, 1998). Firms that do not depend on bank borrowing exhibit higher profitability than the matched sample of firms that have a main bank (Kang and Shivdasani, 1999).

3.2 Keiretsu Group

There exist differences between keiretsu or industrial groups centered around affiliated banks and financial institutions and unaffiliated independent firms with weaker banking ties. Japanese industrial organization is characterized by groups of enterprises (keiretsu) composed of firms based in different industries but bound by ties of fractional ownership and reliant on a large commercial bank as the major but not sole lender. The large shareholders of keiretsu firms often are also large creditors of the firm as well as important long-term commercial business partners. The keiretsu and non-keiretsu firms are facing different liquidity constraints in their investment spending. Investment spending is very sensitive to liquidity constrains for non-keiretsu firms, but not so for keiretsu firms. Since keiretsu firms are likely to have better access to financing sources, keiretsu firms seemingly face less liquidity constraints in making investment decision.

The differences in institutional arrangements between keiretsu and non-keiretsu firms may influence the behavior of shareholders as monitors. Kester (1990) describes the corporate governance system of keiretsu firms in terms of a complex interaction between shareholdings, credit holding and long-term business relationship that exist between the firm and its stake holders. Aoki, Patric, and Sheard (1994), and Berglof and Perotti (1994) suggest a two-tier monitor system. In the first stage, corporate cross-shareholders serve as the monitors under

normal circumstances because they have specific industry knowledge and observe each others' performance through their business relations. In the second stage, the financial institutions take an active intervention role when member firms get into financial distress, replacing incumbent managers and requiring restructuring and liquidation of assets.

3.3 Managerial equity ownership

Because the well-known keiretsu structure and influential bank shareholders, the agency problems between Japanese managers and shareholders are considered to be minimal (e.g. Nakatani, 1984; Hoshi, Kashyap and Scharfstein, 1990, 1991; and Prowse, 1990). The manager ownership, as a way of aligning interests between managers and shareholders, has been viewed as an unnecessary corporate governance mechanism.

However Kang and Stulz (1998), Morck and Nakamura (1999), and Weinstein and Yafeh (1998) questioned the effectiveness of bank oversight in Japan. Morck and Nakamura (1999) argue that for independent firms, bank equity holders pursue their interests as creditors at the expense of their equity claims. Gibson(1995) and Kang and Stulz (2000) argue that poor bank health may adversely affect their dependent firms' investment prospects, which, in turn, would affect their ability to monitor effectively. This particular contention is especially relevant to the late 1980's and early 1990's as it is well known that Japanese banks have been experiencing significant financial difficulties during this time period. In light of these findings, Morck and Nakamura (1999) contend that some independent firms may require corporate control mechanisms other than bank oversight. Due to the decline in power of Japanese banks, the rarity of incentive-based compensation contracts for Japanese managers, and the fact that many Japanese firms are not affiliated with a keiretsu group, the managerial-ownership may represents an alternative mechanism to ensure that firms operate efficiently.

Thus, the unique Japanese institutional arrangements provide an interesting backdrop to investigate whether cash flow theory explanation for dividend policy still apply given the differences.

4. Empirical framework

4.1 Hypotheses

If one assumes, as suggested by Jensen (1986), that managers receive utility from increasing the size of the firm, the control function of dividend payouts on the overinvestment problem varies with the firm's growth opportunities. Management may have an incentive to pay out as few dividends as possible at shareholders' expense. The overinvestment problem is less important and may be trivial for firms with many growth opportunities, because the objectives of managers and shareholders are more likely to coincide. On the other hand, when good projects are not

available, managers with substantial free cash flow must find ways to spend it and hence choose poor projects. Thus, the overinvestment problem is higher for low-growth firms than for high-growth firms, and divergence of interests between shareholders and managers over the firm's payout policy are more severe in firms with few growth opportunities. These firms can limit management's temptation to overinvest by paying out a larger percentage of their earnings. Their high-growth counterparts with lots of investment opportunities are likely to pay low dividends because they have profitable uses for the capital. For this reason, we expect stronger relations between free cash flow and dividend payouts for low-growth firms.

Hypothesis I: relations between the level of free cash flow and dividend payouts are positive and are stronger for firms with low growth opportunities.

Most of the existing agency explanations of payout rely on the implicit assumption that firms can get refinanced on the capital markets when they need funds to undertake new investment projects. Consequently, the strategy that minimizes agency costs is to maintain a high payout (to reduce the amount of free cash flow and to avoid overinvestment problems) and to raise new outside capital whenever and attractive investment opportunity emerges. Outside shareholders are harmed by a potential overinvestment and therefore they have preferences for high payout, which curbs the amount of corporate resources that can be spent by management on value reducing projects. Managerial ownership helps to align interests of management and shareholders that may yield the reduction of agency costs stemming from payout smaller. Consequently, payout ratios in a firm with managerial block holdings may be low because the severity of manager-shareholder agency conflict is low. This traditional agency view generates a set of hypothesis that the payout is negatively related with the managerial ownership.

Institutional investors are more effective at monitoring management than retail investors. Due to the size of their investments and the resources at their disposal, institutional investors have greater incentive and ability to gather and analyze information pertaining to their investments, as well as a greater ability to discipline management and push for changes when management performs poorly. Pound (1988) suggests that institutional investors serve as an alternative mechanism to control the overinvestment problem. Agrawal and Mandelker (1990) indicate that institutional investors provide valuable monitoring services and act as a restraint to opportunistic behavior by managers. Therefore, institutional investors may help in reducing the firm's agency cost and become a substitute for payout.

According to the interpretation in the previous studies regarding the substitutive relation between

managerial ownership, institutional ownership and dividend payouts in controlling the agency cost of overinvestment, the negative relation between managerial ownership, institutional ownership and dividend payouts should be more pronounced for firms with few growth opportunities.

Hypothesis II: relations between managerial ownership, institutional ownership and dividend payouts are negative and are stronger for firms with low growth opportunities.

4.2 Model

$$DP_{i,t} = \beta_1 \text{Managerial}_{i,t} + \beta_2 \text{Bank}_{i,t} + \beta_3 \text{Nonbank}_{i,t} + \beta_4 \text{Business}_{i,t} + \beta_5 \text{FCF}_{i,t} + \beta_6 \text{Lev}_{i,t} + \beta_7 \text{PSTD}_{i,t} + \beta_8 \text{SIZE}_{i,t} + \beta_9 \text{ERN}_{i,t} + \varepsilon_{i,t}$$

Dependent variable

We use dividend yield (Smith and Watts, 1992; Agrawal and Jayaraman, 1994; Gul, 1999; Fenn and Liang, 2001) to represent the firm's payout policy since the management may manipulate the profits and the dividend payout ratio will also be affected.

Dividend yield = Cash dividends per share / Price per share

Stock repurchase were made to be legally available in 1997 for managerial stock option preparations and were made generally available for Japanese corporations as a financial tool in 2002. There is little observation of stock repurchase during our sample period 1992-2000. Hence we didn't consider the stock repurchase.

Independent variable

The key variables are ownership variables and Free cash flow.

1) Managerial ownership

Due to the decline in power of Japanese banks, the rarity of incentive-based compensation contracts for Japanese managers, the manager ownership is an important governance device in Japan. We measure managerial ownership by the percentage of total shares outstanding held by the president and chairman. The coefficient on managerial ownership is expected to be negative.

2) Institutional ownership

To check how the identities of institutional owners matter for dividend policy, we employ bank ownership, nonbank financial ownership and business corporate ownership.

BANK= percentage of shares owned by banks

NONBANK= percentage of shares owned by insurance companies and trusts;

BUSINESS= percentage of shares owned by corporate block holders;

The coefficient of institutional ownership is expected to be negative.

3) Free cash flow

Jensen (1986) defines free cash flow as cash flow left after firms have invested all available positive NPV projects. The most commonly used FCF definition is the one suggested by Lehn and Poulsen (1989).

The coefficient on Free Cash Flow is expected to be positive.

$$\text{FCF} = \frac{(\text{Operating income before depreciation} - \text{Interest expenses} - \text{Taxes} - \text{Preferred dividends})}{\text{Book value of assets}}$$

4) Leverage ratio

$$\text{LEV} = \frac{\text{total liabilities} - \text{accounts and note receivable}}{\text{total liabilities} + \text{market value of equity}}$$

As leverage increases, the probability of financial distress, and hence, external financing costs increase. As argued by Rozeff (1982), dividend payments may be viewed as quasi-fixed charges that can substitute for higher fixed costs or interest payments. As fixed costs rise, the dividend must decline to avoid the additional cost of external financing. Debt is also an alternative method of disgorging free cash flow (Jensen, 1986; Berger, Ofek, and Yermack; 1997). Jensen, Solberg and Zorn (1992) report a negative causal relation from debt levels to dividend payments. Johnson (1995) also supports the argument that debt and dividends are substitute. We expect that firms that rely more on debt to disgorge free cash flow will rely less on dividends. The coefficient on Leverage ratio is expected to be negative.

5) Investment

$$\text{Investment} = \frac{\text{expenditure for plant, equipment} + \text{R\&D}}{\text{Book value of asset}}$$

Myers and Majluf (1984) contend that firms may have to choose between dividend payments and capital expenditures (investments). Coefficient on investment is expected to be negative.

6) Profitability.

$$\text{Profitability} = \frac{\text{operating income}}{\text{sales}}$$

A positive relationship between profitability and dividends seems plausible, all else constant (Rozeff, 1982; Jensen, Solberg and Zorn, 1992). The coefficient on profitability is expected to be positive.

7) External financing cost: risk and firm size

Firms with relatively low financing costs can distribute more cash to shareholders because they know that external funds can be raised relatively inexpensively. As proxies for external financing

costs, we employ two variables, risk and firm size. Firms with higher operating and financial leverage would have higher costs of external financing. The standard deviation of the firm's monthly stock returns over the previous five years is a measure of risk, patterned after Holder, Langrehr and Hexter (1998).

Larger firms are generally regarded as having more stable cash flows and having less information asymmetry, which result in lower financing costs (Smith and Watts, 1992; Opler and Titman, 1993; Fenn and Liang, 2001). Larger firms also have higher agency costs (Jensen and Meckling, 1976). It needs more dividends to reduce the agency costs. We measure firm size as the natural logarithm of the book value of assets.

PSTD = standard deviation of operating income to sales over 5 years

SIZE = natural log of total assets;

We hypothesize that the coefficient on business risk is negative and the coefficient on size is positive.

8) Dummy variable:

Keiretsu dummy is equal to 1 if being keiretsu member, otherwise equal to 0. Nakatani (1984) keiretsu firms pay lower dividends because inter-corporate shareholdings are financed through borrowings and receiving dividends limits the right of the firm to using tax-deductibility of interest payments. He also suggests that the lower dividends may be explained in terms of the fact that keiretsu firms have less incentive to use dividends as a signal. The coefficient on Keiretsu dummy is expect to be negative.

Year dummy is included to control for contemporaneous macroeconomic shocks.

4.3 Methodology

The hypothesis is tested using OLS regression. The OLS methodology assumes that all exogenous variables are uncorrelated with the residual terms. In the case that the regressors are endogenous, this basic assumption of the OLS estimator is violated and the resulting estimates are biased and inconsistent. The managerial ownership, debt policy, investment policy and dividend policy are integral parts of corporate decision making in the agency framework. The Institutional ownership along with other control variables is external to the firm and therefore they are not corporate decision variables. The managerial ownership, the leverage and investment may be endogenous variable and correlated with the regressions' error terms.

To control for possible biases due to reverse causality, we use 2SLS. An alternative method is using a one-year lag between dividend payouts and explanatory variables. To control for industry effects, we also make regression with all variables except for year dummy and keiretsu dummy defined as differences from industry mean.

4.4 Data

4.4.1 Sample Selection

In constructing the sample, we initially take the list of firms and the financial accounting data from the Pacific-Basin Capital Markets (PACAP) database. We use a sample period that spans for 9 years from 1992 to 2000. For the purpose of the lagged analysis, the sample period actually used for estimation on dividend yield payouts runs from 1993 to 2000 and for all explanatory variables from 1992 to 1999. We do not include utility and financial companies in the sample because their ownership structure and dividend payouts are likely to be significantly different from other firms in the sample. This yield a sample of 986 firms observations. To be included in the sample for further analysis, we require that the data on managerial ownership is available. The observations should have no missing value for dividend yield, free cash flow, investment, and standard deviation of operating income to sales over 5 years. Some firms pay dividends when their earnings are negative. These firms are excluded from the sample following Agrawal and Jayaraman (1994).

A breakdown of low-growth and high-growth firms by year, industry and keiretsu classification is provided in table-1. For each year, firms are ranked according to their end-of-fiscal year market-to-book value (Growth Opportunities). The bottom quartile firms are placed in the low-growth subsample and the top quartile firms are placed in the high-growth subsample. Panel A shows that the sample the low-growth sample contains 484 observations for 161 firms, while the high-growth sample consists of 502 observations for 189 firms. The samples distributed evenly over the 9 sample period.

Panel B presents industry distribution of the two samples. Both samples contain 6 industry groups. Firms in manufacturing industries (industry codes between 301 and 315) represent 42.98% of low-growth firms, and 63.74% of high-growth firms.

Panel C show the Keiretsu and Independent Firms in the sample. The low-growth firms contain 37 keiretsu members and 447 independent firms. The high-growth sample contains 35 keiretsu members and 467 independent firms.

4.4.2 Descriptive Statistics

Table 2 provides descriptive statistics for low-growth and high-growth firms. column 1 identifies the variables used in the study, column 2 through 6 provide statistics for the low-growth sample, column 7 through 11 provide statistics for the high-growth sample. The last column reports the p-value for the difference of mean (median) between low-growth and high-growth firms. The first entry is p-value based on the t-test, and the second entry is p-value based on the Wilcoxon test.

There is evidence that dividend yield is significantly higher for low-growth firms than high-growth firms. The mean (median) Dividend yield for the low-growth sample is 0.012 (0.011), compared to a mean (median) of 0.008(0.007) for the high-growth sample. Both t-test and Wilcoxon test indicate that the difference between the two sample is significant ($p < 0.01$). The result is consistent with the argument that dividend payouts are used as a bonding mechanism to control agency costs of free cash flow and also consistent with the earlier findings (Smith and Watts, 1992; Gavor and Gavor, 1993; Gul, 1999).

The difference in the ownership structure between the two samples is significant. The mean (median) managerial ownership for the low-growth sample is 0.066(0.046), compared to a mean (median) of 0.102(0.072) for the high-growth firms. The mean (median) bank ownership for the low-growth sample is 0.092(0.090), compared to a mean (median) of 0.072(0.067) for the high-growth firms. The mean (median) business ownership for the low-growth sample is 0.099(0.054), compared to a mean (median) of 0.126(0.094) for the high-growth firms. Both t-test and a Wilcoxon test indicate that the differences are significant. The mean (median) non-bank ownership for the low-growth sample is 0.066(0.058), compared to a mean (median) of 0.071(0.055) for the high-growth firms. The t-test and the Wilcoxon test show that the difference is not significant.

Both the t-test and Wilcoxon test reveals that free cash flow is significantly lower for low-growth firms (mean of 0.014, median of 0.013) than for high-growth firms (mean of 0.045, median of 0.046). ($p < 0.01$). Possible explanation is that profitability is significantly different between low-growth firms (mean of 0.021, median of 0.013) and high-growth firms (mean of 0.085, median of 0.076) ($p < 0.01$).

The leverage ratio is significantly higher for low-growth firms (mean of 0.691, median of 0.729) than high-growth firms (mean of 0.182, median of 0.163).

The investment is significantly lower for low-growth firms (mean of 0.025, median of 0.014) than high-growth firms (mean of 0.043, median of 0.030).

The size are also significantly different between low-growth firms (mean 11.068, median of 10.968) and high-growth firms (mean of 10.816, median of 10.796) ($p < 0.01$).

The volatility of profitability is not significantly different between low-growth firms and high-growth firms.

5. Regressing Results of Managerial Ownership and Dividend Payout by Growth Opportunities

Table 3, Table 4 and Table 5 presents the results for the impact of growth opportunities on relations between ownership structure and dividend payouts. Three stages of regressions are run using OLS, 2SLS, and one year lag data.

5.1 The results of 2SLS

Table 4 presents the estimates of the two stage least square. Column 2 and 3 provide the regression estimates for low-growth and high-growth firms with the dividend payout ratio as the dependent variable. A t-statistics appears in parentheses below each coefficient and is adjusted for the heteroskedasticity in residuals using the White (1980) method. All regressions provide the estimates obtained after adjusting for year effects. The validity of the instruments is supported by the Sargan Test. The Hausman test confirms the potential bias of OLS and the need for 2SLS, although the evidence for the endogeneity of Leverage is not strong.

There is evidence that free cash flow leads to an increase in dividend yield and the effect is stronger for low-growth firms. The results show that the coefficient on free cash flow for low-growth firms is 0.443 ($p < 0.05$), the coefficient for high-growth firms is 0.083 (insignificant). These findings support the first hypothesis that relations between free cash flow and dividend yield are positive and are more pronounced for low-growth firms. (The OLS method get similar result).

Turning to the role of ownership structure, relations between ownership variable and dividend yields appear to differ dramatically with growth opportunities. For low-growth firms, managerial ownership has very pronounced effects on dividend yield. Higher dividend yield are observed when managers hold a higher percentage of firm shares. The coefficient is 0.363 ($p < 0.05$) on managerial ownership. The possible explanation could be the remuneration of the managers is linked to the amount of dividend. The shareholders use the compensation contract to induce managers to distribute more of their available earnings or cash as dividends when there are less positive NPV projects.

The result show higher bank ownership induce higher dividend yield. The coefficient is 0.122 ($p < 0.05$) on bank ownership. The coefficient on non-bank ownership and business ownership are 0.043 and 0.029 respectively. Both are insignificant. The significantly positive sign of bank ownership is not expected. The possible explanation is that bank investors reduce agency costs not directly by monitoring the management of the firms, but by forcing the firms to raise outside equity regularly which subjects them to the scrutiny of the capital markets. It is also consistent with the Aoki (1988, pp.127-142), which suggests that the banks would prefer client firms to be more generous in their dividend payments. (The OLS method show a little different results. The coefficient on non-bank ownership and business ownership are significant negative. The coefficient on bank ownership is positive but insignificant. Since there may be endogenous variable problem with OLS, we trust the results of 2SLS).

For high-growth firms, the coefficient is 0.019 on managerial ownership, -0.009 on bank

ownership, 0.005 on non-bank ownership and -0.002 on business ownership respectively, but all are insignificant.

Most of control variables have signs in line with expectations. The coefficient on leverage ratio is -0.011 (insignificant) for low-growth firms, 0.044 ($p < 0.01$) for high-growth firms. These findings suggest that there is substitution between dividend payout and leverage ratio in controlling free cash flow problems for low-growth firms, but not for high-growth firms.

Significantly negative coefficient on the investment, -0.719 ($p < 0.05$) for low-growth firms, -0.125 ($p < 0.05$) for high-growth firms, indicates that firms have to choose between dividend payments and investments.

The dividend increases as a function of firm size, with 0.002 (insignificant) for low-growth firms and 0.001 (insignificant) for high-growth firms. This supports the view that firms avoid the commitment to higher dividends when the external financing cost is high. It also suggests that larger firms have higher agency costs and relatively lower transaction cost than small firms.

The exceptions are the negative coefficient on profitability and positive coefficients on volatility of profitability and Keiretsu for the low-growth firms. All are insignificant.

5.2 The results of one year lag

The results for regression using lagged dependent variable for the year 1992 to 1999 are reported in Table 5. The results show that for the low-growth firms, the free cash flow is significantly and positively related with the dividend yield. Managerial ownership and bank ownership have significant positive influence on the dividend yield. They are similar to the results of 2SLS.

For the high-growth firms, the free cash flow is positively related with the dividend yield but insignificant. The managerial ownership, non-bank ownership and business ownership are negatively related with the dividend yield while the bank ownership is positively related with dividend yield. All the results are insignificant.

The coefficient on Leverage ratio suggest that there is substitution between dividend payout and leverage ratio in controlling free cash flow problems for low-growth firms, but not for high-growth firms.

The positive coefficient on the Profitability indicates that firms generating more earnings pay higher dividends.

The dividend is inversely related to Volatility of Profitability. In line with the argument that managers are reluctant to cut dividends (e.g. Kalay, 1980). Firms with unstable earnings pay out less in dividends in an attempt to both keep their dividend payment stable and avoid the cost external financing.

The positive sign on size supports the view that firms avoid the commitment to higher dividends

when the external financing cost is high.

The negative signs for the Keiretsu Classification are consistent with the expectations that keiretsu firms pay lower dividends.

The exception is the positive coefficient on investment, which is insignificant.

6. Regressing Results of Managerial Ownership and Dividend Payout by Growth Opportunities and Keiretsu Classification.

Previous empirical studies suggest that there exist two distinct systems of corporate governance between the independent firms and the keiretsu members. The independent firms are much more similar to U.S. firms in their arms-length relationships with financiers and trading partners. The weaker ties that exist between independent firms and their stakeholders suggest that methods of monitoring and influencing management may rely more directly on the size of the shareholder's equity holdings, as is the case in the U.S. Hence further tests are conducted to examine the role of keiretsu vs. non-keiretsu firms.

6.1 Descriptive statistics

Table 6 shows the comparison of firm characteristics for the four kinds of firms. The column 1 identifies the variables used in the study, the column 2 through 5 provide statistics for the two subsamples compared. The column 6 to 7 reports the p-value for the difference of means test between the two kinds of firms. The column 6 is based on the t-test and the column 7 is based on the Wilcoxon two-sample test. If both p-values are less than 0.10, we identify the difference as significant.

The panel A compares the low-growth keiretsu firms vs. low-growth independent firms. The mean (median) of non-bank ownership for low-growth keiretsu firms is 0.086(0.078), compared to 0.064(0.055) for independent firms. The mean (median) of Leverage ratio for low-growth keiretsu firms is 0.617(0.661), compared to 0.697(0.736) for independent firms. The differences are significant. The differences between the other variables are not significant.

The panel B compares the high-growth keiretsu firms vs. high-growth independent firms. The mean (median) of leverage for high-growth keiretsu firms is 0.230(0.248), compared to 0.179(0.154) for independent firms. The differences are significant.

Panel C compares the low-growth Keiretsu firms and high-growth Keiretsu firms. The differences in dividend yield, Free Cash Flow, Leverage ratio, Investment, Profitability, Volatility of Profitability and Size are significant. The mean (median) of Dividend Yield for low-growth Keiretsu firms is 0.011(0.010), compared to 0.007(0.008) for high-growth firms. The mean (median) of Free Cash Flow for low-growth Keiretsu firms is 0.018(0.014), compared to 0.044(0.039) for high-growth firms. The mean (median) of leverage for low-growth Keiretsu

firms is 0.617(0.661), compared to 0.230 (0.248) for high-growth firms. The mean (median) of Investment for low-growth Keiretsu firms is 0.025(0.020), compared to 0.038(0.030) for high-growth firms. The mean (median) of Profitability for low-growth Keiretsu firms is 0.019(0.021), compared to 0.072(0.053) for high-growth firms. The mean (median) of Volatility of Profitability for low-growth Keiretsu firms is 0.017(0.007), compared to 0.031(0.022) for high-growth firms. The mean (median) of Size opportunities for low-growth Keiretsu firms is 11.493(10.958), compared to 10.784(10.077) for high-growth firms.

Panel D compare the low-growth independent firms and high-growth independent firms. The mean (median) of Dividend Yield for low-growth Keiretsu firms is 0.012 (0.011), compared to 0.008(0.007) for high-growth firms. The mean (median) of Managerial Ownership for low-growth Keiretsu firms is 0.067(0.047), compared to 0.103(0.075) for high-growth firms. The mean (median) of Bank Ownership for low-growth Keiretsu firms is 0.093 (0.091), compared to 0.072 (0.067) for high-growth firms. The mean (median) of Business Ownership for low-growth Keiretsu firms is 0.098 (0.052), compared to 0.124 (0.094) for high-growth firms. The mean (median) of Free Cash Flow for low-growth Keiretsu firms is 0.014 (0.013), compared to 0.046 (0.046) for high-growth firms. The mean (median) of leverage for low-growth Keiretsu firms is 0.697(0.736), compared to 0.179 (0.154) for high-growth firms. The mean (median) of Investment for low-growth Keiretsu firms is 0.025(0.014), compared to 0.085(0.076) for high-growth firms. The mean (median) of Profitability for low-growth Keiretsu firms is 0.021(0.023), compared to 0.085 (0.076) for high-growth firms. The mean (median) of Volatility of Profitability for low-growth Keiretsu firms is 0.028(0.013), compared to 0.028 (0.015) for high-growth firms. The mean (median) of Size opportunities for low-growth Keiretsu firms is 11.033(10.972), compared to 10.818 (10.797) for high-growth firms.

6.2 Regressing results

Further tests are conducted to examine the role of Keiretsu vs. Non-keiretsu firms. As in the earlier case, three set of regression are run; using the OLS, 2-SLS and lagged dependent variable. The results are reported in Table 7, Table 8, and Table 9.

Table 8 presents the estimates of the two stage least square. The results of independent firms are in principal consistent with the results for the previous ones. The coefficient on free cash flow for low-growth independent firms is 0.519 ($p < 0.05$), much high than 0.043 (insignificant) for high-growth firms.(OLS method has the similar results.)

For low-growth independent firms, managerial ownership and bank ownership have very pronounced effects on dividend yield. The coefficient is 0.385 ($p < 0.05$) and 0.122($p < 0.05$) respectively. The coefficient on non-bank ownership and business ownership are insignificant.

(By the OLS method, only the coefficient of managerial ownership is significantly positive). For high-growth independent firms, dividend yield is negatively related with the managerial ownership and institutional ownership. But the results are all insignificant. This suggests the Low-growth independent firms have greater agency costs of free cash flow and use more dividends to control the problem. The managers and bank tend to pay more dividends when they hold more shares. The high-growth independent firms didn't use the dividend to control the agency problem.

For the keiretsu firms, a number of deviations are worth noting. For the low-growth keiretsu firms, the relation between the dividend yield and free cash flow is significantly negative. The coefficients on managerial ownership, bank and non-bank ownership are positive and insignificant. The coefficient on business ownership is negative and insignificant. (By OLS method, the relation between the dividend yield and bank ownership is positive and significant, which show the bank investors elicit higher dividend for the low-growth keiretsu firms. other results are similar).

For the high-growth keiretsu firms, the coefficient on free cash flow is positive but insignificant. The relation between the dividend and ownership variables is all insignificant, which show the high-growth keiretsu firms didn't use dividend policy to monitor the problem of free cash flow.

The result of Keiretsu firms doesn't lend much support to the Hypotheses of free cash flow. The possible explanation may be that the keiretsu-member firms, face less information asymmetries and agency conflicts than the independent firms. (Dewenter and Warther, 1998). The backbone of the free cash flow hypothesis is the agency problem between management and shareholders. In Keiretsu firms, if the affiliated financial institutions and the major corporate shareholders monitor the managers effectively, then dividend payments may not be necessary to reduce managers' tendency to overinvest free cash flow.

The results for regression using lagged dependent variable for the year 1992 to 1999 are reported in Table 9, which are similar to that of 2SLS

To control for industry effect, all variables except for the year dummy and keiretsu dummy are defined as differences from industry means. The results, which are not reported in this paper, are consistent with the previous findings that dividend payouts are significant related with free cash flow only for low-growth firms.

7. Conclusions

The purpose of this study is to explore the implications of the Free Cash Flow hypothesis concerning the disciplinary role of managerial and institutional ownership in corporate dividend

policy. The investigation is motivated by the work of Rozeff (1982) and Jensen (1986) on divergence of interests between shareholders and managers over the payout policy. We consistently observe a positive relation between the dividend yield and the free cash flow, controlling for leverage, investment, profitability, risk and size. There is also evidence that relation between the level of free cash flow and dividend payouts are stronger for low-growth firms. The result suggests that dividend policy appear to be used by Japanese firms to control the overinvestment problem. Free cash flow hypothesis is to some degree supported.

Results indicate that the sensitivity of managerial and institutional ownership to dividend payouts depends on growth opportunities. Managerial ownership and institutional ownership appears to have a very pronounced effect on dividend payout for low-growth firms, while there is no apparent link for high-growth firms. The impact of managerial ownership on dividend yield is found to be positive particularly for the low growth firms. This is inconsistent with the view that the managerial ownership reduces the need for the dividend mechanism, but consistent with White (1996) and Fenn and Liang (2001). The possible explanation may be the remuneration of the managers is linked to the amount of dividend. In fact, the executive bonuses are positively correlated with the dividend policy (Xu, 1997). The result show strong support for a significant and positive association effect between dividend payout policy and bank ownership for the low-growth firms. The finding does not support the theory that the institutional ownership substitute for dividend in controlling overinvestment problem. But the evidence support the prediction in Zeckhauser and Pound (1990), Moh'd, Perry and Rimbey (1995) and Short, Zhang, and Keasey (2002). An alternative explanation may be that due to less influence of the bank now in Japan, the level of institutional monitoring is insufficient; hence this influential group of shareholders pushes for higher payouts to induce capital market monitoring.

Given the specific institutional features of Japanese market, we find that the Keiretsu firms doesn't use dividend as a disciplinary mechanism to control the free cash flow problem. The possible explanation may be that the keiretsu-member firms face less information asymmetries and agency conflicts than the independent firms because of the close monitoring by the major corporate shareholders and the affiliated financial institutions.

Overall, this study suggests that the free cash flow theory is relevant to an understanding of corporate dividend policy in Japan. Conflicts of interest between shareholders and managers over the payout policy vary with the growth opportunities. But managerial and institutional ownership did not substitute for dividend in mitigating the agency conflict for companies with more serious free cash flow problem.

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Table 1. Year Industry and Keiretsu Distribution for low-growth and High-growth Firms

Panel A: Sample Distribution by Year

Year	Low-growth firms		High-growth firms	
	Number	Percent	Number	Percent
1992	49	10.12	48	9.56
1993	55	11.36	55	10.96
1994	53	10.95	51	10.16
1995	57	11.78	45	8.96
1996	65	13.43	61	12.15
1997	56	11.57	58	11.55
1998	44	9.09	73	14.54
1999	48	9.92	62	12.35
2000	57	11.78	49	9.76
Total	484	100	502	100

Panel B: Sample Distribution by Industry

Industry code	Industry Name	Low-growth firms		High-growth firms	
		Count	Percent	Count	Percent
CONSTRUCTION					
201	Construction	123	25.41	15	2.99
sub total		123	25.41	15	2.99
MANUFACTURING					
301	Foods	13	2.69	35	6.97
302	Textile	16	3.31	2	0.4
303	Pulp and Paper	6	1.24		
304	Chemicals	23	4.75	46	9.16
306	Petroleum	4	0.83	5	1
307	Glass and Ceramics	8	1.65	6	1.2
308	Iron and Steel	6	1.24	7	1.39
309	Nonferrous Metals	11	2.27	3	0.6
310	Metal Products	26	5.37	2	0.4
311	Machinery	43	8.88	35	6.97
312	Electric Machinery	17	3.51	99	19.72
313	Transportation Equipment	13	2.69	7	1.39
314	Precision Equipment	9	1.86	12	2.39
315	Other Manufacturing	13	2.69	61	12.15
sub total		208	42.98	320	63.74
WHOLESALE AND RETAIL					
401	Wholesale	73	15.08	18	3.59
402	Retail	34	7.02	71	14.14
sub total		107	22.1	89	17.73
REAL ESTATE					
601	Real Estate	23	4.75	2	0.4
sub total		23	4.75	2	0.4
TRANSPORTATION AND COMMUNICATION					
701	Land Transportation	2	0.41	1	0.2
702	Shipping	2	0.41	4	0.8
704	Warehousing and Wharfing	6	1.24	1	0.2
sub total		10	2.06	6	1.2
SERVICES					
901	Services	13	2.69	70	13.94
sub total		13	2.69	70	13.94
Total		484	100	502	100

Panel C: Sample Distribution by Keiretsu

Identity	Low-growth Firms		High-growth Firms	
	Count	Percent	Count	Percent
Independent Firms	447	92.36	467	93.03
Keiretsu Firms	37	7.64	35	6.97
Total	484	100	502	100

Table 2. Descriptive Statistics for Low-growth and High-growth Firms

Variables	Low-growth Firms (N=484)					High-growth Firms (N=502)					Significance Test *	
	Mean	Median	Maximum	Minimum	Std.	Mean	Median	Maximum	Minimum	Std.	t-test	Wilcoxon test
Dividend Yield	0.012	0.011	0.084	0.000	0.012	0.008	0.007	0.058	0.000	0.005	0.000	0.000
Managerial Ownership	0.066	0.046	0.399	0.007	0.055	0.102	0.072	0.534	0.006	0.082	0.000	0.000
Bank Ownership	0.092	0.090	0.252	0.000	0.049	0.072	0.067	0.217	0.000	0.049	0.000	0.000
Non-bank Ownership	0.066	0.058	0.370	0.000	0.056	0.071	0.055	0.412	0.000	0.065	0.174	0.542
Business Ownership	0.099	0.054	0.586	0.000	0.113	0.126	0.094	0.605	0.000	0.124	0.000	0.000
Free Cash Flow	0.014	0.013	0.077	-0.063	0.021	0.045	0.046	0.077	0.010	0.017	0.000	0.000
Leverage ratio	0.691	0.729	1.151	-0.329	0.201	0.182	0.163	0.694	-0.272	0.150	0.000	0.000
Investment	0.025	0.014	0.256	0.000	0.031	0.043	0.030	0.281	-0.030	0.040	0.000	0.000
Profitability	0.021	0.023	0.149	-0.202	0.040	0.085	0.076	0.377	-0.059	0.054	0.000	0.000
Volatility of Profitability	0.027	0.013	0.433	0.001	0.051	0.028	0.015	0.426	0.001	0.058	0.759	0.174
Size	11.068	10.968	14.669	7.846	1.142	10.816	10.796	13.604	7.961	1.041	0.000	0.001

Table 3. Relation between Dividend Yield and Ownership Structure, Free Cash Flow.

The table presents the regression coefficients for Low-growth Firms and High-growth Firms by OLS. The dependent variable in the regression is the firm's Dividend Yield. The values of t-statistics appear in parentheses below each coefficient estimate and are adjusted for the heteroskedasticity in residuals using the White (1980) method. All regressions are estimated with year dummy variables.

Variables	Low-growth Firms	High-growth Firms
	Coefficient	Coefficient
Managerial Ownership	0.018* (1.925)	0.001 (0.171)
Bank Ownership	0.016 (1.338)	0.005 (1.152)
Non-bank Ownership	-0.014* (-1.677)	-0.001 (-0.397)
Business Ownership	-0.011* (-1.726)	-0.002 (-0.876)
Free Cash Flow	0.064** (2.498)	0.008 (0.589)
Leverage Ratio	-0.006** (-2.013)	0.007*** (3.560)
Investment	0.013 (0.758)	-0.003 (-0.460)
Profitability	0.065*** (4.255)	0.006 (1.378)
Volatility of Profitability	-0.020 (-1.513)	-0.002 (-0.595)
Size	0.002*** (3.127)	0.000 (0.923)
Keiretsu Classification	-0.001 (-0.486)	-0.001 (-0.816)
Number of Observation	484	502
Adjusted R-squared	0.206	0.150

*denotes p-value<0.10

** denotes p-value<0.05

***denotes p-value<0.01

Table 4. Relation between Dividend Yield and Ownership Structure, Free Cash Flow.

The table presents the regression coefficients for Low-growth Firms and High-growth Firms by 2SLS. The dependent variable in the regression is the firm's Dividend Yield. The values of t-statistics appear in parentheses below each coefficient estimate and are adjusted for the heteroskedasticity in residuals using the White (1980) method. All regressions are estimated with year dummy variables.

Variables	Low-growth Firms	High-growth Firms
	Coefficient	Coefficient
Managerial Ownership	0.363** (2.443)	0.019 (0.374)
Bank Ownership	0.122** (2.348)	-0.009 (-0.387)
Non-bank Ownership	0.043 (1.365)	0.005 (0.285)
Business Ownership	0.029 (1.387)	-0.002 (-0.277)
Free Cash Flow	0.443** (2.565)	0.083 (1.439)
Leverage Ratio	-0.011 (-0.441)	0.044*** (2.836)
Investment	-0.719** (-2.307)	-0.125** (-1.990)
Profitability	-0.156 (-1.608)	0.025 (1.531)
Volatility of Profitability	0.098 (1.369)	0.005 (0.525)
Size	0.002 (0.967)	0.001 (0.703)
Keiretsu Classification	0.001 (0.215)	-0.002 (-1.633)
Number of Observation	484	502

Instrument list: Bank Ownership, Non-bank Ownership, Business Corporate Ownership, Free Cash Flow, Profitability, Volatility of Profitability, Size, Collateral Value, R&D, Growth Opportunities, Keiretsu Classification, Industries Classification

*denotes p-value<0.10

** denotes p-value<0.05

***denotes p-value<0.01

Table 5. Relation between Dividend Yield and Ownership Structure, Free Cash Flow.

The table presents the regression coefficients for Low-growth Firms and High-growth Firms with one year lag between Dividend Yield and explanatory variables. The values of t-statistics appear in parentheses below each coefficient estimate and are adjusted for the heteroskedasticity in residuals using the White (1980) method. All regressions are estimated with year dummy variables.

Variables	Low-growth Firms	High-growth Firms
	Coefficient	Coefficient
Managerial Ownership	0.022** (2.251)	-0.004 (-1.168)
Bank Ownership	0.046*** (3.961)	0.006 (0.974)
Non-bank Ownership	-0.008 (-0.925)	-0.001 (-0.404)
Business Ownership	-0.009 (-1.531)	-0.003 (-0.957)
Free Cash Flow	0.027** (1.984)	0.019 (1.502)
Leverage Ratio	-0.007** (-2.013)	0.007*** (3.812)
Investment	0.015 (0.893)	0.001 (0.078)
Profitability	0.070*** (4.813)	0.008* (1.734)
Volatility of Profitability	-0.021 (-1.119)	-0.006* (-1.909)
Size	0.001** (2.328)	0.000 (0.239)
Keiretsu Classification	-0.001 (-0.729)	-0.003*** (-3.056)
Number of Observation	429	452
Adjusted R-squared	0.218	0.158

*denotes p-value<0.10

** denotes p-value<0.05

***denotes p-value<0.01

Table 6. Descriptive Statistics for Low-growth Keiretsu, Low-growth Independent Firms, High-growth Keiretsu and High-growth Independent Firms

Panel A: Descriptive Statistics for Low-growth Keiretsu vs. Low-growth Independent Firms

Variables	Low-growth Keiretsu Members (N=37)		Low-growth Independent Firms (N=447)		Significance test	
	Mean	Median	Mean	Median	t-test	Wilcoxon test
Dividend Yield	0.011	0.010	0.012	0.011	0.549	0.765
Managerial Ownership	0.052	0.034	0.067	0.047	0.109	0.034
Bank Ownership	0.081	0.062	0.093	0.091	0.148	0.093
Non-bank Ownership	0.086	0.078	0.064	0.055	0.025	0.006
Business Ownership	0.105	0.067	0.098	0.052	0.739	0.276
Free Cash Flow	0.018	0.014	0.014	0.013	0.186	0.687
Leverage ratio	0.617	0.661	0.697	0.736	0.020	0.010
Investment	0.025	0.020	0.025	0.014	0.937	0.826
Profitability	0.019	0.021	0.021	0.023	0.751	0.748
Volatility of Profitability	0.017	0.007	0.028	0.013	0.205	0.001
Size	11.493	10.958	11.033	10.972	0.018	0.197

Panel B: Descriptive Statistics for High-growth Keiretsu vs. High-growth Independent Firms

Variables	High-growth Keiretsu Members (N=35)		High-growth Independent Firms (N=467)		Significance test	
	Mean	Median	Mean	Median	t-test	Wilcoxon test
Dividend Yield	0.007	0.008	0.008	0.007	0.358	0.697
Managerial Ownership	0.084	0.042	0.103	0.075	0.195	0.001
Bank Ownership	0.067	0.069	0.072	0.067	0.583	0.656
Non-bank Ownership	0.085	0.080	0.070	0.054	0.185	0.189
Business Ownership	0.153	0.092	0.124	0.094	0.182	0.880
Free Cash Flow	0.044	0.039	0.046	0.046	0.597	0.638
Leverage ratio	0.230	0.248	0.179	0.154	0.052	0.031
Investment	0.038	0.030	0.044	0.031	0.416	0.778
Profitability	0.072	0.053	0.085	0.076	0.160	0.012
Volatility of Profitability	0.031	0.022	0.028	0.015	0.777	0.127
Size	10.784	10.077	10.818	10.797	0.852	0.539

Panel C: Descriptive Statistics for Low-growth Keiretsu vs. High-growth Keiretsu Firms

Variables	Low-growth Keiretsu Members (N=37)		High-growth Keiretsu Members (N=35)		Significance test	
	Mean	Median	Mean	Median	t-test	Wilcoxon test
Dividend Yield	0.011	0.010	0.007	0.008	0.048	0.080
Managerial Ownership	0.052	0.034	0.084	0.042	0.094	0.189
Bank Ownership	0.081	0.062	0.067	0.069	0.212	0.265
Non-bank Ownership	0.086	0.078	0.085	0.080	0.961	0.770
Business Ownership	0.105	0.067	0.153	0.092	0.135	0.604
Free Cash Flow	0.018	0.014	0.044	0.039	0.000	0.000
Leverage ratio	0.617	0.661	0.230	0.248	0.000	0.000
Investment	0.025	0.020	0.038	0.030	0.057	0.029
Profitability	0.019	0.021	0.072	0.053	0.000	0.000
Volatility of Profitability	0.017	0.007	0.031	0.022	0.097	0.002
Size	11.493	10.958	10.784	10.077	0.074	0.073

Panel D: Descriptive Statistics for Low-growth Independent vs. High-growth Independent Firms

Variables	Low-growth Independent Firms (N=447)		High-growth Independent Firms (N=467)		Significance test	
	Mean	Median	Mean	Median	t-test	Wilcoxon test
Dividend Yield	0.012	0.011	0.008	0.007	0.000	0.000
Managerial Ownership	0.067	0.047	0.103	0.075	0.000	0.000
Bank Ownership	0.093	0.091	0.072	0.067	0.000	0.000
Non-bank Ownership	0.064	0.055	0.070	0.054	0.145	0.384
Business Ownership	0.098	0.052	0.124	0.094	0.001	0.000
Free Cash Flow	0.014	0.013	0.046	0.046	0.000	0.000
Leverage ratio	0.697	0.736	0.179	0.154	0.000	0.000
Investment	0.025	0.014	0.044	0.031	0.000	0.000
Profitability	0.021	0.023	0.085	0.076	0.000	0.000
Volatility of Profitability	0.028	0.013	0.028	0.015	0.995	0.703
Size	11.033	10.972	10.818	10.797	0.002	0.003

Table 7. Keiretsu Classification and Relation between Dividend Yield and Ownership Structure, Free Cash Flow.

This table presents the results on relations between Dividend Yield and explanatory variables by OLS method when Low-growth and High-growth firms are divided further according to their Keiretsu classification. The values of t-statistics appear in parentheses below each coefficient estimate and are adjusted for the heteroskedasticity in residuals using the White (1980) method. All regressions are estimated with year dummy variables.

Variables	Low-growth Firms		High-growth Firms	
	Keiretsu	Independent	Keiretsu	Independent
Managerial Ownership	0.000 (-0.016)	0.020** (2.077)	0.003 (0.187)	0.000 (0.077)
Bank Ownership	0.120** (2.331)	0.015 (1.196)	0.020 (0.359)	0.006 (1.236)
Non-bank Ownership	0.070 (0.705)	-0.012 (-1.392)	-0.010 (-0.761)	-0.001 (-0.246)
Business Ownership	-0.019 (-0.565)	-0.011 (-1.620)	0.003 (0.612)	-0.001 (-0.391)
Free Cash Flow	-0.437** (-2.534)	0.086*** (3.185)	0.068 (1.364)	0.001 (0.060)
Leverage Ratio	0.012 (0.973)	-0.006** (-2.042)	0.019*** (3.198)	0.007*** (3.223)
Investment	-0.063 (-1.244)	0.011 (0.600)	-0.022 (-0.766)	-0.003 (-0.492)
Profitability	0.204** (2.430)	0.063*** (4.067)	0.035 (1.720)	0.003 (0.714)
Volatility of Profitability	-0.087 (-1.321)	-0.016 (-1.246)	-0.045 (-1.500)	0.000 (0.104)
Size	-0.004** (-2.734)	0.002*** (2.776)	0.001 (0.882)	0.000 (-0.250)
Number of Observation	37	447	35	467
Adjusted R-squared	0.762	0.211	0.656	0.148

*denotes p-value<0.10

** denotes p-value<0.05

***denotes p-value<0.01

Table 8. Keiretsu Classification and Relation between Dividend Yield and Ownership Structure, Free Cash Flow.

This table presents the results on relations between Dividend Yield and explanatory variables by 2SLS method when Low-growth and High-growth firms are divided further according to their Keiretsu classification. The values of t-statistics appear in parentheses below each coefficient estimate and are adjusted for the heteroskedasticity in residuals using the White (1980) method. All regressions are estimated with year dummy variables.

Variables	Low-growth Firms		High-growth Firms	
	Keiretsu	Independent	Keiretsu	Independent
Managerial Ownership	0.024 (0.249)	0.385** (2.501)	0.013 (0.543)	-0.005 (-0.178)
Bank Ownership	0.104 (1.154)	0.122** (2.271)	0.052 (0.599)	-0.016 (-1.151)
Non-bank Ownership	0.097 (0.690)	0.059 (1.644)	-0.010 (-0.669)	-0.001 (-0.121)
Business Ownership	-0.017 (-0.376)	0.027 (1.230)	0.010 (0.914)	-0.005 (-0.981)
Free Cash Flow	-0.381* (-1.990)	0.519** (2.469)	0.083 (1.574)	0.043 (1.251)
Leverage Ratio	-0.006 (-0.167)	-0.004 (-0.154)	0.027*** (3.452)	0.034*** (3.409)
Investment	-0.140 (-1.219)	-0.716* (-1.915)	-0.036 (-1.139)	-0.082** (-2.134)
Profitability	0.130 (1.312)	-0.154 (-1.517)	0.035 (1.734)	0.028*** (2.743)
Volatility of Profitability	-0.162 (-1.110)	0.109 (1.371)	-0.051 (-1.197)	0.005 (0.822)
Size	-0.004* (-1.993)	0.003 (0.915)	0.001 (0.663)	0.000 (-0.612)
Number of Observation	37	447	35	467

Instrument list: Bank Ownership, Non-bank Ownership, Business Corporate Ownership, Free Cash Flow, Profitability, Volatility of Profitability, Size, Collateral Value, R&D, Growth Opportunities, Industries Classification

*denotes p-value<0.10

** denotes p-value<0.05

***denotes p-value<0.01

Table 9. Keiretsu Classification and Relation between Dividend Yield and Ownership Structure, Free Cash Flow.

This table presents the results on relations between Dividend Yield and explanatory variables with one year lag between them. The Low-growth and High-growth firms are divided further according to their Keiretsu classification. The values of t-statistics appear in parentheses below each coefficient estimate and are adjusted for the heteroskedasticity in residuals using the White (1980) method. All regressions are estimated with year dummy variables.

Variables	Low-growth Firms		High-growth Firms	
	Keiretsu	Independent	Keiretsu	Independent
Managerial Ownership	-0.065 (-1.526)	0.023** (2.290)	-0.003 (-0.169)	-0.004 (-1.013)
Bank Ownership	0.027 (0.618)	0.045*** (3.561)	0.047 (0.568)	0.007 (1.079)
Non-bank Ownership	-0.082 (-1.336)	-0.008 (-0.950)	0.008 (0.348)	-0.001 (-0.356)
Business Ownership	-0.076*** (-2.985)	-0.009 (-1.465)	-0.001 (-0.078)	-0.002 (-0.563)
Free Cash Flow	-0.039 (-0.326)	0.032** (2.291)	-0.041 (-0.799)	0.023 (1.563)
Leverage Ratio	0.021** (2.426)	-0.008** (-2.386)	0.011* (1.767)	0.007*** (3.519)
Investment	0.003 (0.074)	0.014 (0.755)	0.022 (0.904)	-0.001 (-0.160)
Profitability	0.008 (0.133)	0.072*** (4.587)	0.039 (1.039)	0.007 (1.468)
Volatility of Profitability	-0.140** (-2.089)	-0.018 (-0.936)	-0.064 (-1.537)	-0.003 (-0.957)
Size	-0.001 (-0.703)	0.001** (2.061)	0.000 (-0.120)	0.000 (-0.912)
Number of Observation	39	390	39	413
Adjusted R-squared	0.642	0.220	0.456	0.122

*denotes p-value<0.10

** denotes p-value<0.05

***denotes p-value<0.01